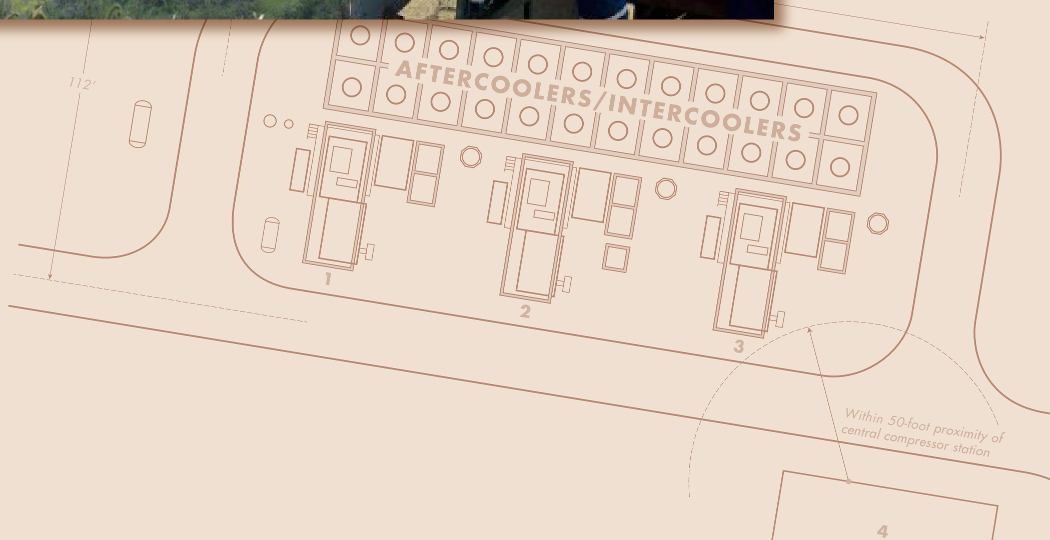
APPENDIX

ALISO CANYON TURBINE REPLACEMENT PROJECT

FINAL
ENVIRONMENTAL IMPACT REPORT

JUNE 2013



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Appendix A
Revisions to the Draft EIR

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Table of Contents

Tables

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Figures

Acronyms and Abbreviations

µg/m3	micrograms per cubic meter
AAI	All Appropriate Inquiry
AB	Assembly Bill
ACSR	Aluminum Conductor Steel Reinforced
af	acre feet
AMSL	above mean sea level
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
APM	Applicant Proposed Measure
applicant	Southern California Gas Company
AQMP	air quality management plan
ATCS	Adaptive Traffic Control System
ATSAC	Automated Traffic Surveillance and Control
B.P.	before present
bgs	below ground surface
BMP	Best Management Practice
Btu/hp	British thermal units/horsepower
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAGN	coastal California gnatcatcher
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Occupational Health and Safety Administration
CalEMA	California Emergency Management Agency
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CBS	U.S. Chemical Safety and Hazard Investigation Board
CCAA	California Clean Air Act
CCAS	California Climate Adaptation Strategy
CCR	Code of California Regulations
CDC	California Department of Conservation
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cf	cubic feet
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
CMA	Congestion Management Agency
CMP	Congestion Management Program
CMWD	Calleguas Municipal Water District
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency

CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalency
CPCN	Certificate of Public Convenience and Necessity
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CSERP	Construction Safety and Emergency Response Plan
CUP	Conditional Use Permit
CUPA	Certified Uniform Program Agency
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibel
DHS	Department of Homeland Security
DOGGR	California Division of Oil, Gas, and Geothermal Resources
DOT	U.S. Department of Transportation
DTSC	Department of Toxic Substances Control
E & E	Ecology and Environment, Inc.
EDR	Environmental Data Resources
EIR	environmental impact report
EMF	Electric and magnetic fields
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act
F	Fahrenheit
FAA	Federal Aviation Administration
FC	candidate for listing under the Federal Endangered Species Act
FE	federally endangered
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
FP	fully protected under the Federal Endangered Species Act
FT	federally threatened
FTA	Federal Transportation Administration
g	fraction of the acceleration of gravity
GHG	greenhouse gas
GO	General Order
GWP	global warming potential
H_2S	hydrogen sulfide
HCA	High Consequence Area
HCM	Highway Capacity Manual
HFC	hydrofluorocarbons
HMTA	Hazardous Materials Transportation Act
HSC	Health and Safety Code
HUC	Hydrologic Unit Code
I-210	Interstate 210
I-5	Interstate 5
ICU	Intersection Capacity Utilization
IPCC	Intergovernmental Panel on Climate Change
IS	initial study
ITP	Incidental Take Permit
IWMD	Ventura County Public Works, Water and Sanitation Department, Integrated Waste Management Division

kV	kilovolt
LACDPW	Los Angeles County Department of Public Works
LACDWP	Los Angeles County Department of Water and Power
LACFD	Los Angeles County Fire Department
LACM	Natural History Museum of Los Angeles County
LADOT	City of Los Angeles Department of Transportation
LADWP	Los Angeles Department of Water and Power
LAFD	City of Los Angeles Fire Department
LAPD	City of Los Angeles Police Department
LARWQCB	Los Angeles Regional Water Quality Control Board
LASDPW	City of Los Angeles Sanitation Department of Public Works
LAUSD	Los Angeles Unified School District
L_{dn}	Day-Night Level
L_{eq} (h)	hourly equivalent sound level
L_{eq}	sound level equivalent
L_{max}	maximum sound level
L_{min}	minimum sound level
LOS	level of service
LRA	Local Responsibility Area
LST	lattice steel tower
LST	localized significance threshold
LUFT	leaking underground fuel tank
LUST	leaking underground storage tank
LWS	lightweight steel (pole)
MBTA	Migratory Bird Treaty Act
MCE	maximum credible earthquake
MDA	Michael D. Antonovich
Metro	Metropolitan Transportation Authority
mg/L	milligrams per liter
MM	mitigation measure
MMP	Mitigation Monitoring Plan
mm/year	millimeters/year
MND	mitigated negative declaration
MP	Milepost
MPE	maximum probable earthquake
mph	miles per hour
MRZ	Mineral Resource Zone
MVA	megavolt ampere
M_w	maximum moment magnitude
MWA	megavolt ampere
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NASA	National Aeronautics and Space Administration
NCWD	Newhall County Water District
NEC	National Electric Code
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NO_2	Nitrogen dioxide
NOA	Notice of Availability

NOP	Notice of Preparation
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NSD	Newhall School District
OSHA	U.S. Occupational Health and Safety Administration
PCE	passenger car equivalency
PEA	Proponent's Environmental Assessment
PFC	perfluorocarbons
PG&E	Pacific Gas and Electric Company
PHA	Process Hazard Assessment
Plant Station	Aliso Canyon Plant Station
PM_{10}	Particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	Particulate matter less than or equal to 2.5 microns in diameter
ppm	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
proposed project	Aliso Canyon Turbine Replacement Project
PSIA	Pipeline Safety Improvement Act
quad	quadrangle
R	Rare under the California Endangered Species Act
RCRA	Resource Conservation and Recovery Act
ROG	reactive organic gas
ROW	right-of-way
RTC	Regional Clean Air Incentive Market Trading Credit
RWQCB	Regional Water Quality Control Board
SA	Settlement Agreement
SARA	Superfund Amendment and Reauthorization Act
SCAB	South Coast Air Basin
SCADA	Supervisory Control and Data Acquisition
SCAQMD	South Coast Air Quality Management District
SCCIC	South Central Coastal Information Center
SCE	Southern California Edison
SCH	State Clearinghouse
SCR	Selective Catalytic Reduction
SDG&E	San Diego Gas and Electric
SE	state endangered
SEA	Significant Ecological Area
SEATAC	Significant Ecological Areas Technical Advisory Committee
SEMS	Standardized Emergency Management System
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SLIC	Spills–Leaks–Investigations–Cleanups
SMARA	California Surface Mining and Reclamation Act
SO_2	sulfur dioxide
SoCalGas	Southern California Gas Company
SPCC	Spill Prevention Control and Countermeasure
SR	State Route
SRA	State Responsibility Areas
SSC	species of special concern in California

ST	state threatened
storage field	Aliso Canyon Natural Gas Storage Field
SWFL	southwestern willow flycatcher
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T&E	threatened and endangered
TAC	toxic air contaminant
TDC	turbine-driven compressors
TIA	Traffic Impact Assessment
TMDL	Total Maximum Daily Load
TSP	tubular steel pole
U.S.C.	United States Code
UBC	Uniform Building Code
UNFCCC	United Nations Framework Convention on Climate Change
USACE	U.S. Army Corp of Engineers
USDA	United States Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
UWMP	Urban Water Management Plan
V/C	volume-to-capacity
VCFD	Ventura County Fire Department
VdB	decibels of vibration velocity
VOC	volatile organic compound
VRP	visibility-reducing particle
WP	wooden pole
WRP	Water Reclamation Plant
ZV	Zone Variance

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Executive Summary

Introduction and Project Overview

Southern California Gas Company (the applicant) provides natural gas services to approximately ~~six~~ 21 million customers in Southern California, and operates four storage fields to meet customer demand. The applicant's Aliso Canyon Natural Gas Storage Field (storage field), which is located in Los Angeles County, has an inventory of approximately 165 billion standard cubic feet (scf) and is one of the largest in the United States. It has a withdrawal capacity of up to 1.875 billion scf per day and an injection ~~capacity~~rate of up to 300 million scf per day. Injection at the storage field is provided by three turbine–driven compressors, which are powered by natural gas. Figure E-1 shows the location of the proposed project and surrounding areas.

The applicant filed an application on September 28, 2009 (A.09-09-020) with the California Public Utilities Commission (CPUC) to amend its Certificate of Public Convenience and Necessity for the construction and operation of the Aliso Canyon Turbine Replacement Project (the proposed project). The application was deemed complete on March 24, 2010. The purpose of the proposed project is to comply with the terms of a settlement agreement implemented by CPUC decision D.08-12-020 (provided in Appendix A of this environmental impact report [EIR]) while maintaining or improving the reliability and efficiency of storage facility operations.

Objectives of the Proposed Project

The two basic objectives of the proposed project are to:

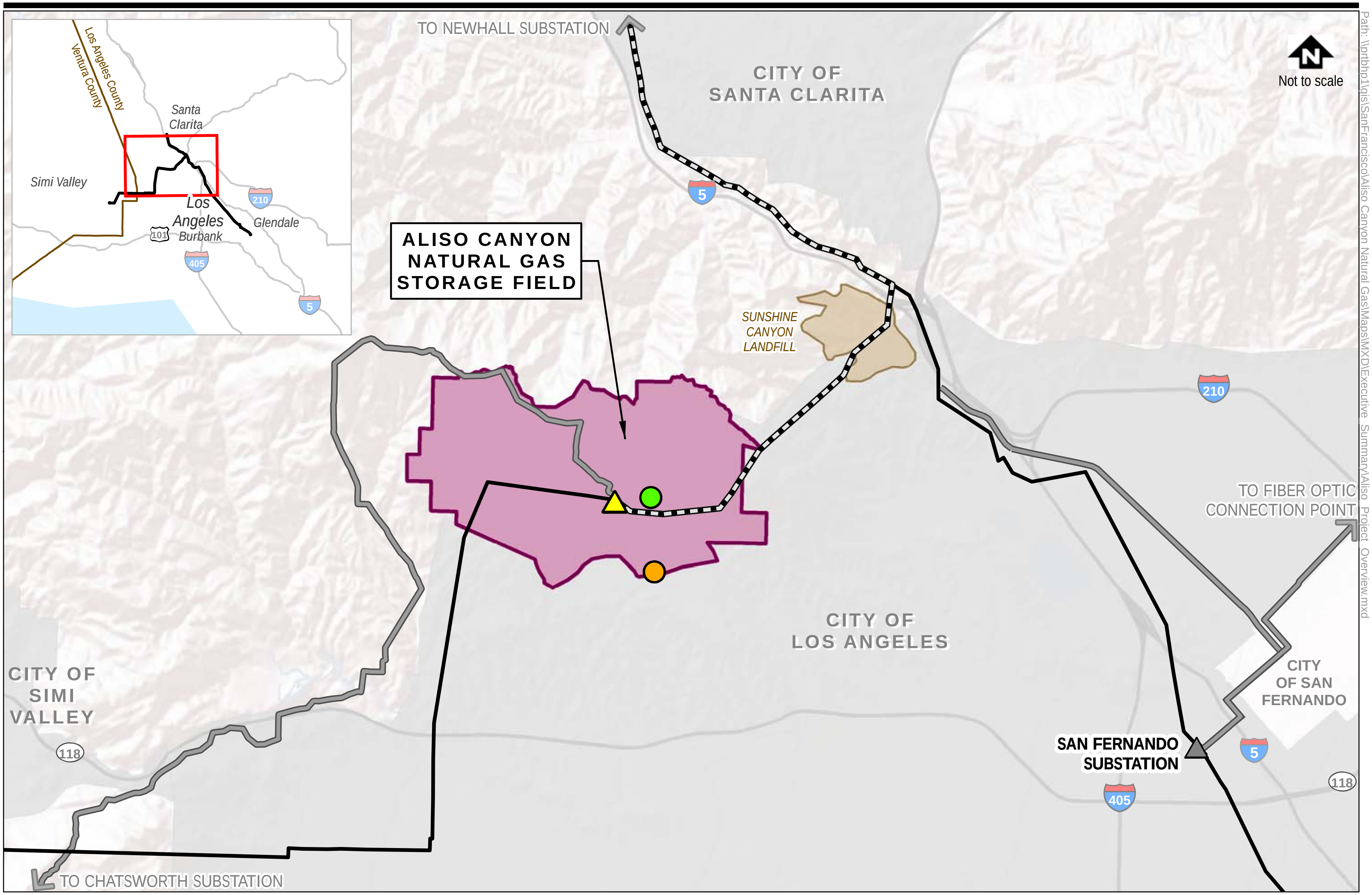
1. Comply with the terms of the Settlement Agreement implemented by CPUC decision D.08-12-020; and
2. Maintain or improve the reliability and efficiency of storage facility operations at the Aliso Canyon Natural Gas Storage Field.

Settlement Agreement

The applicant is required to implement the proposed project to meet the terms of Phase 1 of the Settlement Agreement between the applicant and parties to the 2009 Biennial Cost Allocation Proceeding approved by the CPUC (Appendix A). The Settlement Agreement requires that the applicant increase the overall injection capacity at the field by approximately 145 million scf per day.

The proposed ~~compressors~~ project would be capable of increasing the storage field's natural-gas injection capacity from approximately 300 million scf per day to approximately 450 million scf per day. The storage field's withdrawal capacity would not change.

The proposed project ~~compressors~~ would also improve natural gas service reliability and efficiency. The existing gas turbine–driven compressors at the storage field were installed in 1971. Gas turbines alter compressor speed by varying fuel input. The new motor-driven variable-speed compressors ~~motors~~ that would be installed as part of the proposed project have the ability to alter compressor speed as gas pressure ratios and flow rates change more precisely than the existing gas turbines. Hence, the new motors would be capable of better matching operating pressures at the storage field and would be more energy efficient.



SOURCES: SoCalGas 2009 to 2012

Existing 66-kV Subtransmission Line
66-kV Subtransmission Line Reconductoring Route & Telecommunications Line (Proposed)
Telecommunications Line (Proposed)
Natural Substation (Proposed)
San Fernando Substation
Guardhouse Relocation and Entry Road Widening (Proposed)
Central Compressor Station (Proposed)

Figure E-1

Vicinity Map and Overview of the Proposed Project

Approach to Environmental Review

As lead agency, the CPUC must determine through the California Environmental Quality Act (CEQA) process whether the proposed project would result in significant impacts to the environment, and whether those impacts could be avoided, eliminated, compensated for, or reduced to less than significant levels. This EIR will become part of a body of evidence that the CPUC will use in deciding whether to approve Southern California Gas Company's application.

~~The CPUC is seeking comments on this Draft EIR.~~ The CPUC ~~will respond~~has responded to comments on the Draft EIR, conducted additional analysis as necessary, and modif~~y~~ied mitigation measures as appropriate. If the CPUC approves the project, CPUC staff would closely monitor the applicant's compliance with the requirements imposed by the mitigation measures.

Description of the Proposed Project

The construction of the proposed project would expand the storage field's natural-gas injection capacity from approximately 300 million ~~cubic feet (~~scf~~)~~ per day to approximately 450 million scf per day. As part of the proposed project, the applicant would construct and operate the following project components at the storage field:

- Central Compressor Station with three new electric-driven, variable-speed compressors and pipelines to connect the station to existing facilities;
- 12-kilovolt (kV) Plant Power Line to supply the Central Compressor Station with power;
- Office and crew-shift buildings; and
- Guardhouse on a widened segment of the existing entry road into the storage field.[1]

The applicant would decommission and remove the:

- Existing compressor station and its three gas turbine–driven compressors; and
- Existing main office and crew-shift buildings.

To power the proposed electric-driven, variable-speed compressors, SCE would:

- Construct and operate a 56-megavolt-ampere (MVA), 66/12-kV substation (the Natural Substation) on the storage field site;[2] and
- Reconductor and replace towers and poles along segments of SCE's Chatsworth–MacNeil–Newhall–San Fernando 66-kV Subtransmission Line and MacNeil–Newhall–San Fernando 66-kV Subtransmission Line in the proposed project area.

[1] The existing guardhouse at the storage field would not be removed as part of the proposed project.

[2] The initial build of the Natural Substation would include the installation of two 28 MVA, 66/12-kV transformers. Space would be available for the installation of up to two additional 28 MVA transformers as spares in the event of a long term transformer delivery delay ~~(for a total of 112 MVA)~~ if needed in the future. ~~SCE~~The applicant estimates that 50 ~~megawatts~~MVA of electricity would be required to meet the increase in electrical demand from operation of the proposed electric–driven compressors.

To allow for remote monitoring and operation of the proposed electrical facilities, SCE would:

- Install equipment (new relaying systems to improve protection) at SCE's Newhall substation in the City of Santa Clarita, Chatsworth substation in the County of Ventura, and San Fernando substation in the City of Los Angeles~~, Chatsworth, and San Fernando Substations in the proposed project area~~; and
- Install new fiber optic telecommunications cable in and around the ~~proposed project area~~storage field area and along SCE rights-of-way.

In addition, the applicant would apply to the CPUC to enlarge SCE's existing easement on the storage field site, which would be necessary for SCE to construct and operate the Natural Substation. SCE's Northern Transmission/Substation Regional Facility at Pardee Substation in Santa Clarita would likely be used as the primary staging areas for the 66-kV subtransmission line reconductoring.

Construction of the proposed project would take approximately ~~22~~24 months.

Notice of Preparation

In accordance with the CEQA Guidelines, the CPUC prepared a Notice of Preparation (NOP) for this EIR. The CPUC circulated the NOP for the proposed project on October 21, 2010, to local, state, and federal agencies, and the State Clearinghouse, opening a 30-day comment period on the scope and content of the EIR and announcing two public scoping meetings. The CPUC held two public meetings in November, 2010, and received six comment letters on the NOP from public agencies and eleven comment letters on the NOP from members of the public.

Areas of Potential Controversy

Several areas of potential controversy were identified for the proposed project through the public scoping process, including;

- Safety of storage field operations, including natural gas injection and withdrawal;
- Aesthetics;
- Air Quality;
- Biological Resources;
- Cultural Resources;
- Hazards and Hazardous Materials;
- Hydrology and Water Quality;
- Land Use and Planning;
- Noise;
- Public Services and Utilities; and
- Alternatives.

Less than Significant Impacts (Including Significant Impacts that Can Be Mitigated)

The EIR addresses all potentially significant environmental impacts identified during the public scoping. The evaluation of potential project impacts resulted in the determination that the following environmental impacts would be less than significant with or without mitigation:

- Aesthetics
- Agricultural and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology, Soils, and Mineral Resources
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services and Utilities
- Recreation
- Transportation and Traffic

The mitigation measures identified to reduce significant impacts to less than significant levels are discussed in Chapter 7, "Mitigation Monitoring Plan" and are summarized at the end of this Executive Summary in Table E-1. A final Mitigation, Monitoring, Compliance, and Reporting Program (MMCRP) was prepared for the Final EIR and incorporates changes to the proposed project and mitigation measures that were made as a result of public review of the Draft EIR and further consideration of the proposed project by the CPUC. This MMCRP is presented in Chapter 5, "Revised Mitigation, Monitoring, Reporting, and Compliance Program," of the Final EIR.

Cumulative Impacts and Other CEQA Considerations

The CEQA Guidelines require that potential cumulative impacts be assessed by developing either a list of past, present, and probable future projects that would produce related or cumulative effects in combination with the proposed project or a summary of projections contained in adopted general plans or related planning documents. The discussion of cumulative impacts presented in Chapter 6, "Cumulative Impacts and Other CEQA Considerations," of this EIR describes the potential cumulative impacts for each resource area addressed in Chapter 4, "Environmental Analysis." An analysis of whether the proposed project would result in growth-inducing impacts or significant and irreversible environmental changes is also presented in Chapter 6.

Unavoidable Significant Adverse Impacts

Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts, including those that can be reduced through implementation of mitigation measures but nonetheless would still remain significant (i.e., would not be reduced to less than significant levels). No significant and unavoidable environmental impacts were identified for any resource areas in this EIR.

Alternatives

Alternatives to the proposed project have been identified and evaluated in accordance with CEQA Guidelines. CEQA Guidelines (Section 15126.6[a]) state:

> *An EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project.*

CEQA Guidelines (Section 15364) define feasibility as:

> *….capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.*

Alternatives to the proposed project were suggested during the scoping period by the general public and government agencies after the applicant submitted its application to the CPUC. Some of the alternatives reviewed in this report were presented in the applicant's Proponent Environmental Assessment (PEA) and others were identified by the CPUC Energy Division as a result of the agency's independent review. In total, ten alternatives were identified, including a design alternative (non-wires alternative), electrical alternatives, siting alternatives, and routing alternatives (Appendix C, "Alternatives Screening Report"). The alternatives were modified as a result of comments on the Draft EIR and as a result of minor modification made to the project description, as discussed in the Final EIR.

Alternatives Evaluated in this EIR

The alternatives to the proposed project were selected for analysis based on a screening process that considered the following criteria: meets the basic objectives of the proposed project, lessens significant impacts, is feasible, and represents a reasonable range of alternatives. Alternatives were eliminated from consideration if they failed to meet these criteria. Alternatives that were remote or speculative or the effects of which could not be reasonably predicted, were also eliminated. The applicant considered several alternatives to reduce impacts on air quality, biological resources, cultural resources, hazards, and noise. This section briefly describes the alternatives that were selected for further consideration.

Based on the analysis presented in the EIR, the proposed project and the following ~~three~~ two alternatives were retained for further consideration in the EIR:

- Design Alternative (Alternate Compressor Drive Type, a Non-wires Alternative); and
- ~~Routing Alternative A (Telecommunications: Sylmar Substation to San Fernando Substation); and~~
- No Project Alternative.

Appendix C, "Alternatives Screening Report," includes figures showing the proposed project and each alternative, including those that were eliminated from further consideration in this EIR.

Design Alternative (Alternate Compressor Drive Type, a Non-wires Alternative)

Under the Design Alternative, which was proposed in the PEA, new gas turbine–driven compressors with greater capacity than the existing gas turbine–driven compressors would be installed in the proposed Central Compressor Station instead of electric-driven, variable-speed compressors. The gas turbine–driven compressors would combust natural gas for power rather than use electricity. The proposed Natural Substation, 66-kV subtransmission line reconductoring, and telecommunications line installations would not be required for this alternative. Access to the storage field from Sesnon Boulevard would be improved, and the new guardhouse, main office building, and crew-shift building would be constructed as proposed.

~~Routing Alternative A (Telecommunications: Sylmar Substation to San Fernando Substation)~~

~~For this alternative, the proposed telecommunications route from San Fernando Substation east to a fiber optic connection point within the right-of-way of an existing SCE 220-kV subtransmission line corridor would be routed from San Fernando Substation north to a Los Angeles Department of Water and Power substation (Sylmar Substation) instead. Sylmar Substation is located southwest of the intersection of Interstate 5 and Interstate 210. For both the proposed and alternative routes, new fiber optic cable would be installed primarily overhead on existing SCE and Los Angeles Department of Water and Power electrical distribution line structures. Both routes would be approximately 5-miles long and require approximately 1,000 feet of new underground conduit.~~

~~Routing Alternative A was proposed by SCE in response to a request by the CPUC for more specific information about the telecommunications routes during the EIR preparation process. SCE later submitted the route from San Fernando Substation to a fiber optic connection point as the proposed route, and the CPUC chose to consider the original route as an alternative.~~

No Project Alternative

The No Project Alternative is the circumstance under which the proposed project does not proceed. Under the No Project Alternative, the existing gas turbine–driven compressors would not be replaced at the storage field, and the storage field's injection capacity would not be increased. Compliance with the terms of the Settlement Agreement would not be achieved (Objective #1), and the reliability and efficiency of storage facility operations would not be maintained or improved (Objective #2).

The existing gas turbine–driven compressors were installed in 1971. Production of the gas turbines was halted by the manufacturer in the late 1970s and replacement parts are extremely limited. It is anticipated that maintenance issues requiring compressor replacement parts would take longer to address over time, and that the current level of compressor reliability experienced at the storage field would decrease. Therefore, neither of the basic objectives of the proposed project would be achieved under the No Project Alternative.

Environmentally Superior Alternative: Proposed Project ~~with Routing Alternative A~~

Long-term impacts on coastal California gnatcatcher habitat and other biological resources would be avoided under the Design Alternative, and a number of short-term construction impacts would be avoided or reduced, but the alternative's air quality and greenhouse gas (GHG) emissions impacts would be both long-term and widespread, impacting resources in addition to those located in proximity to the components of the Design Alternative. Furthermore, while offsets can be purchased for air quality impacts, and offsets may be negotiated for GHG impacts, mitigation through the purchase of offsets is indirect. Direct mitigation for air pollutant and GHG emissions can be difficult to implement and, in some cases, cannot sufficiently reduce impacts. Therefore, because the proposed project, during operations, would avoid or reduce long-term impacts from air pollutant emissions and result in a net reduction of GHG emissions in comparison to the Design Alternative, the proposed project would be the Environmentally Superior Alternative.

~~With regard to temporary construction noise, Routing Alternative A would be environmentally superior to the proposed project because fewer sensitive receptors would be impacted. During operations, noise impacts would be similar to the proposed project. During construction and operations for all other resource areas, impacts under Routing Alternative A would be similar to those of the propose project. Therefore, because construction noise from Routing Alternative A would impact fewer sensitive noise receptors, and the proposed project would avoid or reduce long-term impacts from air pollutant emissions and result in a net reduction of GHG emissions during operations in comparison to Design Alternative A, the proposed project with Routing Alternative A would be the Environmentally Superior Alternative.~~

Major Conclusions of the Draft EIR

No significant and unavoidable adverse environmental impacts have been identified that would result from construction or operation of the proposed project. All of the impacts identified in Chapter 4, “Environmental Analysis,” are either less than significant or, with mitigation, would be reduced to less than significant levels. Among the alternatives considered in this EIR, it was determined that the proposed project ~~with Routing Alternative A~~ would be the Environmentally Superior Alternative.

Draft Mitigation Monitoring Plan

A Draft Mitigation Monitoring Plan for the proposed project is presented in Chapter 7 of this Draft EIR. A final Mitigation, Monitoring, Compliance, and Reporting Program (MMCRP) ~~will be~~ was prepared for the Final EIR ~~that~~ and incorporates ~~any~~ changes to the proposed project ~~or~~ and mitigation measures that ~~are~~ were made as a result of public review of the Draft EIR and further consideration of the proposed project by the CPUC. This MMCRP is presented in Chapter 5, “Revised Mitigation, Monitoring, Reporting, and Compliance Program,” of the Final EIR.

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
4.1 Aesthetics			
Impact AE-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area	APM AE-1: Night Lighting. The applicant and SCE will ensure that construction activities occurring at night will use lighting to protect the safety of the construction workers but orient the lights to minimize their effect on any nearby sensitive receptors. The lighting will be directed downward and shielded to eliminate offsite light spill at times when the lighting might be in use.	Confirm that construction lighting is oriented to minimized effects on nearby sensitive receptors (APM AE-1).	During construction
4.2 Agriculture			
No applicable APMs or mitigation measures.			
4.3 Air Quality			
Impact AQ-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment.	APM AQ-1: Maintain Engines in Good Working Condition. The applicant and SCE will ensure that equipment engines will be maintained in good condition and in proper tune as per the manufacturers' specifications. APM AQ-2: Minimization of Equipment Use. The applicant and SCE will ensure that staff and daily construction activities will be efficiently scheduled to minimize the use of unnecessary/duplicate equipment when possible. APM AQ-3 Minimization of Disturbed Areas. The applicant and SCE will ensure that the amount of area disturbed by clearing, grading, earth moving, or excavation operations is minimized to reduce the amount of fugitive dust that is generated during construction in a manner that meets or exceeds the requirements of the	• Confirm that Regional Clean Air Incentive Market Trading Credits are purchased as specified in MM AQ-2. • See additional requirements for APMs AQ-1 through AQ-7 and MMs AQ-1 and AQ-2.	Prior to and during construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	South Coast Air Quality Management District's Rule 43 (Fugitive Dust Regulations). APM AQ-4: Watering Prior to Grading and Excavation. The applicant and SCE will ensure that pre-grading/excavation activities will include watering the area to be graded or excavated before commencement of grading or excavation operations. Application of water (preferably reclaimed, if available) will penetrate sufficiently to minimize fugitive dust during grading activities. APM AQ-5: Vehicle Speed Limits. The applicant will post signs in the storage field along designated travel routes and limiting traffic to 15 miles per hour or less. APM AQ-6: Fugitive Dust from High Winds. During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), the applicant and SCE will ensure that all clearing, grading, earth moving, and excavation operations will be curtailed to the degree necessary to prevent fugitive dust created by onsite activities and operations from being a nuisance or hazard, either offsite or onsite. APM AQ-7: Cleaning of Paved Roads. The applicant and SCE will ensure that paved road surfaces will use vacuum sweeping and/or water flushing to remove buildup of loose material to control dust emissions from travel on paved access roads (including adjacent public streets impacted by construction activities) and paved parking areas.		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	MM AQ-1: Oxides of Nitrogen (NOx) Credits. The emissions of NOx due to construction of the proposed project will be mitigated through the purchase of Regional Clean Air Incentive Market Trading Credits (RTCs) for every pound of NOx emissions in excess of the SCAQMD daily significance threshold of 100 pounds per day. The total amount of NOx RTCs to be purchased will be calculated when the construction schedule and operating conditions are finalized. The applicant will purchase and submit the required RTCs to the SCAQMD prior to the start of project construction. The applicant will also track actual daily emissions during construction according to a monitoring plan that includes records of equipment and vehicle usage. MM AQ-2: Tier 3 Off-Road Emissions Standards. All off-road diesel-powered construction equipment greater than 50 horsepower used during reconductoring of the 66-kV subtransmission line will meet Tier 3 off-road emissions standards.		
4.4 Biological Resources			
Impact BR-1: Substantial adverse direct or indirect effect on special status species.	*Coastal California Gnatcatcher Habitat (Including Critical Habitat)* APM AQ-3: Minimization of Disturbed Areas. See above. APM AQ-4: Watering Prior to Grading and Excavation. See above. APM BR-2: Designated Work Zones and Sensitive Resource Avoidance. Prior to ground-	• Ensure that the applicant and SCE conduct preconstruction surveys for wildlife and plant species as specified in APM BR-1. • Ensure that the applicant and SCE conduct protocol-level pre-construction surveys for coastal California gnatcatcher as	Prior to, during, and after construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	disturbing activities, the applicant and SCE will ensure that work zones are clearly staked and flagged. Construction work areas will be identified to ensure that construction activities, equipment, and associated activities are confined to designated work zones and areas supporting sensitive resources (special-status plants and wildlife, and high-value habitats, such as wetlands) are avoided. APM BR-3: Post-Construction Restoration for Reconductoring. SCE will ensure that all areas that are temporarily disturbed during 66-kV subtransmission line reconductoring will be restored as close to preconstruction conditions as possible or to the conditions agreed upon between the landowner and SCE following completion of construction of the proposed project. APM BR-4: Preconstruction Gnatcatcher Surveys. The applicant and SCE will ensure that protocol-level pre-construction surveys will be conducted for coastal California gnatcatcher, in project component areas where suitable habitat exists and for all project activities proposed within U.S. Fish and Wildlife Service designated critical habitat in accordance with the U.S. Fish and Wildlife Service Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Guidelines, February 28, 1997. In the event that coastal California gnatcatcher are observed in pre-construction surveys, a buffer of 500 feet from any active nest will be flagged and maintained by a biological	specified in APM BR-4 and least Bell's vireo and southwestern willow flycatcher as specified in MM BR-8. • Ensure that SCE conducts surveys of vegetation and estimates the total area of intact Venturan Coastal Sage Scrub (MM BR-2) and prepares a Habitat Restoration Plan for Venturan Coastal Sage Scrub (MM BR-3). • Ensure that the applicant and SCE complete formal delineations per USACE protocols as specified in MM BR-5. • Ensure that the applicant and SCE design all transmission structures as specified in MM BR-6 and implement avian protection plans as specified in MM BR-7. • Ensure that the applicant and SCE conduct pre-construction nesting surveys for golden eagle as specified MM BR-9. • Ensure that the applicant and SCE conduct pre-construction surveys for Plummer's mariposa lily and slender mariposa lily as	

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	monitor. Areas of 2 or more contiguous acres of suitable coastal California gnatcatcher habitat will be identified at the time of pre-construction surveys, and work within or near these areas will be performed outside of the breeding and nesting season (coastal California gnatcatcher breeding/nesting season is approximately February 15 through August 30). APM BR-5: Exclusionary Fencing. The applicant and SCE will ensure that exclusionary fencing will be installed around work and laydown/staging areas, where necessary, to prevent inadvertent encroachment into the native habitat adjacent to areas of impact. Brightly colored, protective construction fencing and/or silt fencing will be erected surrounding the work area where it abuts native habitat prior to the start of construction and/or demolition. APM BR-6: Biological Monitoring. The applicant and SCE will ensure that biological monitoring will be conducted during construction in all areas within 100 feet of native vegetation that has the potential, or is known, to provide habitat for special status species. APM GE-3: Erosion and Sediment Control. See above. APM HZ-6: Worker Environmental Awareness Training. See below. MM BR-1: Trimming of Vegetation. In order to minimize the removal of vegetation in areas of habitat for the coastal California gnatcatcher, for	specified MM BR-10. • See above/below for APMs AQ-3, AQ-4, GE-3, and HZ-6. • See additional requirements for APMs BR-1 through BR-8 and MMs BR-1 through BR-11.	

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas, SCE will ensure that trimming of all native vegetation, riparian vegetation, and vegetation that provides potential habitat for coastal California gnatcatcher will be performed by a certified arborist or a person with a minimum of 6 years' regional expertise in trimming trees/shrubs in this area and who has worked under a certified arborist. MM BR-2: Minimize Removal of Venturan Coastal Sage Scrub. For the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas, SCE will minimize the removal of Venturan Coastal Sage Scrub associations, particularly within designated critical habitat for the coastal California gnatcatcher. Prior to construction and for each of these project areas, SCE will: 1. Ensure that a survey of vegetation and estimate of the total area of intact Venturan Coastal Sage Scrub is completed by a qualified botanist familiar with this vegetation association. 2. Avoid removal of more than 10 percent of intact Venturan Coastal Sage Scrub within a single project area. "Project Areas" are defined as: a. Storage field project components (including the proposed Natural Substation): areas of ground		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	disturbance during construction; b. Access and other roads that would be constructed/modified: 300 linear feet, with a 100-foot buffer on either side of the road; and c. 66-kV line and Telecommunications Route #2: for each pole, a 100-foot radius around the base, plus 100 feet along each extent of the linear ROW beyond the 100-foot radius area. 3. Ensure that areas of intact, contiguous Venturan Coastal Sage Scrub shall not be reduced below a 2-acre threshold. In the event that the applicant wishes to remove more than 10 percent of intact Venturan Coastal Sage Scrub within a single project area, or where intact, contiguous areas of Venturan Coastal Sage Scrub may be reduced below a 2-acre threshold, the applicant will compensate for this loss through the restoration and/or creation of Venturan Coastal Sage Scrub habitat per the applicant's Habitat Restoration Plan for Venturan Coastal Sage Scrub, at a minimum ratio of 2:1 (for example, 2 acres of Venturan Coastal Sage Scrub created or restored for every 1 acre impacted). MM BR-3: Habitat Restoration Plan for Venturan Coastal Sage Scrub. Prior to construction of the proposed project, and with the coordination and review of USFWS and CDFG, SCE will prepare a habitat restoration plan for		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	Venturan Coastal Sage Scrub associations for the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas. The restoration plan will be prepared by a qualified botanist familiar with this vegetation association. Per the requirements of MM BR-2, Venturan Coastal Sage Scrub habitat occurring in these work areas will be identified and quantified; surveys (including vegetation maps) and quantification of Venturan Coastal Sage Scrub habitat will be included in the restoration plan. Restoration will occur at a minimum ratio of 0.5:1 (0.5 acres of Venturan Coastal Sage Scrub created or restored for every 1 acre impacted during project construction), and may be completed by: 1. Establishing Venturan Coastal Sage Scrub habitat within the project areas (onsite); 2. Establishing Venturan Coastal Sage Scrub habitat outside the project areas (offsite); or 3. Purchase of credits and/or mitigation lands at a ratio above 0.5:1 from an entity reviewed and approved by the USFWS and/or CDFG. Details of the restoration plan will be finalized pending consultation between SCE, USFWS, and CDFG. For Options 1. and 2. (establishing Venturan Coastal Sage Scrub onsite or offsite), the plan will include the following elements: planting/seeding palettes; monitoring and contingency program; monitoring schedule, including duration and performance criteria (a		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	minimum of 80 percent successful plant establishment after a minimum of three years); and any specific measures that will be required to ensure success of the restoration effort. MM BR-4: Restriction of Vehicular Traffic. The applicant and SCE will ensure that, in all project construction areas, vehicular traffic (including movement of all equipment) is restricted to established access roads indicated by flagging and signage. All access roads that are not otherwise assigned official speed limits will be restricted to a speed limit of a maximum of 20 miles per hour. *Special Status Amphibians and Reptiles* APM AQ-3: Minimization of Disturbed Areas. See above. APMs BR-2, BR-5, and BR-6. See above. APM GE-3: Erosion and Sediment Control. See above. APM HZ-6: Worker Environmental Awareness Training. See below. MM BR-5: Impacts on Hydrologic Features. Prior to project construction, for all proposed project components in the vicinity of hydrologic features, the applicant and SCE will: 1. Complete formal delineations per USACE protocols to confirm and determine the extent of jurisdictional wetlands present in the proposed project areas;		

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Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	2. Consult with the USACE and CDFG to determine whether CWA Section 404 permits and California Department of Fish and Game Code Section 1600 Streambed Alteration Agreements are necessary for the proposed project, apply for these permits as needed, and determine the area of fill that would require compensation; 3. Commit to compensatory mitigation for any wetland fill per any required permits and in consultation with USACE and CDFG (wetland fill requiring mitigation will be compensated for at a minimum ratio of 0.5:1, or 0.5 acres of wetland creation or restoration for every 1 acre of wetland fill caused by the proposed project); and 4. Ensure that biological monitors establish and maintain a minimum exclusionary buffer of 50 feet from the delineated extent of all jurisdictional wetland features during project construction. Construction of any proposed project component that requires altering, removing, or filling the bed or bank of seasonal drainages, or other jurisdictional or potentially jurisdictional water features, and/or cannot maintain the 50-foot exclusionary buffer, will be performed only when water is not present in the feature. *Special Status Birds* APM AQ-3: Minimization of Disturbed Areas. See above.		

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Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	APM BR-1: Preconstruction Surveys. Prior to construction and activities that may include vegetation clearing, staging and stockpiling, or other activities with the potential to directly or indirectly affect wildlife, the applicant and SCE will ensure that preconstruction surveys are conducted by qualified biologists for sensitive biological resources, including special-status wildlife and special-status plant species, in the project component areas, including access roads and staging areas. In the event that special-status wildlife and special-status plants are identified within a proposed project component area or vicinity (survey buffer), buffers will be established by temporary flagging or fencing (this distance may be greater depending on the species and construction activity, as determined by the biologist) between the identified resource and construction activities. Flagging and fencing will be performed or supervised by a qualified biologist to ensure that these activities are conducted without harm to sensitive species, or habitat flagging and fencing will be performed or supervised by a qualified biologist to ensure that these activities are conducted without harm to sensitive species or habitat. The information gathered from these surveys will be used to determine project planning and minimize impacts on sensitive resources from project-related activities. In addition, the results of these surveys will be used to determine the extent to which environmental specialist construction monitors will be required.		

Table ES-1 Summary of Impacts _(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)_

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	For nesting birds, a field survey will be conducted by a qualified biologist to determine if active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the construction zone or within a minimum of 100 feet (500 feet for raptors) of the construction zone. In the event of the identification of nesting birds within a proposed project component area or vicinity, a minimum 50-foot exclusionary buffer will be established by temporary flagging or fencing (this distance may be greater depending on the bird species and construction activity, as determined by the biologist) between the nest site and construction activities. Clearing and construction within the fenced area will be postponed or halted (except for vehicle traffic on existing roads), at the discretion of the biological monitor, until the nest is vacated and juveniles have fledged. The biologist shall serve as a construction monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests will occur. Biological monitoring will be conducted during construction work in areas in close proximity to native habitat to assure project compliance with all APMs and Mitigation Measures. APMs BR-2 through BR-6. See above. APM BR-7: Wildlife Relocation and Protection. During construction activities, wildlife resources that are not considered to have special status and are determined to be in harm's way may be		

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Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	relocated by the applicant and SCE and/or their construction contractors to native habitat near the work area but outside the construction impact zone in order to avoid injury or mortality. APM BR-8: For the trench to be excavated in the area of the Central Compressor Station during construction for the purposes of pipeline installation, the applicant will ensure that backfilling of the trench would occur within 72 hours of pipeline installation to preclude potential impacts to wildlife that may fall into the trench. Open trenches are inspected twice daily, once in the morning before activities commence and once at the end of the day before backfilling to preclude potential impacts to wildlife that may fall in the trench. At the conclusion of each day's trenching activity, the end of the trench would be left ramped at an approximate 2-to-1 slope to allow any wildlife falling into the trench to escape. APM BR-8: Oak Tree Impact Avoidance. In accordance with City of Santa Clarita/Los Angeles County ordinance and policy guidelines, the applicant and SCE will ensure that loss or impacts to all native oak trees via trimming or ground disturbance within the dripline (i.e., the outermost extent of the canopy) will be avoided using specific measures and/or agency guidance. If impacts cannot be avoided, the applicant or SCE will submit an Oak Tree Permit Application (including an Oak Tree Report) to Los Angeles County and obtain an Oak Tree Permit prior to construction.		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	APM GE-3: Erosion and Sediment Control. See above. APM HZ-6: Worker Environmental Awareness Training. See below. APM HZ-7: Wood Pole Recycling and Disposal. See above. MM BR-1 through MM BR-5. See above. MM BR- 6: Avian Safe Building Standards. The applicant and SCE will design all transmission structures installed as part of the proposed project to be consistent with the Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (APLIC 2006). MM BR-7: Avian Protection Plans. Prior to construction, the applicant and SCE will develop and implement avian protection plans according to Avian Protection Plan (APP) Guidelines (APLIC & USFWS 2005). The avian protection plans will include provisions to reduce impacts on avian species during construction and operation of the proposed project, including measures to reduce impacts on nesting birds, and will provide for the adaptive management of project-related issues. The Avian Protection Plans will be reviewed and approved by the CDFG and USFWS prior to construction. MM BR-8: Pre-Construction Surveys for Least Bell's Vireo and Southwestern Willow Flycatcher. Prior to construction, the applicant and SCE will complete protocol-level surveys for least Bell's vireo and southwestern willow		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	flycatcher in areas of suitable or potentially suitable habitat in the proposed project component areas. Surveys will be completed by a permitted biologist(s) according to the survey protocol for least Bell's vireo (USFWS 2001) and southwestern willow flycatcher (Sogge et al. 2010). Whenever least Bell's vireo or southwestern willow flycatcher territory or nest sites are confirmed, the applicant and/or SCE will notify the USFWS and CDFG immediately upon return from the field. In the event that any least Bell's vireos or southwestern willow flycatchers or their nests are observed, biologists will establish and maintain a minimum 500-foot exclusionary buffer by installing temporary flagging or fencing between the nest site and construction activities. Federal endangered species recovery permits are not required for least Bell's vireo surveys, but are required in all USFWS regions where the southwestern willow flycatcher breeds (application forms can be downloaded at http://www.fws.gov/forms/3-200-55.pdf). State survey permits also may be required from the CDFG for both species. MM BR-9: Nesting Golden Eagle. Nesting surveys for golden eagles will be completed per the most recent USFWS survey guidelines by the applicant and SCE prior to project construction and will include areas within 660 feet of proposed project components located within suitable golden eagle nesting habitat. If surveys identify nesting golden eagles within 660 feet of the proposed project component areas, the applicant and SCE		

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Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	will ensure that all construction activities within 660 feet of the nest occur outside of the nesting season (January through June, subject to adjustment based on field observations). The nest will be monitored from outside the 660-foot buffer by a qualified raptor ecologist with demonstrated experience monitoring eagles and knowledge of normal eagle nesting behavior. In the event that the raptor ecologist observes abnormal behavior or notes any sign of potential disturbance to the nesting birds, the ecologist will ensure that work will be stopped within 1,320 feet of the nest. Work can continue within the buffered area(s) after the raptor ecologist determines that the chicks have fledged and the nest is not active for the season. In the event that golden eagle nests are identified on structures to be removed or modified, the structures will be left in place pending consultation with the USFWS and CDFG. *Special Status Mammals* APM AQ-3: Minimization of Disturbed Areas. See above. APM BR-2: Designated Work Zones and Sensitive Resource Avoidance. See above. APM BR-3: Post-construction Restoration for Reconductoring. See above. APM BR-5: Exclusionary Fencing. See above. APM BR-6: Biological Monitoring. See above. APM BR-8: Oak Tree Impact Avoidance. See above.		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	APM GE-3: Erosion and Sediment Control. See below. APM HZ-6: Worker Environmental Awareness Training. See below. *Special Status Plants* APM AQ-3: Minimization of Disturbed Areas. See above. APM AQ-4: Watering Prior to Grading and Excavation. See above. APMs BR-1 through BR-6 and APM BR-8. See above. APM HZ-6: Worker Environmental Awareness Training. See below. MM BR-4: Restriction of Vehicular Traffic. See above. MM BR-10 Restoration of Plummer's Mariposa Lily and Slender Mariposa Lily. The applicant and SCE will complete pre-construction surveys during the appropriate blooming period to identify Plummer's mariposa lily and slender mariposa lily populations in the proposed project component areas at the storage field and in the area of the 66-kV subtransmission line. Plummer's mariposa lily and slender mariposa lily plants will be identified by a qualified biologist and flagged or surrounded with fencing in such a way that disturbance of the populations will be avoided. In the event that populations or individuals of either species cannot be avoided,		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	restoration will occur. The applicant will develop and implement a restoration plan for both plants which will be reviewed and approved by CDFG prior to project construction. Restoration will occur after construction and to an extent such that "no net loss" (i.e., replacement of destroyed plants at a 1:1 ratio) is ensured for all plants of either species in the proposed project component areas. Restoration may be completed by: 1. Establishing Plummer's mariposa lily and slender mariposa lily plants within the proposed project areas (onsite); 2. Establishing Plummer's mariposa lily and slender mariposa lily plants outside the project areas (offsite); or 3. Purchase of credits and/or mitigation lands at a ratio above 1:1 from an entity reviewed and approved by the USFWS and/or CDFG. Details of the restoration plan will be pending consultation between SCE, USFWS, and CDFG. For Options 1. and 2. (establishing Plummer's mariposa lily and slender mariposa lily plants onsite or off-site), the plan will include the following elements: planting/seeding palettes; monitoring and contingency program; monitoring schedule, including duration and performance criteria (a minimum of 80 percent successful plant establishment after a minimum of three years); and any specific measures that will be required to ensure success of the restoration effort.		

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Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	MM BR-11: Non-Native and Invasive Plant Species. The applicant and SCE will avoid and reduce the spread of non-native and invasive plant species in the proposed project component areas through the following actions: 1. All equipment brought in from offsite that could transport soils, seeds, or other plant propagules (i.e., seeds, spores, tubers, or stems that can reproduce the plant) will be washed at a containment area to prevent introduction of unwanted plant material to the proposed project component areas; 2. All construction vehicles or equipment operating within the proposed project component areas in areas known to have noxious or invasive weeds will similarly be cleaned of any soils or plant materials before transport or re-deployment elsewhere within the proposed project component areas to prevent transferring weeds; 3. All soils, gravel, imported fill, or other construction materials brought from offsite that could inadvertently contain unwanted plant propagules will come from confirmed weed-free sources; 4. All seeds to be used in revegetation and reclamation activities will come from onsite, or from certified weed-free sources; and 5. All temporary disturbance areas, including access roads, transmission line corridors, and towers would be monitored on a		

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Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	quarterly basis for one year after project construction is completed for invasive species establishment, and weed control measures will be initiated immediately upon evidence of invasive species introduction.		
Impact BR-2: Substantial adverse effect on riparian habitat or other sensitive natural community.	*Riparian Habitat* APM AQ-3: Minimization of Disturbed Areas. See above. APM BR-2: Designated Work Zones and Sensitive Resource Avoidance. See above. APM BR-3: Post-construction Restoration for Reconductoring. See above. APM BR-5: Exclusionary Fencing. See above. APM GE-3: Erosion and Sediment Control. See below. APM HZ-6: Worker Environmental Awareness Training. See below. MM BR-1: Trimming of Vegetation. See above. MM BR-5: Impacts on Hydrologic Features. See above. MM BR-12: Minimize Impact on Riparian Habitat. The applicant and SCE will complete the following: 1. A qualified ecologist will survey and determine the spatial extent of riparian zones in the areas of the storage field, the 66-kV subtransmission line, and Telecommunications Route #2;	• Ensure that the applicant and SCE survey for riparian zones within the storage field, the 66-kV subtransmission line routes, and Telecommunications Route #2 as specified in MM BR-12. • Ensure that SCE surveyed Telecommunications Route #2 for individual oak trees as specified in MM BR-13. • See above/below for APMs BR-1 through BR-8; APMs AQ-3, GE-3, and HZ-6; and MMs BR-1 through BR-10. • See additional requirements for MM BR-12 and MM BR-13.	Prior to, during, and after construction

Table ES-1 Summary of Impacts _(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)_

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	2. Where riparian vegetation would be impacted by project construction activities, the applicant and SCE will consult with CDFG to determine if a Lake and Streambed Alteration Agreement pursuant to California Fish and Game Code 1600 would be necessary; and 3. In those areas where riparian vegetation is required to be removed, the applicant and SCE will work with a qualified arborist to determine the minimum amount of vegetation required to be removed in order to accommodate project construction, and the correct trimming procedures to employ. *Sensitive Natural Communities* APMs BR-1 through BR-8. See above. APM AQ-3: Minimization of Disturbed Areas. See above. MMs BR-1 through BR-10 and MM BR-12. See above. MM BR-13: Oak Trees in the Vicinity of Telecommunications Route #2. Prior to construction, SCE will survey the area of Telecommunications Route #2 for individual oak trees that meet the criteria for protection under the Los Angeles County ordinance. All oak trees whose trunks measure 25 inches or more in circumference (8 inches in diameter) will not be removed, nor will ground compaction occur within a 10-foot radius from the drip line of any oak tree that meets this criterion. Impacts on all oak trees		

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Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	within the area of disturbance for Telecommunications Route #2 beyond minor trimming will be avoided and minimized (i.e., no more than 25 percent of any individual oak tree canopy will be trimmed during one growing season). In the event that impacts on oak trees meeting the above criterion cannot be avoided or minimized, the applicant will provide oak tree seedling replacement at a 2:1 ratio, pending consultation with Los Angeles County.		
Impact BR-3: Substantial adverse effect on federally protected wetlands.	APM AQ-3: Minimization of Disturbed Areas. See above. APM BR-2: Designated Work Zones and Sensitive Resource Avoidance. See above. APM GE-3: Erosion and Sediment Control. See below. MM BR-5: Impacts on Hydrologic Features. See above.	See above/below.	See above/below.
Impact BR-4: Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedance of the use of native wildlife nursery sites.	APM BR-2: Designated Work Zones and Sensitive Resource Avoidance. See above.	See above.	See above.

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
Impact BR-5: Conflict with local policy and ordinance protecting oak trees.	APM AQ-3: Minimization of Disturbed Areas. See above. APM AQ-4: Watering Prior to Grading and Excavation. See above. APM BR-8: Oak Tree Impact Avoidance. See above.	See above.	See above.
4.5 Cultural Resources			
Impact CR-1: Substantial adverse change in the significance of an historical resource.	APM CR-1: Conductor Pull and Tension Sites. SCE will ensure that, where feasible, conductor pull and tension sites are located on existing level areas and existing roads to minimize the need for grading and cleanup. APM CR-2: Unidentified Cultural Resources. The applicant and SCE will ensure that, if previously unidentified cultural resources are unearthed during construction activities, construction will be halted in that area and directed away from the discovery until a qualified archaeologist assesses the significance of the resource. If determined to be required by the archeologist, the archaeologist will evaluate the significance of the discovered resources based on eligibility for the California Register of Historical Resources (CRHR) or local registers. Should any cultural resources be identified during construction activities in all project areas (including but not limited to culturally sensitive areas), the applicant and SCE will ensure that qualified archaeologists will monitor cultural resources mitigation and ground-disturbing activities in the area of the find. The size of the area of the find will be determined by the	• Ensure that cultural surveys are completed after final siting for SCE project components and that qualified cultural resources consultants and archaeologists are retained by the applicant and SCE (APM CR-4, MM CR-1, and MM CR-2). • Confirm that Cultural Resources Plans were prepared by the applicant and SCE per MM CR-1 requirements. • See additional requirements for APMs CR-1, CR-2, and CR-4 and MM CR-4. • See requirements for APM HZ-6, below. • Ensure that final inspection is completed after project components are constructed (MM CR-5).	Prior to, during, and after construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	archeologist. The archaeologist will recommend appropriate measures to record, preserve, or recover the resources. Preliminary recommendations of CRHR eligibility made by the archaeologist will be reviewed by the CPUC. APM CR-4: Cultural Surveys After Final Project Siting. Once final siting for SCE project components is completed, SCE or its contractor will complete additional pedestrian surveys for cultural resources, for all areas of proposed disturbance that are not currently located in a built environment within the 66-kV subtransmission line reconductoring route, access roads, and staging areas; and Telecommunications Route #2, access roads, and staging areas. The information gathered from these surveys will be used to determine project planning and design in order to avoid sensitive resources and identify measures that would minimize impacts on sensitive resources from project-related activities. In addition, the results of these surveys will be used to determine the extent to which environmental specialist construction monitors will be required. The survey will result in a report detailing the research design, methods and results of the survey. This report will be submitted to the CPUC. APM HZ-6: Worker Environmental Awareness Training. See below. MM CR-1: Cultural Resources Plan. The applicant and SCE will retain the services of qualified cultural resources consultants who meet		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	or exceed the U.S. Secretary of the Interior qualification standards for archaeologists published in 36 Code of Federal Regulations 61 and have experience working in the jurisdictions traversed by the project, sufficient that they can identify the full range of cultural resources that may be found in the region. The consultants will also have knowledge of the cultural history of the project area and will be approved by the California Public Utilities Commission (CPUC). Prior to issuance of construction permits, the applicant and SCE will submit Cultural Resources Plans for the respective project components, prepared by the approved consultant(s) for review and approval by the CPUC. The intent of the Cultural Resources Plans will be to address cultural resources eligible for the CRHR that cannot be preserved by avoidance and to identify areas where monitoring of earth-disturbing activities is required. The monitoring plan shall include, at a minimum: • A list of personnel to which the plan applies; • Requirements, as necessary, and plans for continued Native American involvement and outreach, including participation of Native American monitors during ground-disturbing activities as determined appropriate; • Brief identification and description of the general range of the resources that may be encountered; • Identification of the elements of a site that		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	would lead to it meeting the definition of a cultural resource requiring protection and mitigation; • Identification and description of resource mitigation that would be undertaken if required; • Description of monitoring procedures that will take place for each project component area as required; • Description of how often monitoring will occur (e.g., full-time, part time, spot checking); • Description of the circumstances that would result in the halting of work; • Description of the procedures for halting work and notification procedures for construction crews; • Testing and evaluation procedures for resources encountered; • Description of procedures for curating any collected materials; • Reporting procedures; and • Contact information for those to be notified or reported to. MM CR-2: Additional Cultural Resources Surveys. Prior to issuance of construction permits, the applicant and SCE will ensure that qualified archaeological consultants, as specified		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	in the Cultural Resources Plans, will conduct intensive-level cultural resources surveys (transects no greater than 15 meters) for all areas to be disturbed that have not already been surveyed for cultural resources and, prior to the project, had previously been undisturbed. Reports that specify the research design, methods, and survey results will be submitted to the CPUC for review. Cultural resources surveys for areas along Telecommunications Route #3 that are located more than 600 feet east of San Fernando Substation will not be required, because these areas are located within residential neighborhoods and are disturbed areas. MM CR-3: Construction Monitoring. Prior to issuance of grading permit(s), the applicant and SCE will retain qualified archaeologists as specified in the Cultural Resources Plans to monitor cultural resources mitigation and ground-disturbing activities in culturally sensitive areas. Culturally sensitive areas would include those areas along the 66-kV subtransmission line reconductoring routes and Telecommunications Route #3 and within the storage field that have not previously been disturbed. Cultural resources monitoring for areas along Telecommunications Route #3 that are located more than 600 feet east of San Fernando Substation will not be required because these areas are located within residential neighborhoods and are disturbed areas. The qualified archaeologists will attend preconstruction meetings to provide comments and/or suggestions concerning monitoring plans		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	and discuss excavation plans with excavation contractors. MM CR-4: Stop Work for Unanticipated Cultural Resources Discoveries. In the event that previously unidentified cultural resources are uncovered during implementation of the project, the applicant and SCE will ensure that ground-disturbing work would be halted or diverted away from the discovery to another location. The CPUC-approved archeological monitor will inspect the discovery and determine whether further investigation is required. If the discovery is significant but can be avoided and no further impacts would occur, the resource would be documented appropriately and no further effort would be required. If the resource is significant but cannot be avoided and may be subject to further impact, the CPUC-approved archeological monitor would evaluate the significance of the resource based on eligibility for the California Register of Historical Resources (CRHR) or local registers and implement appropriate measures in accordance with the Cultural Resources Plans. MM CR-5: Cultural Resources Reporting. Prior to final inspection after construction of project components has been completed, the applicant's and SCE's qualified archaeologists as specified in the Cultural Resources Plans will submit reports to the CPUC summarizing all monitoring and mitigation activities and confirming that all mitigation measures have been implemented. If a cultural resource that meets the definition of a significant resource is encountered and data		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	recovery is necessary, then a data recovery program will be implemented for the resource that is approved by both the qualified archeologist/s and the CPUC.		
Impact CR-2: Substantial adverse change in the significance of an archaeological resource.	See Impact CR-1, above.	See Impact CR-1, above.	See Impact CR-1, above.
Impact CR-3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	MM CR-6: Paleontological Monitoring and Treatment Plan. Prior to construction permit issuance, the applicant and SCE will retain CPUC-approved paleontologists to prepare Paleontological Monitoring and Treatment Plans, and submit to the CPUC for review and approval. The CPUC-approved paleontologists will have knowledge of the local paleontology and be familiar with paleontological procedures and techniques. The Paleontological Monitoring and Treatment Plans will follow Society of Vertebrate Paleontology guidelines and meet all regulatory requirements. The Paleontological Monitoring and Treatment Plans will address the 66-kV subtransmission line reconductoring routes, Telecommunications route #2, and Telecommunications Route #3, Natural Substation, guardhouse, and entry road widening sites. The Paleontological Monitoring and Treatment Plans will identify construction impact areas of moderate to high sensitivity for encountering potential paleontological resources and the shallowest depths at which those resources may be encountered. The Paleontological Monitoring and Treatment Plans	• Ensure that CPUC-approved paleontologists are retained by the applicant and SCE (MM CR-6). • Confirm that Paleontological Monitoring and Treatment Plans were prepared by the applicant and SCE per MM CR-6 requirements. • Confirm that applicant and SCE construction personnel are trained per MM CR-7 requirements. • See additional requirements for MM CR-6 through MM CR-10.	Prior to, during, and after construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	will detail the criteria to be used to determine whether an encountered resource is significant and if it should be avoided or recovered for its data potential. The Paleontological Monitoring and Treatment Plans will also detail methods of recovery, preparation and analysis of specimens, final curation of specimens at a federally accredited repository, data analysis, and reporting. The Paleontological Monitoring and Treatment Plans will outline coordination strategies to ensure that CPUC-approved paleontological monitors will conduct full-time monitoring of all grading activities in sediments determined to have a moderate to high sensitivity. For sediments of low or undetermined sensitivity, the Paleontological Monitoring and Treatment Plans will specify what level of monitoring is necessary. Sediments with no sensitivity will not require paleontological monitoring. The Paleontological Monitoring and Treatment Plans will define specific conditions in which monitoring of earthwork activities could be reduced and/or depth criteria established to trigger monitoring. These factors will be defined by the CPUC-approved paleontologists. MM CR-7: Construction Personnel Training. Prior to the initiation of construction or ground-disturbing activities in areas with high paleontological sensitivity, the applicant and SCE shall ensure that all construction personnel conducting rough grading shall be trained regarding the recognition of possible subsurface		

Table ES-1 Summary of Impacts (Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	paleontological resources and protection of all paleontological resources during construction grading. The applicant and SCE will complete training for all applicable personnel. Training will inform all applicable personnel of the procedures to be followed upon the discovery of paleontological resources. All personnel will be instructed that unauthorized collection or disturbance of protected fossils on- or off-site by the applicant or SCE or their representatives or employees is illegal and that violators shall be subject to prosecution under appropriate federal and state laws. Unauthorized resource collection or disturbance may constitute grounds for the issuance of a stop work order. MM CR-8: Paleontology Construction Monitoring. Based on the Paleontological Monitoring and Treatment Plans, the applicant and SCE will conduct paleontological monitoring using CPUC-approved paleontological monitors. This will include monitoring during rough grading and trenching in areas determined to have high paleontological sensitivity and that have the potential to be shallow enough to be adversely affected by such earthwork as determined by the CPUC-approved paleontological monitors. MM CR-9: Stop Work for Unanticipated Paleontological Discoveries. In the event that previously unidentified paleontological resources are uncovered during implementation of the project, the applicant and SCE will ensure that ground-disturbing work would be halted or diverted away from the discovery to another		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	location. A CPUC-approved paleontological monitor would inspect the discovery and determine whether further investigation is required. If the discovery is significant but can be avoided and no further impacts would occur, the resource would be documented in the appropriate paleontological resource records and no further effort would be required. If the resource is significant but cannot be avoided and may be subject to further impact, the CPUC-approved paleontological monitor would evaluate the significance of the resource and implement appropriate measures in accordance with the Paleontological Monitoring and Treatment Plans. MM CR-10: Paleontological Data Recovery. Prior to final inspection after construction of project components has been completed, if avoidance of significant paleontological resources is not feasible during grading, treatment (including recovery, specimen preparation, data analysis, curation, and reporting) will be carried out by the applicant and SCE in accordance with the approved Paleontological Monitoring and Treatment Plans.		
Impact CR-4: Disturb any human remains, including those interred outside of formal cemeteries.	APM CR-3: Human Remains. The applicant and SCE will ensure that, if human remains are encountered during construction or any other phase of development, work will be halted in the area and directed away from the discovery. The County Coroner will be notified within 24 hours of the discovery. No further disturbance will occur until the County Coroner makes the necessary findings of origin and disposition pursuant to	• Ensure that cultural surveys are completed after final siting for SCE project components and that qualified cultural resources consultants and archaeologists are retained by the applicant and SCE (APM CR-4, MM CR-1, and MM CR-2).	Prior to, during, and after construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	Public Resources Code 5097.98–99, Health and Safety Code 7050.5. If the coroner determines that the burial is not historic, but prehistoric, the Native American Heritage Commission (NAHC) will be contacted to determine the most likely descendent (MLD) for this area. The MLD may become involved with the disposition of the burial following scientific analysis. If the remains are determined to be Native American, the Native American Heritage Commission will be notified within 24 hours as required by Public Resources Code 5097. The CPUC will mediate any disputes regarding treatment of remains. APM CR-4: Cultural Surveys After Final Project Siting. See above. MM CR-1: Cultural Resources Plan. See above. MM CR-2: Additional Cultural Resources Surveys. See above. MM CR-3: Construction Monitoring. See above. MM CR-4: Stop Work for Unanticipated Cultural Resources Discoveries. See above. MM CR-5: Cultural Resources Reporting. See above. MM CR-10: Paleontological Data Recovery. Prior. See above.	• Confirm that Cultural Resources Plans were prepared by the applicant and SCE per MM CR-1 requirements. • See additional requirements for APMs CR-3 and CR-4, MMs CR-1 through CR-6, and MM CR-10. • Ensure that final inspection is completed after project components are constructed (MM CR-5).	

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
4.6 Geology, Soils, and Mineral Resources			
Impact GE-1: Expose people or structures to risk of loss, injury, or death involving rupture of a known earthquake fault.	APM GE-1: Geotechnical Studies. The applicant will ensure that, for the construction of the Central Compressor Station, construction procedures will be conducted as discussed in the recommendations section of the Preliminary Geotechnical Investigation Report prepared by Globus (2006) to avoid impacts related to unstable geologic conditions. In addition, pre-engineering geotechnical studies will be completed by the applicant and SCE for the proposed Natural Substation and select TSP locations prior to construction. The pre-engineering geotechnical studies will evaluate the depth to the water table; document evidence of faulting; and determine liquefaction potential, physical properties of subsurface soil, soil resistivity, slope stability, and the presence of hazardous materials. The applicant and SCE will further ensure that, for the construction of the Natural Substation and select TSP locations, construction procedures will be conducted as discussed in the recommendations section of the geotechnical studies report.	• Ensure that pre-engineering geotechnical studies are be completed by the applicant and SCE (APM GE-1). • See additional requirements for APM GE-1.	Prior to and during construction
Impact GE-2: Expose people or structures to the risk of loss, injury, or death involving strong seismic ground shaking.	APM GE-1: Geotechnical Studies. See above. APM GE-2: Seismic-resistant Design Measures. The applicant and SCE will ensure that the proposed project components are designed in accordance with CPUC General Orders and to meet applicable seismic safety standards of the California Building Code and Uniform Building Code standards for Seismic Risk Zone IV. Specific design measures may include,	• Ensure that pre-engineering geotechnical studies are be completed by the applicant and SCE (APM GE-1). • See additional requirements for APM GE-1 and GE-2.	Prior to and during construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	but are not limited to, special foundation design and additional bracing and support of upright facilities. Project facilities and foundations will be designed to withstand changes in soil density. The proposed Natural Substation will be designed consistent with the Institute of Electrical and Electronics Engineers 693 standard, *Recommended Practices for Seismic Design of Substations*.		
Impact GE-3: Expose people or structures to the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction.	See Impact GE-2, above.	See Impact GE-2, above.	See Impact GE-2, above.
Impact GE-4: Expose people or structures to the risk of loss, injury, or death involving landslides.	See Impact GE-2, above.	See Impact GE-2, above.	See Impact GE-2, above.
Impact GE-5: Result in substantial soil erosion or the loss of topsoil.	APM AQ-3: Minimization of Disturbed Areas. See above. APM GE-3: Erosion and Sediment Control. The applicant and SCE will ensure that erosion and sediment control measures will be implemented in each of the project component areas during construction activities to reduce the amount of soil displaced and transported to other areas by storm water, wind, or other natural forces. To minimize site disturbance, the applicant and SCE or their respective construction contractors will: • Remove only the vegetation that is absolutely necessary to remove (e.g., trim or mow instead of grub where feasible); • Avoid off-road vehicle use outside work	• Ensure that the applicant and SCE complete formal delineations per USACE protocols and consult with CDFG and USACE as specified in MM BR-5. • See requirements for APMs AQ-3, GE-3, and MM BR-5.	Prior to and during construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	zones; and • Instruct all construction personnel on storm water pollution prevention concepts to ensure they are conscious of how their actions affect the potential for erosion and sedimentation. MM BR-5: Impacts on Hydrologic Features. See above.		
Impact GE-6: Located on a geologic unit or soil that is or would become unstable and result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.	APM GE-1: Geotechnical Studies. See above.	See above.	See above.
Impact GE-7: Located on expansive soil.	APM GE-2: Seismic-resistant Design Measures. See above.	See above.	See above.
4.7 Greenhouse Gases			
Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	APM AQ-1: Maintain Engines in Good Working Condition. See above. APM AQ-2: Minimization of Equipment Use. See above. APM GHG-1: Engine Maintenance. The applicant and SCE will ensure that construction and operations vehicle equipment engines are maintained in good condition and in proper tune according to manufacturer specifications. APM GHG-2: Scheduling. The applicant and SCE will ensure that staff and daily construction activities for each of the project components are efficiently scheduled to minimize the use of unnecessary/duplicate equipment when possible.	See requirements for APMs AQ-1, AQ-2, GHG-1, and GHG-2.	During construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
4.8 Hazards and Hazardous Materials			
Impact HZ-1: Significant hazard from routine transport, use, or disposal of hazardous materials.	APM HZ-3: Hazardous Materials Spill and Release Prevention. The applicant and SCE will ensure that construction procedures are implemented to minimize the potential for hazardous material spills and releases in each of the project component areas. APM HZ-5: Hazardous Materials Use and Storage and Hazardous Waste. The applicant and SCE will ensure the following during construction of the proposed project components: • All hazardous materials (including fuels, lubricants, and cleaning solvents) will be stored, handled, and used in accordance with applicable regulations. • For all hazardous materials in use at construction sites, Material Safety Data Sheets will be available for routine or emergency use. In addition, the applicant will ensure the following for the storage field project components during construction: • All hazardous materials planned for use or storage at the storage field site during construction of the proposed Central Compressor Station will be preapproved by the applicant's designated safety staff. Approval of hazardous materials will be determined only after full review of the Material Safety Data Sheet for the proposed	• Ensure that the applicant and SCE implement a Worker Environmental Awareness Training program as specified in APM HZ-6. • See additional requirements for APMs HZ-3, HZ-5, HZ-6, and HZ-7.	Prior to and during construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	material. • Hazardous materials storage locations at the storage field will be determined based on the storm water pollution prevention plan and storage field policy. Existing materials are stored within the storage field's hazardous material and hazardous waste storage area. The applicant and SCE will also ensure the following during operation of the proposed project components: • All hazardous and nonhazardous wastes generated during operation of the proposed project (e.g., waste oil and gas condensates from the compressor station) will be classified and managed in accordance with federal and state regulations and site-specific permits. All hazardous materials (including fuels, lubricants, and cleaning solvents) will be stored, handled, and used in accordance with applicable regulations. APM HZ-6: Worker Environmental Awareness Training. . Prior to construction, the applicant and SCE will develop and implement Worker Environmental Awareness Training Programs based on the final engineering design, the results of preconstruction surveys, and a list of mitigation measures developed by the CPUC to mitigate significant environmental effects of the proposed project. Prior to start of work, presentations will		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	be prepared by the applicant and SCE and shown to all workers who will be present on the proposed project component sites during construction. A record of all trained personnel (including logs of training sessions signed by all workers who attended each session) will be kept with the construction foreman. The CPUC will conduct regular (monthly and random) audits to ensure that workers on the project component sites have received the appropriate training. Audits will include worker tests and/or interviews to confirm adequate instruction in construction procedures and mitigation measures. All construction personnel will receive the following: 1. Instruction for compliance with project component site-specific biological or cultural resource protective measures and mitigation measures that are developed after preconstruction surveys; 2. A list of phone numbers for key personnel associated with the proposed project including the archeological and biological monitors, environmental compliance coordinator, and regional spill response coordinator; 3. Instruction on the South Coast Air Quality Management District Fugitive Dust and Ozone Precursor Control Measures and Portable Engine Operating Parameters; 4. Direction that site vehicles must be properly		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	muffled; 5. Instruction on what typical cultural resources look like, and instruction that if cultural resources are discovered during construction, to suspend work in the vicinity of the find and contact the site supervisor and archeologist or environmental compliance coordinator; 6. Instruction on how to work near any Environmentally Sensitive Areas delineated by archeologists or biologists; 7. Instruction on individual responsibilities under the Clean Water Act, the applicant's and SCE's storm water pollution prevention plans, site-specific best management practices, hazardous materials and waste management requirements, and the location of Material Safety Data Sheets as needed for each proposed project component; 8. Instructions to notify the site supervisor and regional spill response coordinator in the event of hazardous materials spills or leaks from equipment or upon the discovery of soil or groundwater contamination; 9. A copy of the truck routes to be used for material delivery; and 10. Instruction that noncompliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	activities associated with the proposed project components. APM HZ-7: Wood Pole Recycling and Disposal. SCE will ensure that utility pole and other utility wood waste is reused by SCE, returned to the manufacturer, disposed of in a Class I hazardous waste landfill, or disposed of in the lined portion of a municipal landfill certified by the associated Regional Water Quality Control Board.		
Impact HZ-2: Significant hazard from accident conditions involving the release of hazardous materials.	APM HZ-3: Hazardous Materials Spill and Release Prevention. See above. APM HZ-4: Contaminated Soil Disposal. The applicant and SCE will ensure that any soil from excavation and grading activities that is suspected of being contaminated with oil or other hazardous materials is characterized and disposed offsite at an appropriately licensed waste facility. APM HZ-5: Hazardous Materials Use and Storage and Hazardous Waste. See above. APM HZ-6: Worker Environmental Awareness Training. See above. MM HZ-1: Soil Sampling and Contaminated Soils Contingency Plan. The applicant will prepare a Soil Sampling and Contaminated Soils Contingency Plan that would outline procedures for testing soils in locations where contaminated soils are suspected to be present including the office building and Central Compressor Station site locations. The Soil Sampling and	• Ensure that the applicant prepares a Soil Sampling and Contaminated Soils Contingency Plan as specified in MM HZ-1. • Ensure that the applicant and SCE implement a Worker Environmental Awareness Training program as specified in APM HZ-6. • See additional requirements for APMs HZ-3, HZ-4, HZ-5, and HZ-6 and MM HZ-1.	Prior to and during construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	Contaminated Soils Contingency Plan will also outline the steps that would be implemented if contaminated soils are encountered during pre-construction soil sampling and testing or if they are encountered at any point during construction. Provisions outlined in this plan would include phone numbers of city, county, state, and federal agencies and primary, secondary, and final cleanup procedures. In addition, the plan would address health and safety procedures to minimize environmental impacts in the event that hazardous soils or other materials are encountered during construction of the project, including measures such as worker training, containerization and storage, and monitoring. The plan would also establish security measures to prevent unauthorized entry to cleanup sites and to reduce hazards outside the investigation/cleanup area and would identify appropriate, licensed disposal facilities, and haulers.		
Impact HZ-3: Emit hazardous emissions or involve handling hazardous materials, substances, or waste within one-quarter miles of an existing or proposed school.	APM HZ-3: Hazardous Materials Spill and Release Prevention. See above. APM HZ-5: Hazardous Materials Use and Storage and Hazardous Waste. See above. APM HZ-6: Worker Environmental Awareness Training. See above.	See above.	See above.
Impact HZ-4: Be located on a site that is included on a list of hazardous materials sites.	MM HZ-1: Soil Sampling and Contaminated Soils Contingency Plan. See above.	See above.	See above.

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
Impact HZ-5: Safety hazards for people residing or working in the project component areas that are within the area of an airport land use plan or within two miles of an airport.	APM HZ-1: Federal Aviation Administration Consultation. SCE will consult with the Federal Aviation Administration as part of the design phase for the SCE-proposed project components to ensure that elevated structures such as TSPs will not pose a hazard for air traffic.	See requirements for APM HZ-1.	Prior to construction
Impact HZ-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	APM HZ-8: Construction Fire Control and Emergency Response Measures. To address the risk of fire during construction of the proposed project components, the applicant and SCE will develop fire control and emergency response measures as part of the Construction Safety and Emergency Response Plans developed in consultation with their contractors for use during construction of the proposed project components. The Construction Fire Control and Emergency Response Measures will describe fire prevention and response practices that the applicant and SCE will implement during construction of the proposed project components to minimize the risk of fire, and in the case of fire, provide for immediate suppression and notification. SCE's Construction Fire Control and Emergency Response Measures will also be generally consistent with SCE's Specification E-2005-104, Transmission Line Project Fire Plan (February 21, 2006). The Construction Fire Control and Emergency Response Measures shall specify that the applicant and SCE, or the respective construction contractors, shall furnish all supervision, labor, tools, equipment, and material necessary to prevent starting any fire, control the spread of	• Ensure that the applicant and SCE develop Construction Safety and Emergency Response Plans as specified in APM HZ-8. • See additional requirements for APM HZ-8.	Prior to construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	fires if started, and provide assistance for extinguishing fires started as a result of project construction activities. Labor shall include the assignment of Fire Risk Managers who will be present at each proposed project component area during construction activities, whose sole responsibility will be to monitor the contractor's fire-prevention activities, and who will have full authority to stop construction in order to prevent fire hazards. 1. The Fire Risk Managers shall: • Be responsible for preventing, detecting, controlling, and extinguishing fires set accidentally as a result of construction activity; • Review the Fire Control and Emergency Response Measures with the fire patrolperson and construction employees prior to starting work at each project area; • Ensure that all construction personnel are trained in fire safety measures relevant to their responsibilities. At a minimum, construction personnel shall be trained and equipped to extinguish small fires; • Be equipped with radio or cell phone communication capability; and • Maintain an updated a key personnel and emergency services contact		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	(telephone and email) list, kept onsite and made available as needed to construction personnel. 2. Equipment shall include: a. Spark arresters that are in good working order and meet applicable regulatory standards for all diesel and gasoline internal combustion engines, stationary and mobile; b. One shovel and one pressurized chemical fire extinguisher for each gasoline-powered tool, including but not restricted to compressors, hydraulic accumulators, gardening tools (such as chain saws and weed trimmers), soil augers, rock drills, etc.; c. Fire suppression equipment to be kept on all vehicles used for project construction; and d. An onboard self-extinguishing fire suppression system capable of extinguishing any equipment-caused fire to be kept on heavy construction operating equipment. 3. Measures to be undertaken by the applicant, SCE or the respective construction contractors, and monitored and enforced by the Fire Risk Manager, at each of the project areas during construction activities, shall include:		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	a. The installation of fire extinguishers at the proposed Central Compressor Station site; b. The prohibition of smoking at each construction job site as follows: no smoking in wildland areas; no smoking during operation of light or heavy equipment; limit smoking to paved areas or areas cleared of all vegetation; no smoking within 30 feet of any area in which combustible materials (including fuels, gases, and solvents) are stored; no smoking in any project construction areas during any Red Flag Warnings that apply to the area; c. The posting of no smoking signs and fire rules on the project bulletin board at all contractor field offices and areas visible to employees during fire season; d. The maintenance of all construction areas in an orderly, safe, and clean manner. All oily rags and used oil filters shall be removed from project construction areas. After construction activities are completed in each project area, the area shall be cleaned of all trash and surplus materials. All extraneous flammable materials shall be cleared from equipment staging areas and parking areas; e. Confinement of welding activities to cleared areas having a minimum radius		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	of 10 feet measured from place of welding, and observed by the Fire Risk Manager; f. Prevention of the idling of vehicles with hot exhaust manifolds on dirt roads with dead combustible vegetation under the vehicle; g. The provision of portable communication devices (i.e., radio or mobile telephones) as needed to construction personnel and communication protocols for onsite workers to coordinate with local agencies and emergency personnel in the event of fire or other emergencies during construction or operation of the proposed project; and h. Any additional measures as needed during construction to address fire prevention and detection, to lower the risk of wildland fires. 4. Measures will also include the following requirements that would involve coordination between the applicant and SCE, and the Fire Departments and CAL FIRE: a. The applicant and SCE or the respective construction contractors shall furnish any and all forces and equipment to extinguish any uncontrolled fire near the project component areas as directed by Fire		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	Department or CAL FIRE representatives; b. The applicant and SCE or the respective construction contractors shall abide by all restrictions to construction activity that may be enforced by the Fire Departments and/or CAL FIRE during Red Flag Warning days; and c. In the event that the applicant and SCE or the respective construction contractors sets fire to incinerate cleared vegetation, the Fire Risk Manager shall notify the Fire Departments and/or CAL FIRE in advance of the burning. Special care shall be taken to prevent damage to adjacent structures, trees, and vegetation. 5. Measures will also include additional, special provisions for days when the National Weather Service issues a Red Flag Warning. Standard protocols implemented during these periods will include: a. Measures to address storage and parking areas; b. Measures to address the use of gasoline-powered tools; c. Procedures for road closures as necessary;		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	d. Procedures for use of a fire guard as necessary; and e. Additional fire suppression tools and fire suppression equipment, and training requirements.		
Impact HZ-7: Expose people or structures to a significant risk involving wildland fires.	APM HZ-2: Plant Power Line Inspection and Maintenance. After construction, the applicant will inspect and maintain the Plant Power Line on at least a monthly basis for the purpose of reducing wildfire hazards. APM HZ-8: Construction Safety and Emergency Response Plan. See above. MM HZ-2: Fire Department Review and Coordination. Prior to construction of the proposed project components, the applicant and SCE will coordinate with CAL FIRE, the City of Los Angeles Fire Department, and the Los Angeles County and Ventura County Fire Departments (Fire Departments) according to the location of the proposed project components, to the satisfaction of the lead agency. The applicant and SCE will submit the following materials ("fire management information") for review by the Fire Departments: proposed project components and design, specific construction methods and equipment, and a description of plans and measures including but not limited to the applicant's Fire/Emergency Action Plan, SCE's Fire Management Plan, the applicant's and SCE's Construction Safety and Emergency Response Plans, and measures that would be undertaken	• Confirm that the applicant and SCE coordinated with the Los Angeles County and Ventura County Fire Departments as specified in MM HZ-2. • Ensure that the applicant and SCE develop Construction Safety and Emergency Response Plans as specified in APM HZ-8. • See additional requirements for APMs HZ-2 and HZ-8 and MM HZ-2.	Prior to, during, and after construction and during operations

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	by the applicant and SCE to further address risks involving wildland fires during construction and operation of the proposed project components (including Fire Control and Emergency Response Measures). The Fire Departments will review the applicant and SCE's fire management information prior to construction of the proposed project components. The applicant and SCE will also submit the fire management information along with a record of contacts and coordination with the Fire Departments to the CPUC, for review and approval prior to construction of the proposed project components. The applicant will also submit any revisions of the facility Fire/Emergency Action Plan related to operation of the Central Compressor Station, for the same level of review and approval, prior to the start of project operations at the storage field.		
4.9 Hydrology and Water Quality			
Impact HY-1: Violate water quality standards or waste discharge requirements.	APM AQ-3: Minimization of Disturbed Areas. See above. APM AQ-4: Watering Prior to Grading and Excavation. See above. APM AQ-6: Fugitive Dust from High Winds. See above. APM BR-3: Post-construction Restoration for Reconductoring. See above.	See above/below.	See above/below.

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	APM GE-1: Geotechnical Studies. See above. APM GE-2: Seismic-resistant Design Measures. See above. APM GE-3: Erosion and Sediment Control. See above. APM HZ-3: Hazardous Materials Spill and Release Prevention. See above. APM HZ-4: Contaminated Soil Disposal. See above. APM HZ-5: Hazardous Materials Use and Storage and Hazardous Waste. See above. APM PS-1: Site Cleanup. See below. APM PS-2: Non-hazardous Waste Management. See below.		
Impact HY-3: Substantial alteration of the existing drainage pattern of the site or area.	APM AQ-3: Minimization of Disturbed Areas. See above. APM BR-3: Post-construction Restoration for Reconductoring. See above. APM GE-3: Erosion and Sediment Control. See above. MM BR-5: Impacts on Hydrologic Features. See above.	See above.	See above.
Impact HY-8: Risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow.	APM GE-1: Geotechnical Studies. See above. APM GE-2: Seismic-resistant Design Measures. See above.	See above.	See above.
4.10 Land Use and Planning			
No applicable APMs or mitigation measures.			

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
4.11 Noise			
Impact NS-1: Noise levels in excess of standards established in the local general plan or noise ordinance.	APM NS-1: Construction Hours. The applicant and SCE will ensure that construction of the proposed project components will comply with all applicable City of Los Angeles, City of Santa Clarita, County of Los Angeles, and County of Ventura noise regulations. Construction activities will generally be scheduled during daylight hours (7:00 a.m. to 5:00 p.m.) Monday through Friday and some Saturdays. APM NS-2: Construction Noise Control Plan. SCE will prepare and implement a noise control plan to address all SCE structure installation/replacement and substation modifications associated with the SCE-proposed project components. Construction measures required by the Noise Control Plan will include, but not be limited to, the following: • Stockpiling and vehicle staging areas will be located as far away from occupied residences as possible; • All stationary construction equipment will be operated as far away from residential uses as possible; • To the extent feasible, haul routes for removing excavated materials or delivery of materials from each respective project component site will be designed to avoid residential areas and areas occupied by residential receptors (e.g., hospitals,	• Ensure that construction activities are scheduled during daylight hours Monday through Saturday or that variances from noise ordinances are obtained as necessary (APM NS-1). • Ensure that the applicant and SCE notify sensitive receptors about construction as specified in APM NS-3. • Ensure that SCE implements a Noise Control Plan (APM NS-2) and all noise control and reduction measures as specified in MM NS-1. • See additional requirements for APM NS-1 through NS-4 and MM NS-1.	Prior to, during, and after construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	schools, convalescent homes, etc.); and • Idling construction equipment will be turned off when not in use for periods longer than 15 minutes. APM NS-3: Notification Procedures. At least two weeks prior to construction, the applicant and SCE will notify all sensitive receptors within 300 feet of construction activities of the potential to experience significant noise levels during construction. APM NS-4: Operational Noise Control. MM NS-2: Operational Noise Control. After construction of the Central Compressor Station is completed, the applicant will take measures as necessary to ensure that the operational noise levels from the Central Compressor Station do not exceed 45 dBA at the closest receptor in the City of Los Angeles. Measures that may be implemented to achieve this level during the operational phase for turbines, compressors, and cooling equipment proposed to be installed at the Central Compressor Station could include: • Turbines will be placed within an acoustical enclosure; • Compressor noise will be mitigated by placing an acoustical blanket over the compressor itself or enclosing the compressor within an appropriately rated acoustical building; • Noise emitted from gas process coolers will		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	be mitigated by installing acoustic barriers without gaps around the equipment casing and with a continuous minimum surface density of 10 kilograms per square meter in order to minimize the transmission of sound. MM NS-1: Noise Reduction and Control Practices. SCE will employ the following noise reduction and control practices during subtransmission line reconductoring and fiber optic installation activities that could produce noise levels above 80 dBA Leq near sensitive receptors (within 100 feet): • Construction equipment, stationary or mobile, will be equipped with properly operating and maintained mufflers on engine exhausts and compressor components. • Construction equipment specifically designed for low noise emissions (i.e., equipment that is powered by electric or natural gas engines instead of diesel or gasoline reciprocating engines) will be used as much as feasible. Electric engines have been reported to have lower noise levels than internal combustion engines. • Temporary enclosures or acoustic barriers (i.e., solid sound absorber composite materials) will be used around stationary pieces of equipment. Noise barriers or enclosures will be selected with a sound transmission class of 30 or greater, in accordance with American Society of		

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	Testing and Materials Test Method E90. Acoustical curtain enclosures can provide a sound transmission loss of 10 to 13 dBA, whereas portable solid barriers can achieve up to 33 dBA in noise reduction. Acoustic barriers will be used for all construction activities within 100 feet of closest receptors. • Construction traffic will be routed away from residences and other sensitive receptors, as feasible. • Noise from back-up alarms (alarms that signal vehicle travel in reverse) in construction vehicles and equipment will be reduced by providing a layout of construction sites that minimizes the need for back-up alarms and using flagmen to minimize time needed to back up vehicles. As feasible, and in compliance with the applicant's safety practices and public and worker safety provisions required in the Occupational Safety and Health Standards for the Construction Industry (29 CFR Part 1926), the applicant may also use self-adjusting, manually adjustable, or broadband back-up alarms to reduce construction noise.		
Impact NS-3: Permanent increase in ambient noise levels in the project vicinity.	APM NS-4: Operational Noise Control. See above.	See above.	See above.

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
Impact NS-4: Substantial temporary or periodic increase in ambient noise levels in the project vicinity.	APM NS-4: Operational Noise Control. See above. MM NS-1: Noise Reduction and Control Practices. See above.	See above.	See above.
4.12 Population and Housing			
No applicable APMs or mitigation measures.			
4.13 Public Services and Utilities			
Impact PS-1: Result in substantial adverse physical impacts associated with new or physically altered governmental facilities.	APM HZ-2: Plant Power Line Inspection and Maintenance. See above. APM HZ-8: Construction Safety and Emergency Response Plan. See above. MM HZ-2: Fire Department Review and Coordination. See above.	See above.	See above.
Impact PS-5: Served by a landfill without sufficient permitted capacity to accommodate the proposed project's solid waste disposal needs.	APM HZ-5: Hazardous Materials Use and Storage and Hazardous Waste. See above. APM HZ-7: Wood Pole Recycling and Disposal. See above. APM PS-2: Nonhazardous Waste Management. The applicant and SCE will ensure that nonhazardous waste materials, including wood, soil, vegetation, and sanitation waste (portable toilets) that would be generated during construction of the project components will either be re-used at the project component construction sites (e.g., clean soil used for backfill) or disposed of at an appropriately licensed offsite facility.	See requirements for APMs HZ-5, HZ-7, and PS-2.	During construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
Impact PS-6: Noncompliance with federal, state, or local statues and regulations related to solid waste.	APM HZ-5: Hazardous Materials Use and Storage and Hazardous Waste. See above. APM PS-1: Site Cleanup. The applicant and SCE will direct construction contractors to perform initial site cleanup immediately following construction activities at each of the proposed project components. Initial site cleanup at each project component area will include the following: • Removal of all construction debris; • Proper disposal or recycling of all construction materials and debris at appropriately licensed landfills and other offsite facilities; and • Inspection of project component sites to ensure that cleanup activities are successfully completed. APM PS-2: Non-hazardous Waste Management. See above.	See requirements for APMs HZ-5, PS-1, and PS-2.	During construction
4.14 Recreation			
No applicable APMs or mitigation measures.			

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
4.15 Transportation and Traffic			
Impact TT-1: Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.	APM TT-1: **Traffic Control Plan.** The applicant and SCE will prepare Traffic Control Plans in accordance with the latest version of the California Joint Utility Traffic Control Manual. These Traffic Control Plans will be implemented by the applicant and SCE as needed. The Traffic Control Plans will be developed to minimize short-term construction-related impacts on local traffic and potential traffic safety hazards, and will include measures such as the installation of temporary warning signs at strategic locations near access locations for the project components. The signs will be removed after construction-related activities are completed. The Traffic Control Plans may include the following measures: • Coordination with the City of Los Angeles, City of Santa Clarita, County of Los Angeles, or County of Ventura on any temporary land or road closures; • Installation of traffic control devices as specified in the California Joint Utility Traffic Control Manual; • Provisions for temporary alternate routes to route local traffic around construction zones; and • Consultation with emergency service providers and development of an Emergency Access Plan for emergency	• Ensure that the applicant and SCE develop and implement a Traffic Control Plan (APM TT-1) and Commuter Plan (APM TT-3). • See additional requirements for APMs TT-1 and TT-3.	Prior to and during construction

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	vehicle access in and adjacent to the construction zone. APM TT-3: Commuter Plan. The applicant would implement a Commuter Plan that includes a designated offsite parking area that has adequate parking capacity for 150 workers (the peak construction-activity maximum not including SCE workers) and a shuttle that would transport worker crews (approximately 10 workers per trip) from the parking area to worksites.		
Impact TT-2: Conflict with an applicable congestion management program including, but not limited to, LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.	APM TT-1: Traffic Control Plan. See above. APM TT-3: Commuter Plan. See above.	See above.	See above.
Impact TT-3: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	APM TT-1: Traffic Control Plan. See above.	See above.	See above.
Impact TT-4: Result in inadequate emergency access.	APM TT-1: Traffic Control Plan. See above. APM TT-3: Commuter Plan. See above.	See above.	See above.

Table ES-1 Summary of Impacts *(Note: Revisions to this table are presented in Chapter 5, "Revised Mitigation, Monitoring, Compliance, and Reporting Program," of the Final EIR)*

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
Impact TT-5: Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	APM TT-1: Traffic Control Plan. See above. APM TT-2: Repair of Damaged Roads. The applicant and SCE will ensure that damage to existing roads that is the direct result of activities related to construction of the proposed project components will be repaired once construction is complete in accordance with local jurisdiction requirements and/or existing franchise agreements held by the applicant and SCE.	See requirements for APMs TT-1 and TT-2.	Prior to, during, and after construction

1.0 Introduction

With an inventory of approximately 165 billion standard cubic feet (scf), the Aliso Canyon Natural Gas Storage Field (storage field) in Los Angeles County is the largest underground natural gas storage field operated by Southern California Gas Company (the applicant) and is also one of the largest in the United States. The applicant filed an application on September 28, 2009 (A.09-09-020), with the California Public Utilities Commission (CPUC) to amend its Certificate of Public Convenience and Necessity (CPCN) for the construction and operation of the Aliso Canyon Turbine Replacement Project (the proposed project). The application was deemed complete on March 24, 2010. The purpose of the proposed project is to comply with the terms of a settlement agreement implemented by CPUC decision D.08-12-020 (Settlement Agreement, provided in Appendix A of this environmental impact report [EIR]) while maintaining or improving the reliability and efficiency of storage facility operations.

As part of the proposed project, the applicant would construct and operate a new compressor station at the storage field with three new electric-driven, variable-speed compressors and pipelines to connect the station to existing facilities; a 12-kilovolt (kV) Plant Power Line; main office and crew-shift buildings; and a guardhouse on a widened segment of the existing entry road into the storage field. The proposed project is located in an unincorporated area of Los Angeles County, an unincorporated area of Ventura County, and northern Los Angeles, California. The three new compressors are proposed to comply with the terms of the Settlement Agreement (Appendix A). In addition, the existing compressor station and its three gas turbine–driven compressors and existing office facilities would be decommissioned and removed from the storage field. The existing guardhouse would not be removed as part of the proposed project. Metered service from Southern California Edison's (SCE's) electrical distribution line to the storage field would also be removed in accordance with SCE tariff rules.

To meet the increase in electrical demand from operation of the proposed electric–driven compressors (estimated at 50 megawatts), SCE proposes to provide electrical service from their existing 66-kV subtransmission line system, part of which crosses the southern half of the storage field site. To enable the existing 66-kV system to provide power to the proposed compressors, SCE would reconductor and replace structures along segments of the Chatsworth–MacNeil–Newhall–San Fernando 66-kV Subtransmission Line and MacNeil–Newhall–San Fernando 66-kV Subtransmission Line and construct and operate a new 56-megavolt ampere, 66/12-kV substation (the Natural Substation) at the storage field. An existing SCE easement on the storage field would be widened to accommodate the new substation. Additionally, SCE would install equipment at their Newhall, Chatsworth, San Fernando, and Pardee Substations. SCE would also install new fiber optic cable along the 66-kV subtransmission line reconductoring routes, along ~~two~~three other existing electrical lines (including the installation of new poles to support the fiber optic cable and installation of some of the cable in new and existing underground conduit), and within existing substations to allow for remote monitoring and operation of the proposed Natural Substation.

1.1 Background Information

The applicant provides natural gas to approximately ~~six~~21 million customers in Southern California, and operates four storage fields to meet customer demand. The applicant's storage field has a withdrawal ~~capacity~~rate of up to 1.875 billion scf per day and an injection ~~capacity~~rate of up to 300 million scf per day. Injection at the storage field is provided by three turbine–driven compressors, which are powered by natural gas.

1.1.1 Settlement Agreement

The applicant is required to implement the proposed project to meet the terms of Phase 1 of the Settlement Agreement between the applicant and parties to the 2009 Biennial Cost Allocation Proceeding approved by the CPUC (Appendix A). The Settlement Agreement requires that the applicant increase the overall injection capacity at the field by approximately 145 million scf per day.

The proposed compressors would be capable of increasing the storage field's natural-gas injection ~~capacity~~rate from approximately 300 million scf per day to approximately 450 million scf per day. The storage field's withdrawal ~~capacity~~rate would not change.

The proposed project~~compressors~~ would also improve natural gas service reliability and efficiency. The existing gas turbine–driven compressors at the storage field were installed in 1971. Gas turbines alter compressor speed by varying fuel input. The new electric driven, variable-speed compressors~~motors~~ that would be installed as part of the proposed project have the ability to alter compressor speed as gas pressure ratios and flow rates change more precisely than the existing gas turbines. Hence, the new compressors~~motors~~ would be capable of better matching operating pressures at the storage field and would be more energy efficient.

1.2 Objectives of the Proposed Project

The two basic objectives of the proposed project are to:

1. Comply with the terms of the Settlement Agreement implemented by CPUC decision D.08-12-020; and
2. Maintain or improve the reliability and efficiency of storage facility operations at the Aliso Canyon Natural Gas Storage Field.

Further information and additional context about the objectives was provided by the applicant in the Proponent's Environmental Assessment, in applicant responses to CPUC data gap requests, and during discussions with the applicant. The additional information is discussed here as it relates to the purpose of the project, description of the proposed project (Chapter 2.0), and screening of alternatives (Section 1.3.3, Chapter 3.0, and Appendix C).

Objective 1

The first basic objective of the proposed project is to comply with the terms of the Settlement Agreement implemented by CPUC decision D.08-12-020. To meet this objective, the applicant would, as soon as possible:

a. Replace the three existing LM-1500 gas turbine–driven compressors used to compress up to 300 million scf per day of natural gas for injection into the storage field; and
b. Expand overall injection capacity at the storage field by approximately 145 million scf per day.

Objective 2

The second basic objective is to maintain or improve the reliability and efficiency of storage facility operations. To meet this objective, the applicant would:

a. Ensure successful conversion to the replacement compression system prior to decommissioning the LM-1500 gas turbine–driven compressors;

b. Install the replacement compression system in proximity to the existing compressor station and operations facility/control center;

c. Substantially reduce air emissions resulting from operation of the three existing gas turbine–driven compressors; and

d. Improve access to the storage field from Sesnon Boulevard for existing operations vehicles and facilitate vehicle entry for construction of the proposed project.

1.3 CPUC Process and Intended Uses of the EIR

Pursuant to Article XII of the Constitution of the State of California, the CPUC is charged with the regulation of investor-owned public utilities. The CPUC conducts two parallel processes when considering any application for approval of a CPCN: an application process similar to a court proceeding, in which the CPUC considers whether the proposed project~~expansion~~ is needed and is in the public interest; and an environmental review process under the California Environmental Quality Act (CEQA). The CPCN application process focuses on utility ratepayer and public need and benefit issues ("public convenience and necessity"). Through this process, the CPUC determines whether a project meets the CPCN criteria for approval. An Assigned Commissioner (one of the CPUC's five appointed commission members) and an Administrative Law Judge supervise the process. The CPUC is the lead agency for CEQA compliance in evaluation of the proposed project, and has directed the preparation of this EIR.

This EIR provides an assessment of environmental impacts associated with the proposed project and alternatives based on the level of design performed to date for each project element. Project elements that would be implemented by SCE are based on preliminary engineering data and are subject to change based on final engineering. Per CEQA Guidelines Section 15004, design of the proposed project and the CEQA review process occur concurrently, not consecutively. These concurrent processes allow the applicant to incorporate environmental considerations into project conceptualization, design, and planning at the earliest feasible time. Additional environmental analysis may be required in instances where, as a result of refined engineering design, anticipated construction activities vary significantly from those described in the EIR or project construction or operation would take place in areas not identified in the EIR. If the EIR is certified and changes to the project are proposed after certification, these changes would be reviewed with consideration given, where appropriate, to CEQA Guidelines Sections 15162–15164, which describe the requirements for subsequent and supplemental EIRs, and addendums to EIRs.

As lead agency, the CPUC must determine through the CEQA process whether the proposed project would result in significant impacts to the environment, and whether those impacts could be avoided, eliminated, compensated for, or reduced to less than significant levels. This EIR will be used by the CPUC in conjunction with other information developed in the CPUC's formal record to act on the application for construction and operation of the proposed project. Under CEQA requirements, the CPUC will determine the adequacy of the final EIR and, if adequate, will certify the document as complying with CEQA. If the CPUC approves a project with significant environmental impacts that cannot be mitigated to less than significant levels, it must state why in a Statement of Overriding Considerations, which would be included in the Commission's decision on the application.

1.3.1 Other Public Agencies

State, regional, and local agencies in addition to the CPUC, such as the California Department of Transportation, California Department of Fish and ~~Game~~Wildlife, regional Air Quality Management District, Regional Water Quality Control Board, and state Historic Preservation Office, may be involved in reviewing and/or approving the proposed project. At the federal level, agencies with potential reviewing and/or permitting authority include the U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service. The agencies will rely on the information presented in this EIR to inform their decision regarding the issuance of permits related to construction or operation of the proposed project.

The project concerns the construction, operation, and maintenance of utility plant and lines by two regulated public utilities for the provision of natural gas and electric utility service. Pursuant to Article XII of the California Constitution, the CPUC is vested with jurisdiction over this project. Article XII, Section 8 of the California Constitution states in pertinent part: "A city, county, or other public body may not regulate matters over which the Legislature grants regulatory power to the [CPUC]." "Thus under the Constitution, as to matters over which the PUC has been granted regulatory power, the PUC's jurisdiction is exclusive."[1] To the extent the exercise of local ordinances or permit requirements would frustrate the CPUC's regulation of matters of statewide importance affecting the project here, such as the safe operation of natural gas and electric utility facilities, the EIR addresses the environmental impacts addressed by such local ordinances and requirements, as well as the impacts that might be caused by preemption. The applicant and SCE would still be required to obtain from local jurisdictions all building, encroachment, and other ministerial (administrative) permits that do not conflict with or interfere with the Commission's regulation of public utilities~~from local jurisdictions~~.

CPUC General Order 131-D, which establishes requirements for the planning and construction of facilities for the generation and transmission of electricity, requires the applicant and public utilities such as SCE to comply with local building, design, and safety standards to the greatest degree feasible to minimize project conflicts with local conditions. General Order 131-D also requires the CPUC to contact and coordinate with local planning agencies regarding land use concerns that could result from the proposed project. General Order 112-E establishes requirements for the design, location, quality of materials, construction, operations, maintenance, safety, testing, and reporting for facilities used in the gathering, transmission, and distribution of natural gas, hydrocarbon gas, or any mixture of such gases for domestic, commercial, industrial, or other purposes.

The CPUC consulted with other affected agencies and jurisdictions to gather information related to the possible environmental effects of the proposed project: this included making early contact and opening a line of communication with key public agencies that would be directly affected by the proposed project, and, as part of this process, obtaining insight and information for this EIR. Outreach for the project included consultations with more than 10 public agencies and was conducted primarily by telephone. Local agency representatives provided background information on the local setting, permitting requirements, regulatory requirements, land use information, and local environmental concerns. Chapter 8, "List of Preparers, Agencies, and Persons Contacted," lists all agencies consulted during preparation of this EIR. The mitigation measures in the EIR reflect the requirements of local public agencies that would otherwise be required of the applicant and SCE but for the CPUC's exclusive jurisdiction and

[1] *Southern California Gas Co. v. City of Vernon* (1995) 41 Cal. App. 4th 209, 215.

preemption. With the adopting of the mitigations measures reflecting such local requirements, there are no significant unmitigated impacts.

The CPUC's authority does not preempt special districts, such as Air Quality Management Districts, other state agencies, or the federal government. The applicant and SCE would obtain permits, approvals, and licenses as needed, and would participate in reviews and consultations as needed with federal, state, and local agencies (Section 2.6, "Permitting and Consultation Requirements").

1.3.2 Public Scoping

On October 21, 2010, in accordance with the CEQA Guidelines, the CPUC published and distributed a Notice of Preparation (NOP) to the State Clearinghouse, responsible and trustee agencies, and other interested parties to notify them that an EIR would be prepared for the proposed project.[2] The NOP was distributed to more than 700 individuals, including property owners within 300 feet of the storage field, SCE's 66-kV subtransmission lines, and existing SCE substations.

The NOP solicited written and verbal comments on the EIR's scope during a 30-day comment period and provided information about the public scoping meetings. It also presented a description, purpose and objectives, and location of the proposed project; potential issues to be addressed in the EIR; and contact details for additional information. In addition to the NOP, the CPUC published legal notices in the *Santa Clarita Valley Signal* on October 21 and 28, 2010, and the *Los Angeles Daily News* on October 21 and 28, 2010.

The CPUC conducted scoping meetings on November 4, 2010, at the Porter Valley Country Club in Porter Ranch, California, and November 5, 2010, at Wiley Canyon Elementary School in Newhall, California. During the public scoping meeting, participants commented on the scope of issues to be included in the EIR for the proposed project. Written comments were also collected throughout the public comment period.

Twenty-two people attended the public scoping meetings with 14 people at the November 4, 2010, meeting and eight people at the November 5, 2010, meeting. Seventeen written comments were received during the comment period from the U.S. Fish and Wildlife Service, California Department of Fish and Game (now known as the California Department of Fish and Wildlife), California State Office of Planning and Research, Native American Heritage Commission, South Coast Air Quality Management District, Division of Oil Gas and Geothermal Resources, and 11 individuals.

The following list summarizes the written and verbal comments received during public scoping:

1. **Public Notification:** Comments from the public included a request that the applicant post a large sign (at least 6 feet tall and 6 feet wide) at the entrance to the storage field near Sesnon Boulevard that provides an overview of the proposed project.

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[2] Projects or actions undertaken by the lead agency, in this case the CPUC, may require subsequent oversight, approvals, or permits from other public agencies. Other such agencies are referred to as responsible agencies and trustee agencies. Pursuant to Sections 15381 and 15386 of the CEQA Guidelines, a responsible agency is a public agency that proposes to carry out or approve a project for which a lead agency is preparing or has prepared an EIR. For the purposes of CEQA, the term *responsible agency* refers to all public agencies other than the lead agency that have discretionary approval authority over the project. A *trustee agency* is a state agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the state.

2. **Project Description:** Comments from the public included a suggestion that the description of the proposed project also describe the current operations of the storage field.

3. **Aesthetics:** Comments from the public included a suggestion that the reconductored subtransmission lines be routed underground to avoid fire danger and visual impacts, the lines be relocated out and away from the backyards of residential properties in the proposed project area, and the subtransmission line structures be designed to look more like trees.

4. **Air Quality:** Comments from the public included concerns about the smell of natural gas in neighborhoods near the storage field and health effects from breathing air that may contain natural gas. Comments from the South Coast Air Quality Management District and the public included a request that emissions, localized significance thresholds, and air quality impacts of the proposed project be disclosed in the EIR.

5. **Biological Resources:** Comments from the U.S. Fish and Wildlife Service and California Department of Fish and Game (now known as the California Department of Fish and Wildlife) included concerns regarding potential impacts on alluvial scrub and coastal sage scrub, California gnatcatcher, and special status plant species including San Fernando Valley spineflower and Braunton's milkvetch. Comments were also provided regarding the conditions under which an incidental take permit would be required for the proposed project.

6. **Cultural Resources:** Comments from the Native American Heritage Commission included a recommendation that the CPUC consult with local Native America tribes, survey and monitor the site for cultural resources, and review recorded archaeological data for the proposed project area.

7. **Hazards, Health, and Public Safety:** Comments from the County of Los Angeles Department of Public Works referred to a fire in 2008 that has been attributed to a downed electrical distribution line in the area of the proposed project (CAL FIRE 2008). The Department requested public outreach and that plans be developed for emergency response at the storage field and long-term maintenance, care, and inspection of the subtransmission lines to be reconductored. Comments from the public included concerns regarding impacts related to venting natural gas, safety of the storage field with regard to earthquakes, potential for downed power lines to ignite fires in the hills near the Porter Ranch community, and the applicant's and SCE's brush clearance activities. As noted above under "Aesthetics," public comments also included a suggestion that the reconductored subtransmission lines be routed underground to avoid fire danger.

8. **Hydrology and Water Quality:** Comments from the public included concerns that the proposed project would result in the contamination of local water resources, requests that local water sources be analyzed for contamination, and requests that surface water and groundwater be monitored for potential contamination.

9. **Land Use and Planning:** Comments from the public included a request that the applicant and SCE comply with local grading and oak tree ordinances.

10. **Noise:** Comments from the public included concerns about noise emanating from trucks using Tampa Road in the evening and early morning hours.

11. **Public Services and Utilities:** Comments from the public included concerns that the proposed project would contaminate drinking water and groundwater supplies.

The Scoping Summary Report is provided in Appendix B of this Draft EIR. The NOP is available on the project website at: http://www.cpuc.ca.gov/Environment/info/ene/aliso_canyon/aliso_canyon_home.html.

1.3.3 Screening of Alternatives to the Proposed Project

Alternatives to the proposed project were presented by the applicant in the Proponent's Environmental Assessment (PEA) and developed by the CPUC.[3] An alternatives screening process was carried out to determine which alternatives could feasibly attain most of the basic objectives of the proposed project (Section 1.2, "Objectives of the Proposed Project") but would avoid or substantially lessen significant effects pursuant to CEQA Guidelines Section 15126.6. The Alternatives Screening Report is provided in Appendix C.

The outcome of the screening process was a reasonable range of alternatives to be evaluated in the EIR. Because the first basic objective of the proposed project refers to compliance with a Settlement Agreement adopted by CPUC decision D.08-12-020 in A.08-02-001, the alternatives to the proposed project considered were necessarily limited to those that would not conflict with the Settlement Agreement. The alternatives eliminated from further consideration and those retained for analysis in this EIR are presented in Chapter 3, "Description of Alternatives," and compared in Chapter 5, "Comparison of Alternatives."

Pursuant to CEQA, a No Project Alternative was carried through both the alternatives screening process and the description and comparison of alternatives in this EIR. The Environmentally Superior Alternative is defined in Chapter 5, "Comparison of Alternatives," based on a comparison of each alternative with the proposed project as required by CEQA.

1.3.4 Public Comment on the Draft EIR

The Draft EIR was~~is~~ circulated to local and state agencies and interested individuals who may wish to review and comment on the report. Written comments ~~may be~~ were submitted to the CPUC during the ~~45-day~~ public review period. Verbal and written comments on the Draft EIR ~~will be~~were accepted via regular mail, fax, email, and at noticed public meetings (noticed under separate cover from this document).

1.3.5 Final EIR

Written and oral comments received in response to the Draft EIR ~~will be~~ are addressed in a Response to Comments document that, together with the Draft EIR, ~~will~~ constitutes the Final EIR. ~~The Final EIR will be released for public review before the CPUC decides whether to certify the Final EIR.~~ The CPUC will ~~then~~ issue a proposed decision on the application and release the proposed decision ~~it~~ for public comment.

1.3.6 Organization of the EIR

This Draft EIR is organized as follows:

Executive Summary. Presents a summary of the environmental impacts of the proposed project and mitigation measures identified to reduce or eliminate significant impacts. The Executive Summary also presents a summary of alternatives to the proposed project.

[3] The PEA is available on the project website at: http://www.cpuc.ca.gov/Environment/info/ene/aliso_canyon/documents/aliso_canyon_pea.pdf.

Chapter 1: Introduction. Provides a discussion of the background and objectives of the proposed project. The results of the public scoping process are summarized, and public agency and other planned uses of the EIR are explained.

Chapter 2: Project Description. Provides a detailed description of the proposed project and a summary of permits and consultations that may be required.

Chapter 3: Description of Alternatives. Provides a description of the alternatives evaluation process, description of alternatives considered in this EIR, and rationale for eliminating some of the alternatives from further analysis.

Chapter 4: Environmental Analysis. Provides a comprehensive analysis and assessment of impacts and mitigation measures for the proposed project. This chapter is divided into sections for each environmental issue area (e.g., Aesthetics, Agriculture and Forestry Resources, and Air Quality).

Chapter 5: Comparison of Alternatives. Provides a discussion of the relative advantages and disadvantages of the proposed project and alternatives and identifies the CEQA Environmentally Superior Alternative.

Chapter 6: Cumulative Impacts and Other CEQA Considerations. Identifies cumulative projects and provides an analysis of cumulative impacts and other CEQA considerations, including growth-inducing impacts. The purpose of the cumulative impacts analysis is to identify impacts from the proposed project that might not be significant when considered alone but may contribute to significant impacts when considered in conjunction with impacts from past, current, and reasonably foreseeable future projects.

The purpose of the growth-inducing impacts analysis is to determine if the proposed project would result in additional development, such as increases in population, employment, or housing, above and beyond what is already assumed would occur in land use plans or in projections made by regional or local planning authorities, irrespective of the proposed project. Significant irreversible environmental changes, including the consumption of nonrenewable natural resources, are also discussed in this chapter.

Chapter 7: Mitigation Monitoring Plan. Provides a summary of impacts of the proposed project, a discussion of CPUC mitigation monitoring requirements, and measures that would be implemented to avoid or reduce those impacts. A final Mitigation, Monitoring, Compliance, and Reporting Program (MMCRP) was prepared for the Final EIR and incorporates changes to the proposed project and mitigation measures that were made as a result of public review of the Draft EIR and further consideration of the proposed project by the CPUC. This MMCRP is presented in Chapter 5, “Revised Mitigation, Monitoring, Reporting, and Compliance Program,” of the Final EIR.

Chapter 8: Report Preparation. Lists the authors who prepared the report and identifies public agencies that were consulted.

Appendices: The Settlement Agreement; EIR Scoping Summary Report; Alternatives Screening Report; 66-kV Subtransmission Line Reconductoring Routes, Existing Structures, and Vegetation Communities; Biological Resources Studies; Construction Schedule and Equipment Lists; Air Quality and Greenhouse Gas Calculations; Supplemental Cultural Resources Data; Traffic Impact Study, and other reports, maps, data, and figures are provided as appendices to this Draft EIR. For a complete list, refer to the Draft EIR Table of Contents.

References

CAL FIRE (California Department of Forestry and Fire Protection). 2008. Sesnon Fire Incident Information. http://bof.fire.ca.gov/incidents/incidents_details_info?incident_id=308. Accessed October 9, 2011. Last modified October 18, 2008.

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2.0 Project Description

Southern California Gas Company (the applicant) proposes to construct the Aliso Canyon Turbine Replacement Project (the proposed project) in unincorporated and incorporated areas of the County of Los Angeles and County of Ventura, California (Figure 2-1). New and modified Southern California Edison (SCE) electric service facilities would be required to provide power for the proposed project. Because the improvements that would be carried out by SCE would be required to serve the proposed project, SCE's improvements are considered part of the proposed project and are subject to the same level of California Environmental Quality Act (CEQA) review as the other components of the proposed project.

The construction of the proposed project would expand the Aliso Canyon Natural Gas Storage Field's (storage field's) natural-gas injection capacity from approximately 300 million standard cubic feet (scf) per day to approximately 450 million scf per day. As part of the proposed project, the applicant would construct and operate the following project components at the storage field:

- Central Compressor Station with three new electric-driven, variable-speed compressors and pipelines to connect the station to existing facilities (Figures 2-2 and 2-3);
- 12-kilovolt (kV) Plant Power Line to supply the Central Compressor Station with power;
- Office and crew-shift buildings; and
- Guardhouse on a widened segment of the existing entry road into the storage field (Figure 2-4).[1]

The applicant would decommission and remove the:

- Existing compressor station and its three gas turbine–driven compressors; and
- Existing main office and crew-shift buildings.

To provide power to the proposed electric-driven, variable-speed compressors, SCE would:

- Construct and operate a 56-megavolt-ampere (MVA), 66/12-kV substation (the Natural Substation) on the storage field site;[2] and
- Reconductor and replace towers and poles along segments of SCE's Chatsworth–MacNeil–Newhall–San Fernando 66-kV Subtransmission Line and MacNeil–Newhall–San Fernando 66-kV Subtransmission Line in the proposed project area.

To allow for remote monitoring and operation of the proposed electrical facilities, SCE would:

- Install equipment at SCE's Newhall, Chatsworth, and San Fernando Substations in the proposed project area; and
- Install new ~~fiber optic~~ telecommunications cable in the proposed project area.

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[1] The existing guardhouse at the storage field would not be removed as part of the proposed project.
[2] The initial build of the Natural Substation would include the installation of two 28 MVA, 66/12-kV transformers. Space would be available for the installation of up to two additional 28 MVA transformers as spares in the event of a long term transformer delivery delay (for a total of 112 MVA) if needed in the future.

In addition, the applicant has applied ~~would apply~~ to the California Public Utilities Commission (CPUC) to enlarge SCE's existing easement on the storage field site, which would be necessary for SCE to construct and operate the proposed Natural Substation and sections of the proposed 66-kV subtransmission lines and telecommunications lines. SCE's Northern Transmission/Substation Regional Facility at Pardee Substation in Santa Clarita would likely be used as the primary staging area for the 66-kV subtransmission line reconductoring.

Construction of the proposed project would take approximately ~~22~~24 months.

2.1 Setting and Location of the Proposed Project

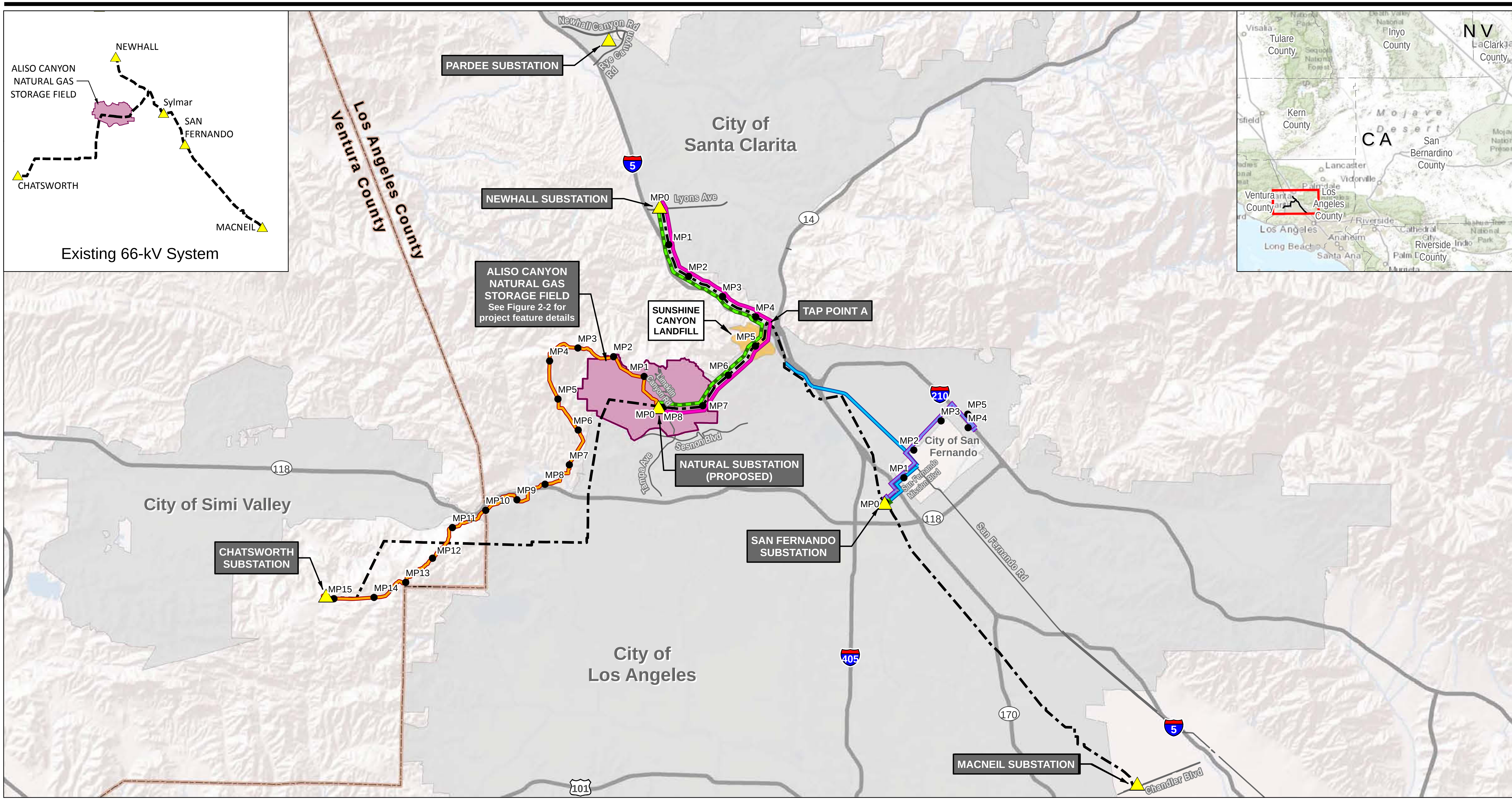
The existing storage field includes a guardhouse at the entrance to the storage field at Tampa Avenue/Limekiln Canyon Road and Sesnon Boulevard. The private entry road leads to the Aliso Canyon Plant Station (Plant Station). The Plant Station includes an existing compressor station with three gas turbine–driven compressors; an operations facility/control center; a main office building; a crew-shift building; wells that facilitate the injection and withdrawal of natural gas into an underground, natural rock reservoir below the Plant Station; and pipelines that transport the natural gas to and from the storage field (Figures 2-3 and 2-5). The Plant Station is located approximately 0.8 miles north of Sesnon Boulevard on elevated terrain within Aliso Canyon and is surrounded by hills. A single-circuit, 16-kV distribution line provides electrical power to storage field facilities. A single-circuit, 66-kV subtransmission line crosses the southern half of the storage field through an easement granted to SCE by the applicant.

The storage field, which is owned and operated by the applicant, has been in continuous operation since the 1970s. The storage field allows the applicant to purchase natural gas during periods of low demand (generally at lower prices) and store it for withdrawal during periods of high demand. The intent of the storage-withdrawal dynamic is to provide utility customers with lower-cost natural gas supplies and services in a manner that ensures the safe and reliable provision of natural gas utility service.

The storage field is located approximately 20 miles north of downtown Los Angeles. It is situated within the topographic feature of Aliso Canyon in the Santa Susana Mountains. Most of the storage field site is located in unincorporated Los Angeles County, but the southernmost and easternmost parts of the field are located in the City of Los Angeles, and its address, 12801 Tampa Avenue, is within the City of Los Angeles. South of the storage field site are the communities (each within the City of Los Angeles) of Porter Ranch, Granada Hills, Chatsworth, and Northridge.

Within the storage field property boundary, the proposed project would comprise several construction sites, including the:

- Plant Station site;
- New guardhouse site and road-widening area;
- 12-kV Plant Power Line route;
- Proposed Natural Substation site; and
- 66-kV Segment C reconductoring route.



SOURCES: ESRI 2010, SoCalGas 2009 to 2012

- Milepost (MP)
- 66-kV Subtransmission Line Reconductoring Route (Proposed)
- Telecommunications Route #1
- Telecommunications Route #2
- Telecommunications Route #3
- Telecommunications Route #4
- Existing 66-kV Sub Transmission Line

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

Figure 2-1

Proposed Project Area

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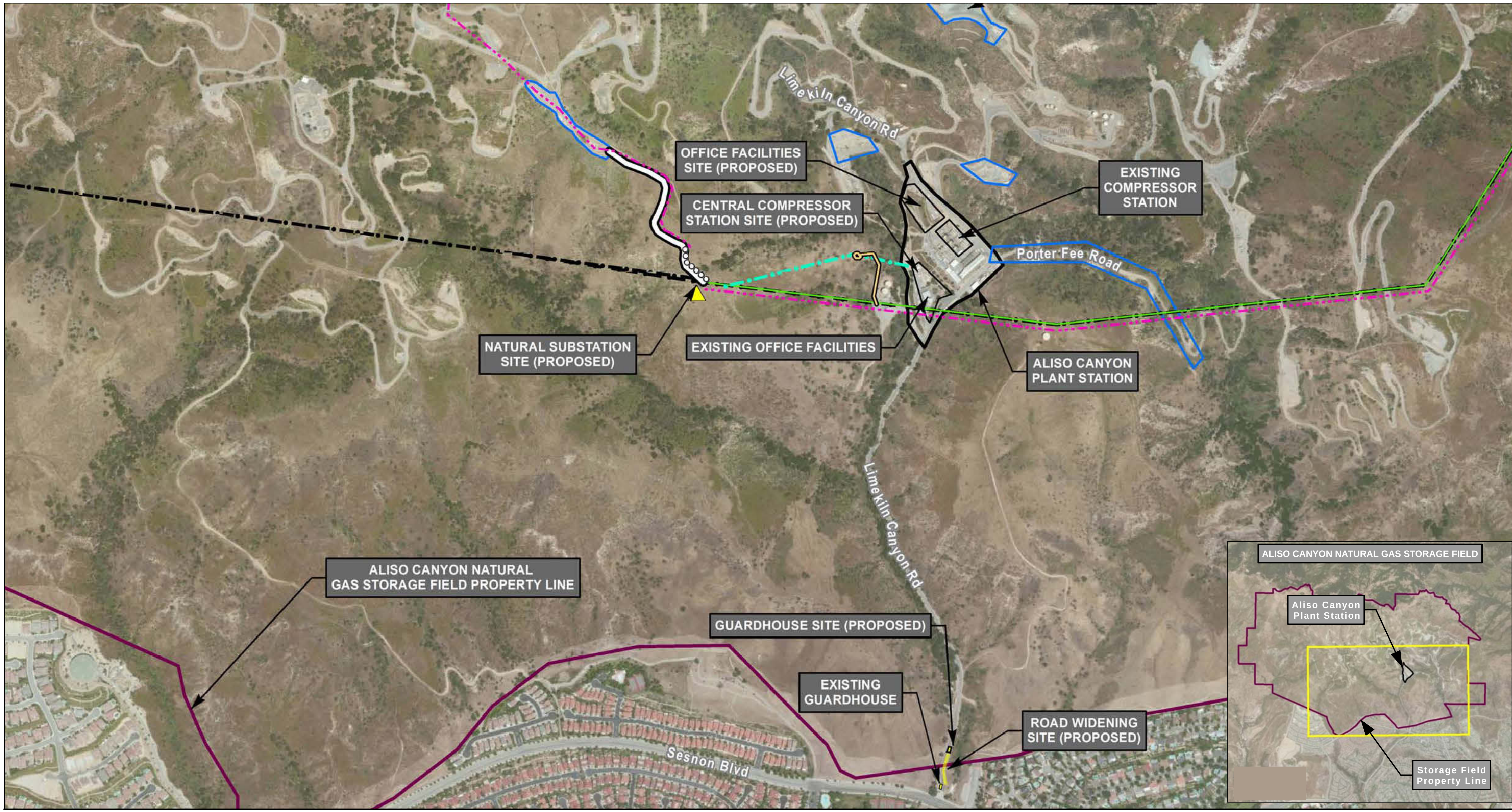

SOURCES: ESRI 2010, SoCalGas 2009 to 2012

- 66-kV Subtransmission Line Reconductoring Route (Proposed)
- Existing SCE 66-kV Subtransmission Line
- Overhead Fiber Optic Cable (Proposed)
- 12-kV Plant Power Line (Proposed)
- Underground Fiber Optic Cable (Proposed)
- Access Road (Proposed)
- Road Upgrade for Use as Haul Road (Proposed)
- Staging Area (Proposed)

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

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0 0.25 Miles

Figure 2-2

Components of the Proposed Project at the Storage Field

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Source: SoCalGas 2009–2012

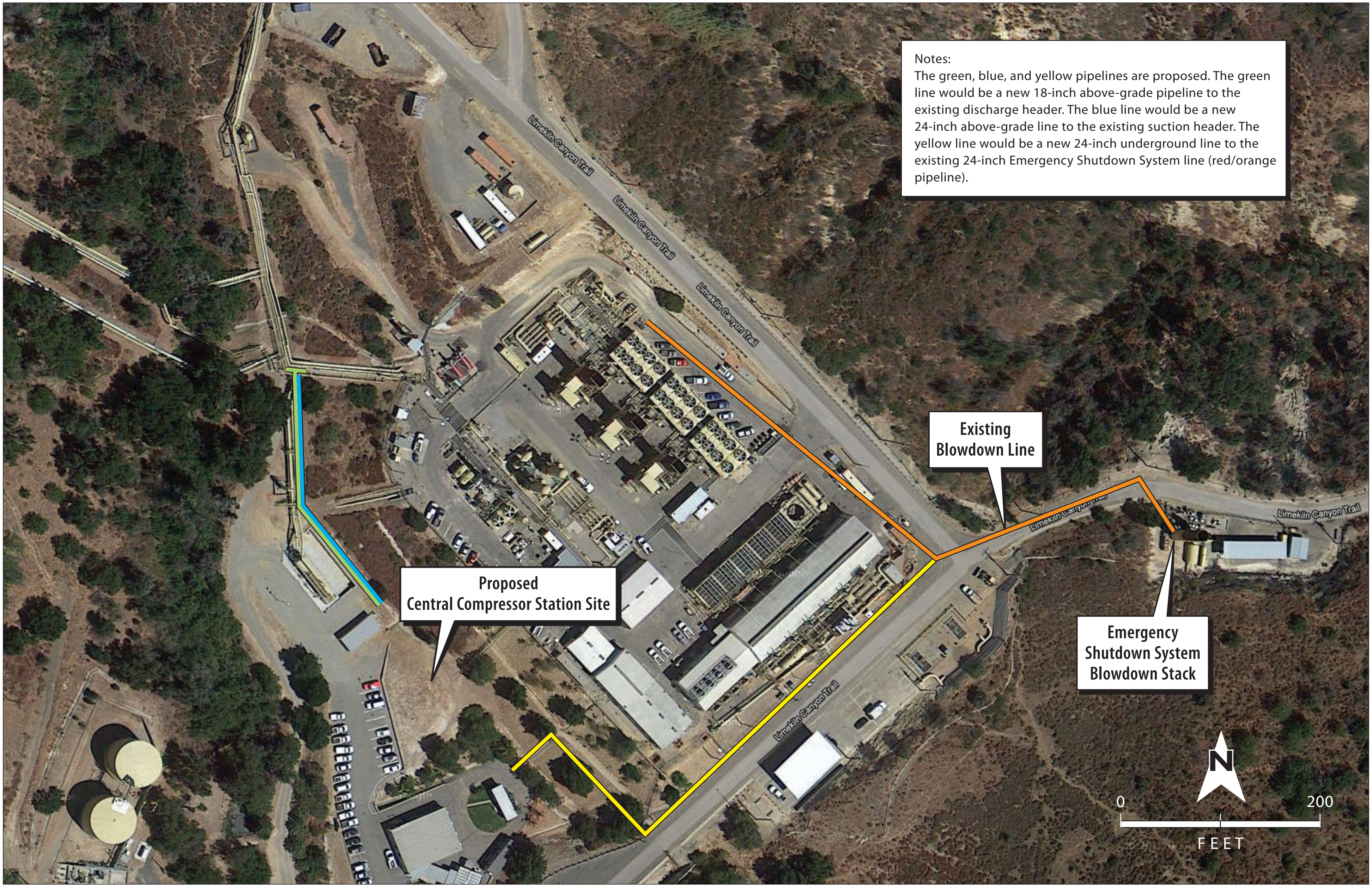

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Figure 2-3

New Pipelines to Connect the Proposed Central Compressor Station to Existing Facilities

Source: SoCalGas 2009–2012

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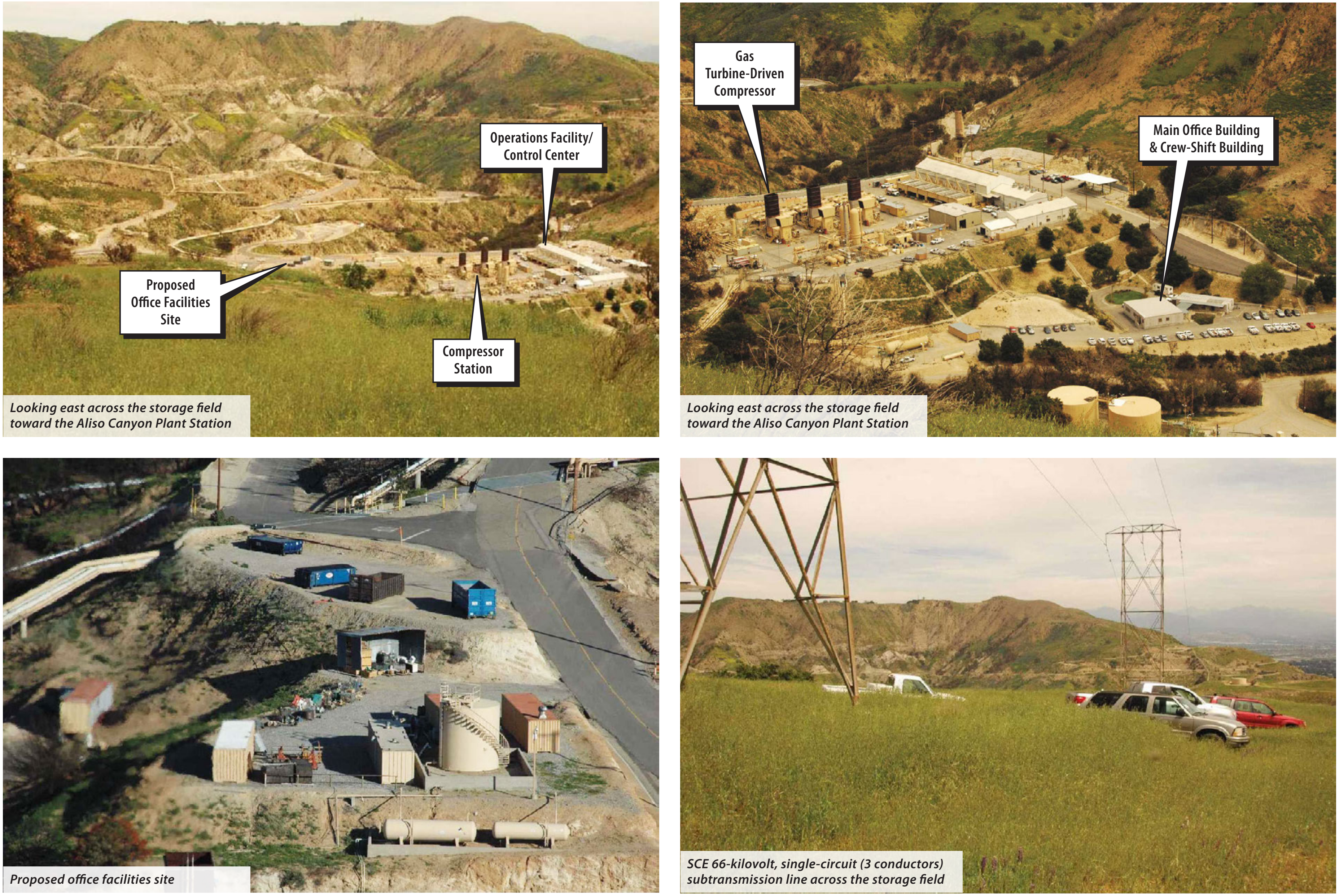
Figure 2-4

Existing and Proposed Guardhouses

Source: SoCalGas 2009–2012



Looking east across the storage field toward the Aliso Canyon Plant Station

Looking east across the storage field toward the Aliso Canyon Plant Station

Proposed office facilities site

SCE 66-kilovolt, single-circuit (3 conductors) subtransmission line across the storage field

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Figure 2-5

Existing Aliso Canyon Gas Storage Field Facilities and 66-Kilovolt Subtransmission Line

2.1.1 Storage Field Operations and Technical Details

At the storage field, natural gas is compressed and injected through injection wells into an underground storage reservoir during periods of low demand (generally in the summer season) and withdrawn during periods of peak demand (generally in the winter season). The depth of the storage zone ranges from 7,100 feet to 9,400 feet below surface level. The average depth of the wells is approximately 8,500 feet. Although well sizes vary, most of the wells have a 7-inch or 9-5/8-inch production casing. The maximum withdrawal rate of a well can be up to 80 million scf per day at peak field inventory and pressure.

The volume of daily, weekly, and monthly injections and withdrawals varies with utility customer demand and is subject to the volume, suitability of gas quality for delivery, and injection capabilities of the field. Water, sediment, oil, and liquid hydrocarbons~~, and other chemicals~~ are removed from the gas when it is withdrawn from storage.

The storage field includes 116 withdrawal/injection wells, two observation wells, six flood wells, and two water disposal wells. The existing withdrawal, injection, and observation wells would not be affected by construction of the proposed project, nor would new wells be constructed as part of the proposed project. Additionally, there are no abandoned wells on the proposed project site, and no well abandonments are planned as part of the proposed project.

2.1.1.1 Natural Gas Injection and Withdrawal

In a storage field such as Aliso Canyon, natural gas is injected through a pipeline into the ground for storage using powerful compressors to be used for the provision of natural gas utility service. The compressors are commonly driven by either electric motors or gas-turbine engines. The compression and injection of natural gas into the storage field is currently accomplished using three gas turbine–driven compressors. The compressors are driven by General Electric LM-1500 gas turbines, which were installed at the storage field in 1971. Each compressor ~~generates~~ is ISO rated at 15,000 horsepower and together are capable of compressing approximately 300 million scf of natural gas per day, with a maximum discharge pressure of approximately 3,000 *pounds per square inch, gauge*—the pressure of a system measured by a gauge relative to the surrounding atmospheric pressure. The drive mechanism for the withdrawal of natural gas from the underground reservoir is a *gas-cap drive*—energy for the withdrawal of natural gas is provided by the pressure and expansion of gas within the storage reservoir. No additional energy beyond the pressure within the reservoir is needed to withdraw natural gas.

Water, sediment, oil, and ~~other chemicals, including oil and other~~ liquid hydrocarbons ~~condensates,~~ may be withdrawn with the gas when it is taken from the reservoir. This “produced water” must be removed from the natural gas stream along with other impurities during the gas withdrawal process before the gas can be transported to utility consumers.

2.1.1.2 Electrical Power and Backup Generators

SCE’s 16-kV Gavin Distribution Line currently provides electrical power to the storage field. The distribution line crosses from the northeast corner of the storage field southwest toward the Plant Station site. The line originates at SCE’s Newhall Substation, but follows a separate alignment from the 66-kV subtransmission line that crosses east to west across the southern half of the storage field (Figure 2-1).

Four 500-kilowatt, 16-kV gas-driven generators are available to provide electricity if electrical power is lost at the storage field. ~~The generators provide enough electricity to run operational controls, natural gas processing (dehydration), and other support activities prior to discharging natural gas into delivery~~

~~pipelines. With the gas-driven generators and gas-turbine driven compressors, injection and withdrawal activities are able to continue operating at full capacity during a loss of electrical power to the storage field.~~ The number of generators continuously operating is dependent upon power requirements needed to provide electricity to the office, controls, and blackstart capacity for dehydration upon withdrawal and for the existing turbine driven compressors for compression.

2.1.2 Proposed Project Area

The proposed project area includes the 3,600-acre storage field in unincorporated Los Angeles County and the City of Los Angeles. It also includes the segments of the 66-kV subtransmission lines to be reconductored and ~~fiber optic~~ telecommunications cable installations within the storage field property boundary, in the Cities of Los Angeles and Santa Clarita, and in unincorporated areas in the County of Los Angeles and County of Ventura, California (Figure 2-1). The proposed project area also includes SCE's Chatsworth Substation in unincorporated Ventura County,[3] Newhall Substation in the community of Newhall in the City of Santa Clarita, and San Fernando Substation in the community of Mission Hills in the City of Los Angeles. The ~~fiber optic~~ telecommunications cable installations would also cross the City of Simi Valley and community of Simi Hills in the County of Ventura; City of San Fernando in the County of Los Angeles; and the community of Sylmar in the City of Los Angeles. The primary construction staging area for reconductoring activities would likely be located at SCE's Pardee Substation, in the City of Santa Clarita.

2.1.3 Reconductoring and Telecommunications Route Locations

Reconductoring and ~~fiber optic~~ telecommunications cable installations along SCE's 66-kV Segments A, B, and C would occur within SCE's right-of-way (ROW) on the storage field site, in the Cities of Los Angeles and Santa Clarita, and in unincorporated Los Angeles County (Figure 2-6). Segments A and B form an existing double-circuit, 66-kV line from Newhall Substation that would be reconductored and remain a double-circuit line.[4] Segment C~~A~~, from Tap Point A to the proposed Natural Substation, is a single-circuit line that would be reconductored. New ~~fiber optic cable~~ optical ground wire would also be installed on Segments A, B, and C (Telecommunications Route #1).[5]

Segments A and B would be located within the community of Newhall in the City of Santa Clarita. The community of Newhall extends south through parts of unincorporated Los Angeles County. The southwest section of Segment C would be on the storage field site. The northeast section of Segment C would traverse the Sunshine Canyon Landfill and unincorporated areas of Los Angeles County.

Fiber optic cable would be installed from Chatsworth Substation northeast to the proposed Natural Substation. The installation would begin in the Simi Hills area of unincorporated southeastern Ventura County (Telecommunications Route #2). The fiber optic cable would cross into the southeast corner of the City of Simi Valley, the northwest border of the City of Los Angeles, and then unincorporated western Los Angeles County. Within unincorporated Los Angeles County, it would extend north into the storage field site to the proposed Natural Substation (Figure 2-7).

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[3] The Chatsworth Substation is located on SCE property within the larger Boeing Rocketdyne Santa Susana complex.

[4] Segments A and B~~C~~ form a double-circuit, alternating-current subtransmission line with six conductors (three conductors on each side of each structure supporting the line). Each set of three conductors forms one *circuit*.

[5] Optical ground wire is composed of one or more optical fibers surrounded by layers of conductor wire. It combines the functions of electrical grounding and telecommunications within one cable.

Source: SoCalGas 2009–2012

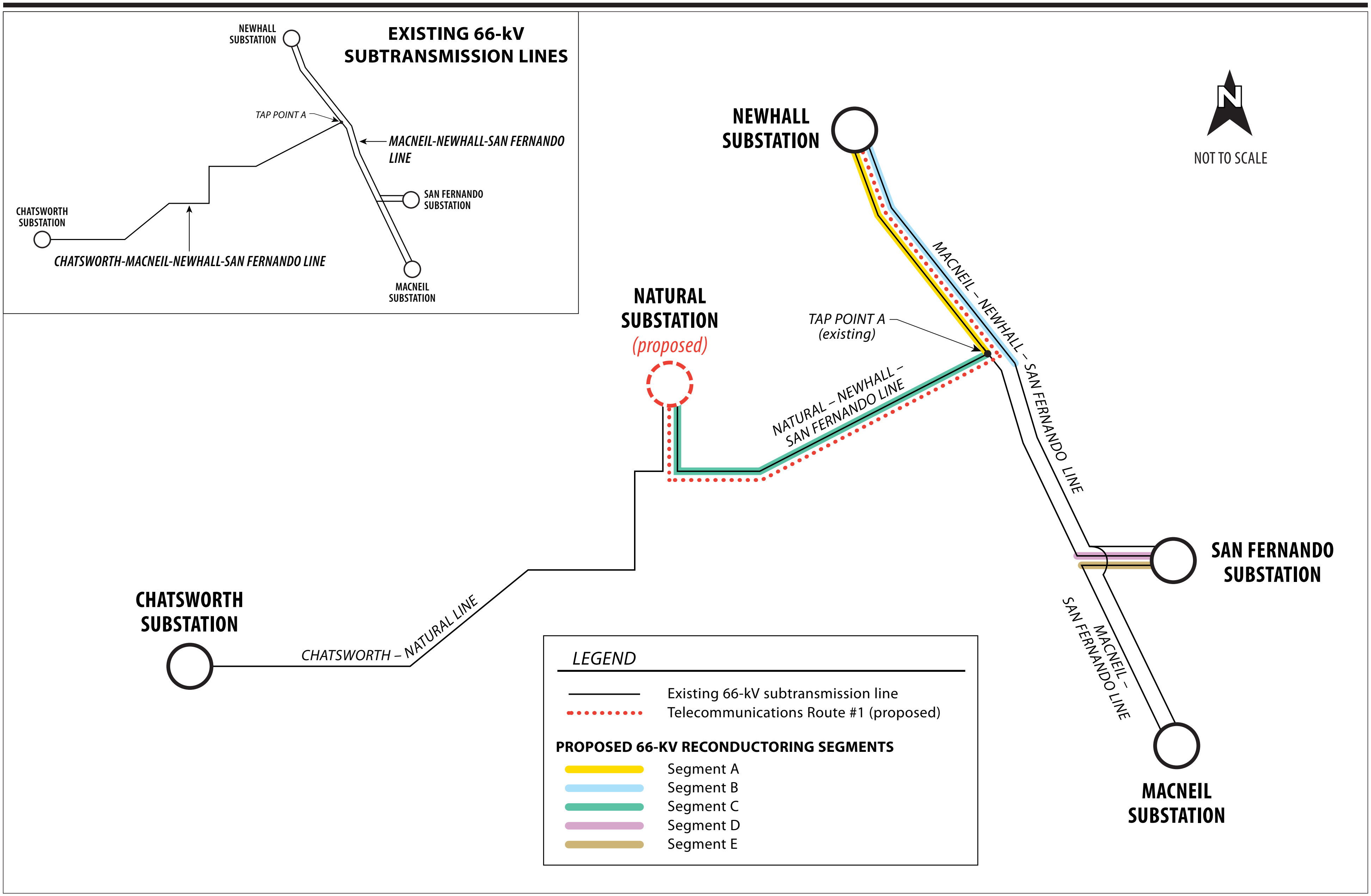

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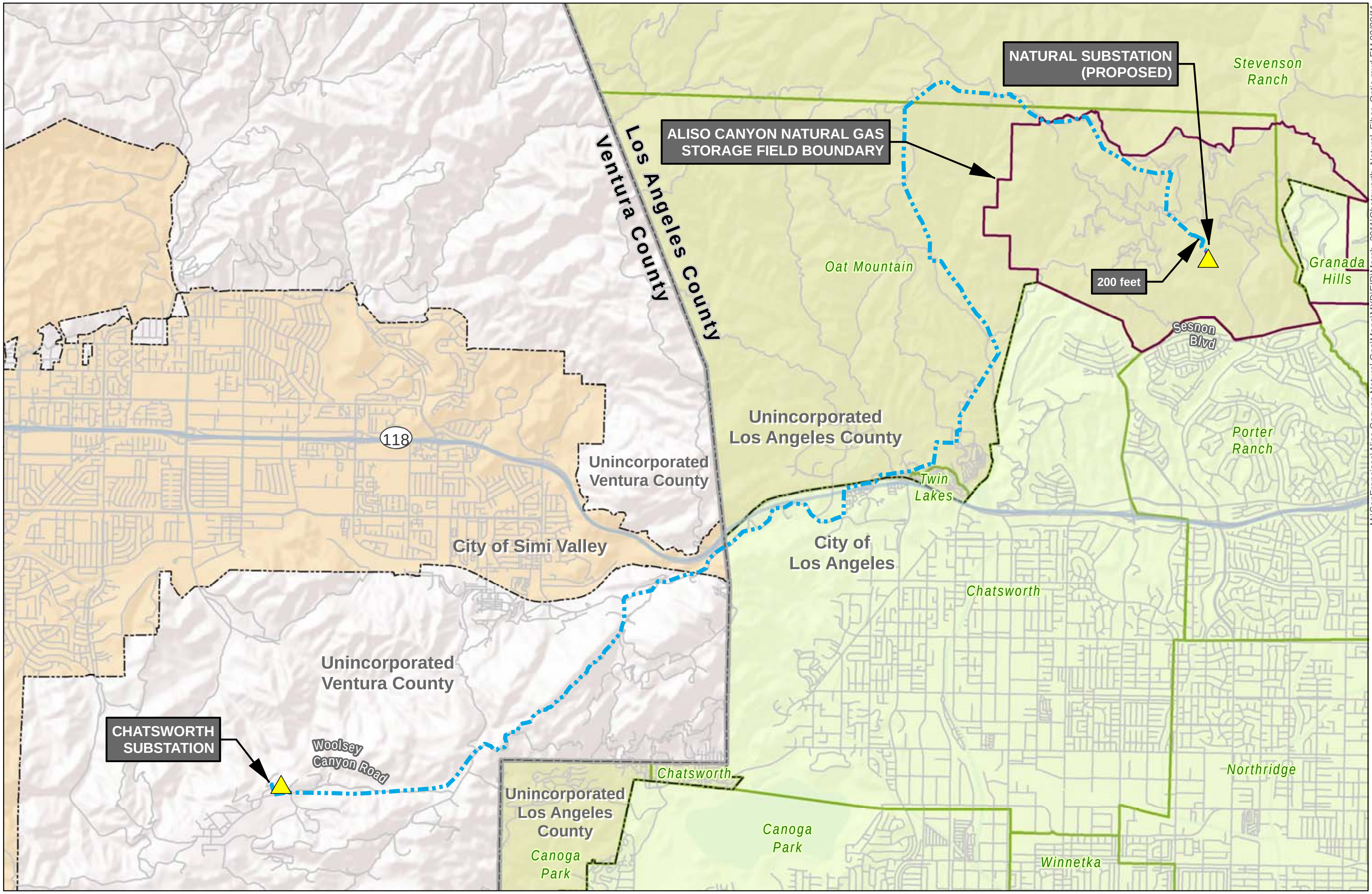
Figure 2-6

Existing 66-kV Subtransmission Lines, 66-kV Reconductoring Segments, and Telecommunications Route #1



SOURCES: ESRI 2010, SoCalGas 2009 to 2012

Proposed Overhead Fiber Optic Cable/ Underground in Existing Conduit

Proposed Underground Fiber Optic Cable in New Conduit

Figure 2-7

Telecommunications Route #2: Chatsworth Substation to Proposed Natural Substation

0 1 Miles

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Reconductoring of SCE's double-circuit, 66-kV Segments D and E would take place in the community of Mission Hills in the City of Los Angeles. ~~The~~ Two fiber optic cable installations are proposed ~~route~~ from San Fernando Substation: Telecommunications Routes #3 and #4. Telecommunications Route #3 would extend northeast from the substation to a fiber optic connection point within the ROW of an existing SCE 220-kV subtransmission line corridor. It~~,~~ would traverse northeast from the substation within the community of Mission Hills in the City of Los Angeles, through ~~into~~ the City of San Fernando~~,~~ and into ~~then~~ the community of Sylmar in the City of Los Angeles ~~(Telecommunications Route #3)~~(Figure 2-8).

Telecommunications Route #4 would extend northeast from San Fernando Substation along the same path as Telecommunications Route #3, but would be routed northwest at Truman Street in the City of San Fernando. Telecommunications Route #4 would follow Truman Street through the community of Sylmar to where it merges with San Fernando Road, and it would then continue northwest along San Fernando Road to a fiber optic connection point located at the entrance to Sunshine Canyon Landfill (Figure 2-8). The fiber optic line would be installed on existing overhead wood poles owned by SCE and the Los Angeles Department of Water and Power, and in new underground conduit in several locations, including new underground conduit that would cross under I-5. One new 45-foot-tall wood telecommunications pole would be installed along Telecommunications Route #4 just west of I-5 and Interstate 210 (I-210) at the intersection of San Fernando Road and Sepulveda Boulevard.

2.2 Components of the Proposed Project

2.2.1 Central Compressor Station

The proposed project would include the installation of electric motor–driven compressors with variable-speed drivers, to replace the existing gas turbine–driven compressors.

The proposed compressors would be installed at a new Central Compressor Station, which would be approximately 26,500 square feet (Figure 2-2). The proposed Central Compressor Station enclosures would house three new electric-driven, variable-speed compressors, as well as scrubbers (which remove impurities from the gas), piping, coolers, and electrical equipment (Figure 2-9). The station would be constructed in an area that includes the existing office buildings and parking within the footprint of the Plant Station site (Figure 2-2). The office buildings would be removed to allow for construction of the Central Compressor Station. The Central Compressor Station would not be visible from residential properties outside the storage field property line.

The proposed Central Compressor Station site would be fenced and paved for access control, fire control, and maintenance purposes. The station enclosures would be painted and have no reflective surfaces, but permanent nighttime lighting would be installed.

2.2.1.1 Electric-driven, Variable-speed Compressors

The three electric-driven, variable-speed compressors installed in the proposed Central Compressor Station would each have approximately 22,000 horsepower for a combined maximum output of approximately 66,000 horsepower. Combined, the compressors would be capable of compressing a total of approximately 450 to 600 million scf of natural gas per day. The maximum discharge pressure of the gas injected into the reservoir would be approximately 3,400 pounds per square inch, gauge.

SOURCES: ESRI 2010, SoCalGas 2009 to 2012

- Proposed 66-kV Subtransmission Line Reconductoring Route
- Proposed Underground Fiber Optic Cable in New Underground Conduit (feet)
- Telecommunications Route #3 (overhead fiber optic line)
- Telecommunications Route #4 (overhead fiber optic line)
- New Wood Telecommunications Pole (45-feet tall)

Figure 2-8
Telecommunications Routes #3 and #4:
San Fernando Substation to
Fiber Optic Connection Points

0 0.25 0.5 1 Miles

N

Source: SoCalGas 2009–2012

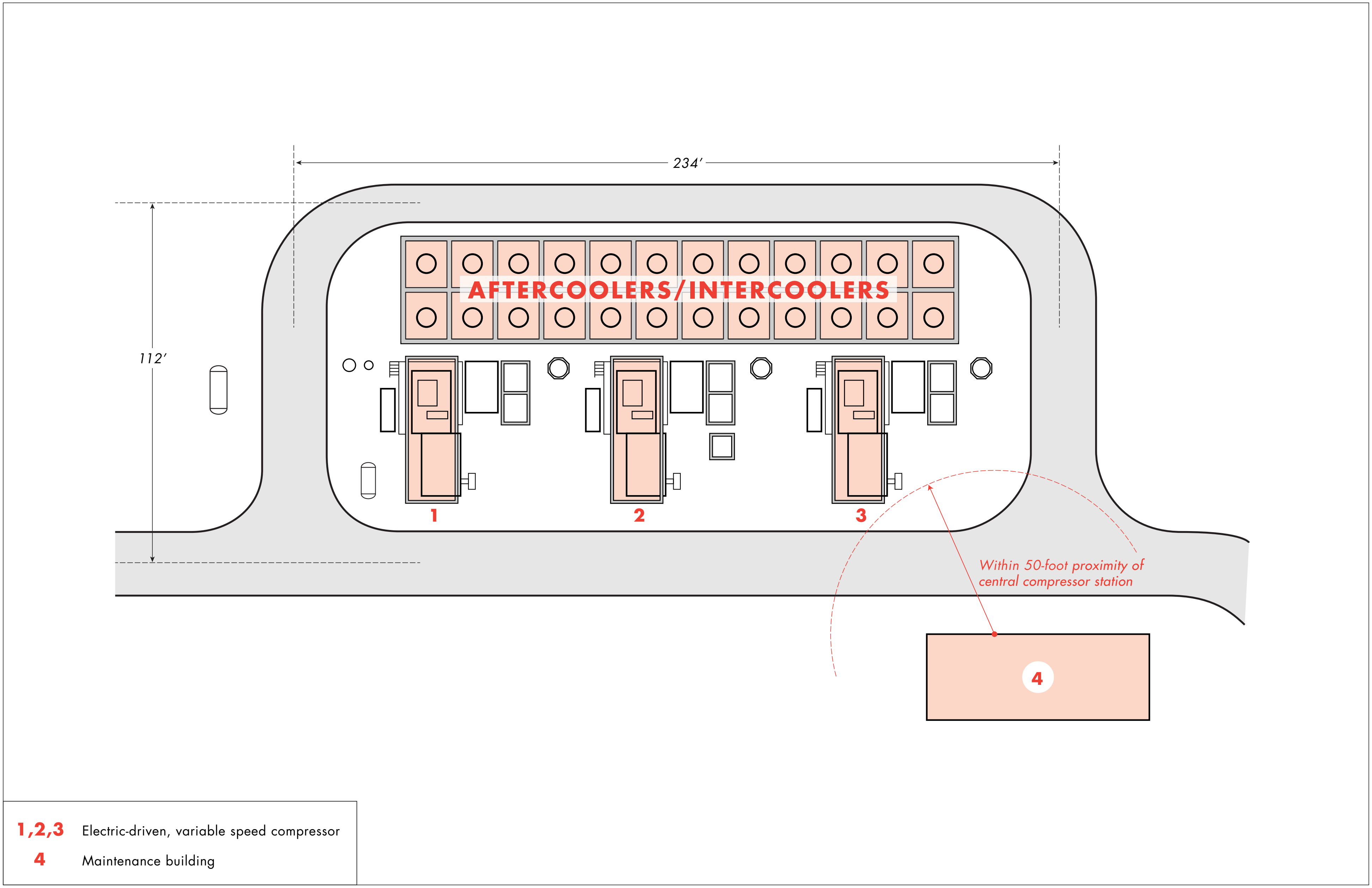

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Figure 2-9

Central Compressor Station

Installation of the compressors would not affect the existing storage reservoirs, withdrawal/injection wells, storage-field pressure levels, and other storage field facilities and parameters. The compressors would be installed to operate using the existing injection and withdrawal wells but would require new pipeline segments to connect them to the existing suction, discharge, and blowdown headers, and the existing emergency shutdown system.

2.2.1.2 Metering, Control, Safety, and Pressure Relief

Metering refers to ~~monitoring~~ the measurement of the flow rate of natural gas withdrawal and injection. Metering and control of the three new electric-driven, variable-speed compressors would be conducted from the ~~existing~~ new, onsite operations facility at the Plant Station site. The control system installed with the proposed compressors would be connected to the existing Supervisory Control and Data Acquisition system in the existing operations facility. Telemetry equipment would be installed as required to allow for operation of the proposed compressors from the existing operations facility.

Redundant safety systems would be installed at the proposed Central Compressor Station, as further described in Section 4.8, “Hazards and Hazardous Materials.” Gas and fire sensors would monitor all equipment and automatically shut down the facility if unusual conditions are detected.

Pressure relief along compressor station pipelines is necessary for safe operation. Regular and emergency *blowdowns*—events of pressure release through valves or vents—provide for some of this pressure relief. During normal operations, sectional piping is usually blown down whenever a compressor unit shuts down. In addition, abnormal emergency conditions trigger activation of emergency shutdown valves and initiate a controlled blowdown of the entire facility. Both of these types of blowdowns rapidly depressurize the piping and equipment in a controlled manner. Depressurization is also accomplished via pressure safety valves. These valves activate only when the pressure exceeds a pre-set level on piping. In normal operating mode and even under the first level of alarm mode, in which the emergency shutdown valves are activated, the pressure safety valves do not open.

Operations Facility/Control Center

The existing control room at the operations facility on the Plant Station site includes a system of personal computers and programmable logic controllers that provide for automation of control and monitoring functions as well as data collection, recording, and storage. The system provides continuous monitoring of critical system parameters and, once connected to the proposed Central Compressor Station, would have the ability to shut down the proposed station if operating conditions exceed preset safety parameters.

The system is connected to the graphic display monitors at the operator’s console. Operators would provide valve line-up and sequencing for gas movement between the proposed Central Compressor Station and storage field pipelines. Operators regularly inspect the condition and operation of equipment and facilities prior to and during start-up operations.

2.2.1.3 New Pipelines

Approximately 550 feet of new 18-inch pipeline would be installed to connect the three proposed electric-driven compressors to the existing discharge header, and approximately 550 feet of new 24-inch pipeline would be installed to connect the proposed compressors to the existing suction header. In addition, approximately 600 feet of new 24-inch pipeline would be needed to connect the compressors to the existing emergency shutdown system. The pipelines would be installed above grade on pipe supports or buried below grade ~~in existing trenches~~ (Figure 2-3). The pipeline materials would be constructed of a high strength steel pipe and would be cathodically protected for corrosion control. Pipelines would have a factory-applied external protective coating, and field welds and connections would be coated or wrapped in a similar way. Pipeline wall thickness would be determined by the operating pressures in accordance with applicable codes and regulations.

The pipelines would be installed using a cut-and-cover approach, which entails excavating a trench, installing sections of pipeline into the trench, and backfilling the trench. Trenching would be conducted by tracked backhoes or ditchers, and would begin by removing the topsoil over the trench and segregating it at the edge of the construction area for replacement following construction. The trench would be a maximum of 5 feet wide and up to 6 feet deep to ensure cover over the pipeline.

On completion of pipeline construction, the pipeline would be hydrostatically tested. Test water would be analyzed for potential contaminants prior to testing; depending on its quality, the water would be either discharged upland or trucked to an appropriate offsite facility.

2.2.2 Existing Compressor Station and Gas Turbine-driven Compressor Decommissioning

The existing compressor station and foundation on which the gas turbine–driven compressors are located would be removed and the site would be leveled to grade. The compressors would be decommissioned and removed from the storage field in a manner that would still allow for continuous reliable service. This would include maintaining the existing gas turbine–driven compressor station for at least one *field cycle* of tested reliable service using the new electric-driven, variable-speed compressors to verify reliable and efficient operation of the new equipment.[6]

2.2.3 Office and Crew-shift Buildings

Prior to construction of the Central Compressor Station, new office facilities would be completed, and the existing office facilities at the Plant Station site would be removed. The existing 3,000-square-foot main office and 1,500-square-foot crew-shift buildings are located on the southern part of the Plant Station site (Figure 2-2). The existing office structures (modular trailer facilities) would be decommissioned and removed from the storage field once the proposed office buildings are operational.

~~Several new office buildings are proposed for construction within the northern part of the Plant Station site: a 4,500-square-foot office building, two archive storage sheds totaling approximately 1,500 square feet, and a 1,600-square-foot crew-shift building (for a total of 7,600 square feet of new office facilities).~~ Two main buildings are proposed for construction within the northern part of the plant station. The existing 4,500-square-foot modular office and the two archive storage sheds, totaling 1,500 square feet, would be replaced by one new steel office building with a 6,000-square foot footprint. The existing 1,600-square foot modular crew shift building would be replaced with a new steel crew shift building with a 1,600-square foot footprint. The archive storage sheds would contain material that is required to be kept onsite, and is currently stored on the future Central Compressor Station site, which would need to be relocated prior to installation of the new compressors. The buildings would be constructed of steel (structural components, roofing, and siding), built at grade level (without raised foundations), and have

[6] A complete field cycle typically lasts 12 months and includes one injection season of six months (typically April through September) and one withdrawal season of six months (typically October through March).

pitched roofs. The buildings would be constructed at the storage field site (not delivered as with modular trailer facilities).

Outdoor lighting installed for the proposed office facilities would be controlled by photocells that would automatically turn on at night and go off during the day. Lighting inside the office facilities would be controlled automatically by occupancy sensors. The exterior color of the office facilities would match the other structures located on the Plant Station site. The proposed office facilities would not be visible from residential properties in the vicinity of the storage field site.

2.2.4 Guardhouse and Entry Road Widening

A new, 164-square-foot guardhouse and access gate would be constructed within the storage field property boundary approximately ~~500~~ 200 feet north of the existing guardhouse, which currently provides vehicle entry to the storage field along Tampa Avenue/Limekiln Canyon Road from Sesnon Boulevard (Figure 2-4). The proposed new guardhouse would improve traffic flow into the storage field by allowing more vehicles to turn onto the road into the storage field while they are being processed for admission into the storage field. The existing guardhouse would remain in place for use as an additional entry-monitoring station. Signage for the storage field would also remain in place at the existing guardhouse site.

The proposed guardhouse would be approximately 8 feet wide by 20 feet long, and the color would match that of the existing guardhouse. Exterior lighting would be controlled automatically by photocells and would comply with lighting requirements of the California Building Standards Code (California Code of Regulations, Title 24). Lighting inside the guardhouse would be controlled automatically by occupancy sensors. A restroom would be installed inside the proposed guardhouse.

The proposed road widening in the area of the existing guardhouse would allow two-lane ingress into the storage field. The entry road into the storage field (a private road) from Sesnon Boulevard (Tampa Avenue/Limekiln Canyon Road) would be widened by 12 feet for approximately ~~500~~ 300 feet leading up to the proposed guardhouse site. Delivery trucks would be able to line up for entry using one lane, and other vehicles would be able to enter using the second lane without being delayed by delivery truck check-in procedures. This would help alleviate truck congestion at the intersection of Tampa Avenue and Sesnon Boulevard. Construction activities for road widening would cross from the City of Los Angeles into unincorporated Los Angeles County (Figure 2-4).

2.2.5 12-kV Plant Power Line

The 12-kV Plant Power Line would be constructed on the proposed project site by the applicant to provide electrical service from the proposed Natural Substation to the Central Compressor Station (Figure 2-2).

The Plant Power Line would be approximately ~~1,200~~ 1,800-feet long. Three tubular steel poles (TSPs) would be installed to support the Plant Power Line: one at the proposed Natural Substation, one at the proposed Central Compressor Station, and one at the mid-point between the substation and compressor station. The poles would be between 100 and 120 feet high depending on the precise location, which would be determined during final engineering design for the proposed project.

2.2.6 Natural Substation

The Natural Substation would be constructed by SCE. The "open-air" design for the substation would include a foundation, equipment pads, switchracks, transformers (which would not be enclosed), capacitor banks, and a Mechanical and Electrical Equipment Room (Table 2-1) (Figure 2-10). It would be approximately 46,500 square feet. The purpose of the substation would be to provide electrical power to the three new electric-driven, variable-speed compressors and the storage field. Initial construction of the substation would include the installation of two 28 MVA transformers; space would also be available on the substation site capable of carrying ~~for the installation of~~ two spare ~~additional~~ 28 MVA transformers ~~(for a total of 112 MVA)~~, if needed in the future (Figure 2-10). Approximately 880 square feet on the substation site would be available to house the additional transformers and related equipment. The additional transformers could be installed quickly if the current transformers need to be replaced immediately without removing the existing transformers, reducing any downtime that might be experienced by the Plant Station in the event of a transformer ~~substation~~ failure. The applicant and SCE do not anticipate a need to use this additional space in the foreseeable future.

Table 2-1 Natural Substation Equipment Descriptions

Equipment	Description
66-kV Switchrack and Capacitor Bank	The 66-kV switchrack would be approximately 120 feet long, 65 feet wide, and 17 feet high. It would be an open-air construction and have six positions; five 66-kV circuit breakers; and one 66-kV capacitor bank.
12-kV Switchracks	The two 12-kV switchracks would be 36 feet long, 12 feet wide, and 17 feet high each. Each switchrack would accommodate up to two line positions.
28 MVA Transformers	The initial build of the Natural Substation would include the installation of two 28 MVA, 66/12-kV transformers. Space would be available for the installation of up to two spare ~~additional~~ 28 MVA transformers ~~(for a total of 112 MVA)~~ if needed in the future. Each transformer would be equipped with a group-operated isolating disconnect switch on the high- and low-voltage side, surge arresters, and neutral current transformers. Each transformer and ancillary equipment would occupy an area approximately 40 feet long, 30 feet wide, and 15 feet high.
Mechanical and Electrical Equipment Room	A pre-fabricated steel Mechanical and Electrical Equipment Room would be erected and equipped with air conditioning, control and relay panels, battery and battery charger, alternative current and direct current distribution panels, human machine interface rack, communication equipment, telephone, and alarm system. Control cable trenches would connect the room to the 66-kV and 12-kV switchracks. The room would be 36 feet long, 20 feet wide, and 12 feet high.

Source: SoCalGas 2009, ~~2011~~2012
Notes:
kV = kilovolt
MVA = megavolt ampere

The substation would be unstaffed, automated, and low profile (equipment height would be limited to 17 feet). It would be located approximately 1,200 feet west of the proposed Central Compressor Station site on elevated terrain (Figure 2-2).

2.2.6.1 Substation Telecommunications System

The proposed Natural Substation would contain telecommunications equipment to connect to SCE's existing telecommunication system. Fiber optic cable and relay protection equipment would be installed in the Mechanical and Electrical Equipment Room within the substation. SCE would provide two bidirectional 64-kilobit~~yte~~-per-second digital channels (C37.94) for each new 66-kV line terminal.

Source: SoCalGas 2009–2012

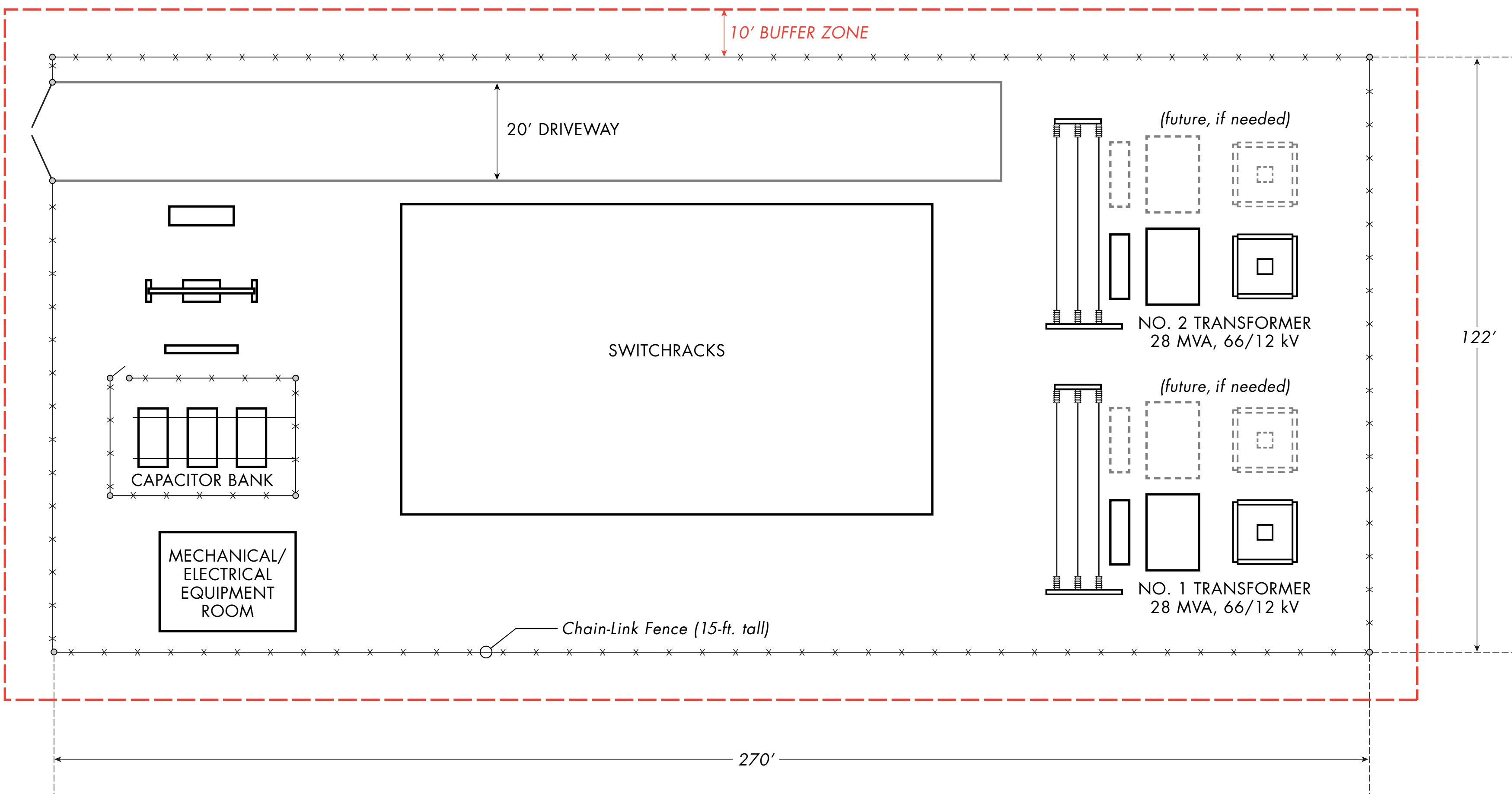

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Figure 2-10

Natural Substation

2.2.6.2 Substation Security

The proposed Natural Substation would be enclosed by a chain-link fence made of galvanized steel that would be up to 8 feet tall and topped with double barbed wire. A 20-foot-wide double gate would be installed at the substation entrance. A safety light would be installed on the gate, which would activate when the gate is opened.

High-pressure sodium, low-intensity lights would be installed on the high side and low side of the switchracks, around the transformer banks, and in areas where operations and maintenance activities may take place during evening hours for emergency or scheduled work. The lights would be controlled by a manual switch that would normally be in the off position. The lights, typically mounted at a height of 7.5 feet, would be directed downward to reduce glare outside the substation. No landscaping or aesthetic improvements are planned for the proposed substation.

2.2.6.3 Expansion of SCE's Easement Rights on the Storage Field

The proposed SCE Natural Substation site and a segment of SCE's existing 66-kV subtransmission lines are located within the storage field property boundary. Approximately 300 feet of the existing easement for the 66-kV subtransmission line would be amended (or a new easement would be granted) to allow for a widening of the area where SCE has easement rights from 50 feet to approximately 150 feet. The enlarged easement would be granted by the applicant to SCE to accommodate the proposed Natural Substation.

2.2.7 66-kV Subtransmission Line Reconductoring

Reconductoring of segments of an existing 66-kV subtransmission line would be completed by SCE. Reconductoring and pole replacement for 66-kV Segments A and B would originate at the Newhall Substation (Figure 2-6). The reconductoring route would follow the existing ROW from the Newhall Substation toward Interstate 5 (I-5) south to the existing SCE Chatsworth tap (Tap Point A), which is located 4.2 miles south of the Newhall Substation.[7] From Tap Point A, Segment C would extend southwest to the proposed Natural Substation. Segment C would be looped into the proposed Natural Substation.

Segment C from the proposed Natural Substation would connect from Tap Point A to Segment A to create the Natural–Newhall–San Fernando 66-kV Subtransmission Line. The subtransmission line between the proposed Natural Substation and existing Chatsworth Substation would be called the Chatsworth–Natural 66-kV Subtransmission Line. The line from Newhall Substation to San Fernando Substation, which includes Segments B and D, would be called the MacNeil–Newhall–San Fernando 66-kV Subtransmission Line.

Along Segment D and E, the existing Chatsworth–MacNeil–Newhall–San Fernando 66-kV line~~s~~ from ~~MacNeil~~ Newhall Substation to ~~San Fernando~~ MacNeil Substation would be looped through San Fernando Substation on new conductor in proximity to San Fernando Substation and would create the new Natural–Newhall–San Fernando and MacNeil–San Fernando ~~to create the MacNeil–San Fernando No. 1 and MacNeil–San Fernando No. 2~~ 66-kV subtransmission lines. The length of each 66-kV segment and the number of structures to be replaced are provided in Table 2-2.

[7] A *tap* can be installed to make an additional electrical connection in the middle of a subtransmission line without constructing a substation or switchyard facility. The structure supporting the tap would have electrical conductors extending in three directions from the tap point.

Table 2-2 66-kV Reconductoring and Structure Replacement

66-kV Route Segment	Route Length	Existing Structures	New/Replacement Structures
~~Segment A/B (double circuit)~~ Segment C (single circuit)	3.9 miles	22 LSTs, H-frame, and 3-pole structures[(a)]	28 TSPs
Segment A/B (double circuit) ~~Segment C (single circuit)~~	4.2 miles	38 LSTs, TSPs, and wood poles	45 TSPs
Segment D (double circuit)	350 feet	2 LSTs	2 TSPs
Segment E (double circuit)	350 feet	2 LSTs	3 TSPs
Total	8.2 miles	64 structures	78 TSPs[(b)]

Source: SoCalGas 2009, ~~2011~~2012
Notes:
kV = kilovolt
LST = lattice steel tower
TSP = tubular steel pole
(a) Each H-frame structure is composed of two, side-by-side wood poles or lightweight steel poles.
(b) Additional poles may be required to maintain ground and conductor clearances. The exact number of TSPs to be installed would be determined during final engineering.

2.2.7.1 New Conductor

For Segments A, B, and C, the existing American Wire Gauge size 4/0 Copper and Aluminum Conductor Steel Reinforced (ACSR) 336.4 and 653.9 conductors would be replaced with ACSR 954 non-specular conductors. Polymer insulators would also be installed.[8,9] For Segments D and E, the existing ACSR 336.4 conductor would be replaced with approximately 1,000 feet of 954 ACSR conductor on four new TSPs within and near the existing San Fernando Substation.

2.2.7.2 Structure Replacement

The existing lattice steel tower, TSP, 3-pole, and *H-frame structures*—side-by-side wood or lightweight steel poles—along Segments A, B, and C would be replaced with TSPs capable of supporting the weight of the proposed conductor (Figure 2-11). The TSPs would be between 55 and 150 feet high depending on site survey information and site evaluation for final engineering. Because the terrain varies along the 66-kV routes, each TSP would be specifically designed and engineered for each installation location. The proposed TSPs are not anticipated to require guywires because they would be engineered as self-supporting structures. The span length between TSPs would be based on the location of each TSP, which would be determined during final engineering.

SCE would file the necessary Federal Aviation Administration (FAA) Form 7460 for structures (poles/towers/conductors) that exceed notification requirements outlined in FAA Part 77. SCE would file the form upon completion of final engineering and prior to construction per FAA Part 77. If conductor or TSP heights would reach more than 200 feet above ground level, marker balls or lights would be installed on the conductor or TSP if required by the FAA.

8 ACSR 954 conductor is composed of 45 aluminum strands and 7 ACSR strands. The conductor has a diameter of 1.165 inches.

9 Polymer insulators are hydrophobic (repel water) and minimize the accumulation of surface contaminants, such as soot and dirt, which in turn, reduce corona noise.

Source: SoCalGas 2009–2012

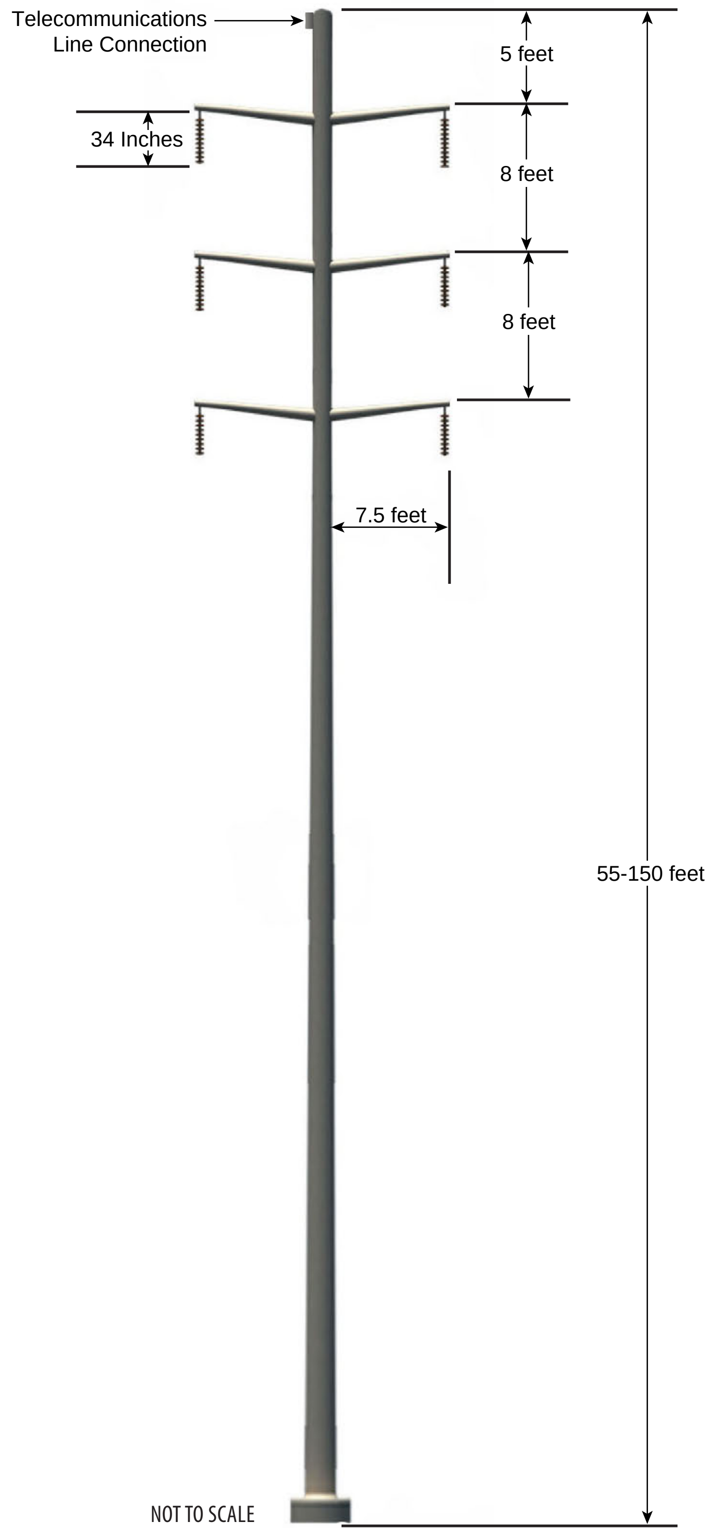

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Figure 2-11

Tubular Steel Pole

At Segment D, two of the existing lattice steel towers (LSTs) are located on the premises of Bishop Alemany High School, just north of the San Fernando Substation. The LSTs would be replaced with TSPs. The number of structures on the Bishop Alemany High School site, however, may be reduced from two LSTs to only one TSP pending final engineering design.

At Segment E, an LST is located in Brand Park, just south of San Fernando Substation. This LST would be replaced with a TSP. In addition, one LST within San Fernando Substation would be replaced with two TSPs. Each of the LSTs and TSPs for Segments D and E are located within 350 feet of the substation and are within an SCE ROW.

The TSPs installed as part of the proposed project would have a de-glared hot dipped galvanized finish and all conductors would be non-specular. The types and heights of existing structures along the proposed 66-kV subtransmission line reconductoring routes are listed in Table 2-3 and shown in Appendix D. For the purpose of this environmental impact report (EIR), it is assumed that all 64 existing structures would be replaced.

Table 2-3 Existing 66-kV Subtransmission Line Structures

Structure Number	Structure ID Number	Existing Height (feet)	Existing Type
1.	4205197E	60	TSP
2.	4205198E	55	TSP
3.	1927400E	60	TSP
4.	M3-T4	60	LST
5.	M3-T5	60	LST
6.	M3-T6	60	LST
7.	M3-T7	60	LST
8.	M3-T8	60	LST
9.	M3-T9	40	LST
10.	M4-T1	60	LST
11.	M4-T2	60	LST
12.	M4-T3	50	LST
13.	417603E	61	WP
14.	M4-T5	70	LST
15.	M4-T6	97	LST
16.	M4-T7	76	LST
17.	M4-T8	70	LST
18.	M4-T9	82	LST
19.	M4-T11	40	LST
20.	M5-T1	50	LST
21.	M5-T2	50	LST
22.	M5-T3	65	LST
23.	M5-T4	60	LST
24.	M5-T5	30	LST
25.	M5-T6	74	LST
26.	M5-T7	74	LST
27.	M5-T8	74	LST
28.	M5-T9	74	LST
29.	M6-T1	88	LST
30.	M6-T5	88	LST
31.	M6-T6	50	LST
32.	M6-T7	84	LST

Table 2-3 Existing 66-kV Subtransmission Line Structures

Structure Number	Structure ID Number	Existing Height (feet)	Existing Type
33.	M6-T8	74	LST
34.	M7-T1	70	LST
35.	M7-T2	70	LST
36.	M7-T3	94	LST
37.	M7-T5	109	LST
38.	M7-T6	106	LST
39.	4452278E, 4452279E	97 and 97	LWS / H-frame (2 Poles)
40.	4452276E, 4452277E	88 and 98	LWS / H-frame (2 Poles)
41.	4320812E, 4320813E, 4320814E	61, 61, and 65	3 Wooden Poles
42.	4476885E, 4476886E, 4513741E	88, 88, and 88	LWS ~~/ H-frame~~ (~~2~~ 3 Poles)
~~43.~~	Structure #43 was removed in January 2011 because of a landslide, and Structure #44 was replaced. ~~4476887E, 4476888E~~	~~88 and 88~~	~~WP / H-frame (2 Poles)~~
44.	4539201E, 4539202E, 4539203E~~4476889E, 4476890E, 447689XE~~	84, 84, and 84 ~~70, 70, and 70~~	3 Wooden Poles
45.	4476891E, 4476892E	65 and 65	WP / H-frame (2 Poles)
46.	4476893E, 4476894E	57 and 57	WP / H-frame (2 Poles)
47.	M15-T1	50	LST
48.	M14-T6	50	LST
49.	M14-T5	66	LST
50.	M14-T4	73	LST
51.	M14-T3	50	LST
52.	M14-T2	50	LST
53.	M14-T1	59	LST
54.	M13-T3	59	LST
55.	M13-T2	50	LST
56.	M13-T1	66	LST
57.	M12-T5	80	LST
58.	M12-T4	59	LST
59.	M12-T3	52	LST
60.	M12-T2	50	LST
61.	M13-T1	60 [a]	LST
62.	M13-T2	60 [a]	LST
63.	M0-T1	60 [a]	LST
64.	M0-T2	60 [a]	LST

Source: SoCalGas 2009, ~~2011~~2012

Key:

kV = kilovolt
LST = lattice steel tower
LWS / H-frame = H-frame structure composed of lightweight steel poles
LWS = lightweight steel (pole)
TSP = tubular steel pole
WP / H-frame = H-frame structure composed of wooden poles
WP = wooden pole

Note:

a. TSPs installed near the San Fernando Substation would be between 60 and 85 feet tall.

2.2.7.3 Sunshine Canyon Landfill

Approximately 4,200 feet of the reconductoring route from Tap Point A to the proposed Natural Substation would cross the Sunshine Canyon Landfill, which is located approximately 1 mile east of the proposed project site (Figure 2-1). An expansion of the Sunshine Canyon Landfill was approved in 2009 (Cipley 2011) that requires relocation of a section of SCE's Chatsworth–MacNeil–Newhall–San Fernando 66-kV Subtransmission Line that crosses the Sunshine Canyon Landfill, referred to as Segment C in this EIR (Figure 2-6). The subtransmission line would be relocated from the current alignment within the landfill to a location that runs along the outer perimeter of the disturbed area of the landfill, within the County of Los Angeles.

~~Relocation of the subtransmission line would require approval by the CPUC.~~ SCE ~~will~~has filed ~~file~~ a separate Permit to Construct application with the CPUC (which the CPUC ~~will~~ is evaluating~~e~~ pursuant to CEQA separate from this EIR) for the relocation of all or a portion of the subtransmission line segment across Sunshine Canyon Landfill (application number A.12-11-007). However, a portion of the subtransmission line ~~may~~ is approved for relocation ~~be relocated~~ under yet another separate project ~~related to~~concerning the interconnection of the Sunshine Gas Producers Renewable Energy Project, which was evaluated pursuant to CEQA by the South Coast Air Quality Management District ~~in April 2012~~ (Final Supplemental Environmental Impact Report certified May 2012, State Clearinghouse No. 92041053). The Sunshine Gas Producers Renewable Energy Project is now under construction, including the portion of the subtransmission line to be relocated as part of this project, which was approved by an Advice Letter from the CPUC (CPUC 2012) because the relocation of this portion was exempt from CPUC Permit to Construct requirements pursuant to CPUC General Order 131-D, Section III.B.1.f. ~~The proposed relocation will be evaluated pursuant to CEQA separately from this EIR.~~ SCE has stated that if the subtransmission line relocation project or the Sunshine Gas Producers Renewable Energy Project do not occur or if ~~it~~ either project occurs after construction of the Aliso Canyon Turbine Replacement Project, reconductoring and structure replacement under the Aliso Canyon Turbine Replacement Project for Segment C would follow the existing alignment across the landfill (SoCalGas 2009). The Sunshine Canyon Landfill Project, including the subtransmission line relocation, and the Sunshine Gas Producers Renewable Energy Project ~~is~~ are further discussed in Chapter 6, "Cumulative Impacts and Other CEQA Considerations."

2.2.8 Substation Equipment Installations

2.2.8.1 Newhall, Chatsworth, and San Fernando Substations

To accommodate the new 66-kV subtransmission line arrangement and to improve protection against equipment damage during electrical fault conditions, SCE proposes to install new equipment ~~would be installed~~ within the footprint of the existing Newhall, Chatsworth, and San Fernando Substations. The existing primary protection would be replaced at the three substations with General Electric L90 line current differential relaying systems (to be used as System A pilot protection) and Schweitzer SEL-311L line current differential relaying systems (to be used as System B pilot protection). Each relaying system would require separate current-transformer connections and a dedicated digital communication channel. Digital transport and channel equipment would be installed including lightweight transport (SONET) terminals and digital multiplexers (channel banks).

Within the footprint of the existing Newhall and Chatsworth Substations, SCE proposes to install Schweitzer SEL-311C relays ~~would be installed~~ on the 66-kV bus ties. Installation of the relay systems and related equipment would be within the Mechanical and Electrical Equipment Rooms at these two substations and would not require ground-disturbing activities. Within the footprint of the existing San

Fernando Substation, two ~~four~~ 66-kV circuit breakers, four ~~eight~~ sets of disconnect switches, and associated equipment would be installed for the proposed 66-kV reconductoring work to create one ~~two~~ new position~~s~~ on the existing switchrack, and would require ground-disturbing activities.

2.2.8.2 Pardee Substation

SCE proposes to incorporate e~~E~~quipment designed to receive the global-positioning-system timing signal from ~~SCE's~~ its Pardee Substation ~~would be incorporated~~ into the proposed Natural Substation. To transmit the signal, a new head-end node would be installed within the Pardee Substation's existing Mechanical and Electrical Equipment Room. The head-end node would transmit the global-positioning-system timing signal to the Newhall Substation, from which the timing signal would be transmitted to the Natural (proposed), Chatsworth, and San Fernando Substations via the fiber optic cables to be installed as part of the proposed project. The global-positioning-system timing signal is a key element of the proposed 66-kV subtransmission line protection system for the substations.

2.2.9 Telecommunications Routes

Three new telecommunication routes would be installed by SCE as part of the proposed project. The telecommunications installations would allow for the communication of a global-positioning-system timing signal (a key element of the proposed 66-kV subtransmission line protection system) from the Pardee Substation to the Newhall, Natural (proposed), Chatsworth, and San Fernando Substations (see also Section 2.2.8.2).

Telecommunications Route #1 would consist of the installation of a new optical ground wire ~~fiber optic cable~~ on new structures (overbuilt~~underbuilt~~) along 66-kV Segments A, B, and C between Newhall Substation and the proposed Natural Substation. ~~The f~~ Fiber optic cable would be installed within new underground conduit as it enters the proposed Natural Substation (Table 2-4). The new fiber optics ~~cable~~ would allow for remote monitoring and operation of the proposed Natural Substation, which would be unstaffed. The cable would provide telecommunications interconnection, protective relay circuits, Supervisory Control and Data Acquisition circuits, and data and telephone services.

Table 2-4 Telecommunications Line Routes and New Underground Conduit

Telecommunications Route	Route Length (approximate)	Length of New Underground Conduit (approximate)
#1 Newhall Substation to Natural Substation [(a)]	8.1 miles	200 feet [(b)]
#2 Chatsworth Substation to Natural Substation	15.3 miles	200 feet [(b)]
#3 San Fernando Substation to Fiber Optic Connection Point	5.0 miles	~~1,200~~1,250 feet [(c)]
#4 San Fernando Substation to Fiber Optic Connection Point	5.6 miles	1,710 feet
Total	34~~28.4~~ miles	3,360~~1,600~~ feet

Source: SCE 2011
Notes:
(a) To be installed overhead along 66-kV Segments A, B, and C.
(b) New underground conduit would be installed from where the overhead telecommunications line transitions down and into the proposed Natural Substation.
(c) Includes 300 feet of new underground conduit that would be shared by Telecommunications Route #4 (Figure 2-8).

Telecommunications Route #2 would consist of the installation of a new fiber optic cable on existing poles and newly installed poles and within existing and new underground conduit from Chatsworth Substation to the proposed Natural Substation. Telecommunications Routes #3 and #4 would consist of the installation of a new fiber optic cable on existing overhead SCE and Los Angeles Department of Water and Power (LADWP) wood poles and in new underground conduit and structures from San Fernando Substation to connect to fiber optic connection points to SCE's telecommunications system.

Telecommunications Route #3 would connect with ~~east to~~ an existing fiber optic cable within the ROW of an existing SCE 220-kV subtransmission line corridor. Telecommunications Route #4 would connect with a fiber optic connection point located at the entrance to Sunshine Canyon Landfill (Figure 2-8).[10]

2.2.9.1 New Structures and Rights-of-Way

The following description of Telecommunications Route #1 assumes that new ~~fiber optic cable~~ optical ground wire would be installed at the top of new TSPs installed for the reconductored 66-kV subtransmission lines and that no additional structures would be installed. The descriptions provided for Telecommunications Routes #2 and #3 assume that only existing structures would be used for ~~overhead~~ fiber optic line installations. Existing structures may need to be replaced along Telecommunications Routes #2 and #3; the number and location of the structures that would be replaced will not be confirmed until testing related to final engineering is completed. For the purpose of this EIR, it is assumed that any of the structures may be replaced with structures of a comparable size and type. The existing wood poles along these two routes range in height from 40 to 80 feet. The taller, 80-foot poles are located at the crossing of State Route (SR)-118 (Telecommunications Routes #2). One 45-foot-tall wood telecommunications pole would be installed along Telecommunications Route #4 just west of I-5 and I-210 at the intersection of San Fernando Road and Sepulveda Boulevard.

Where the fiber optic routes would attach to LADWP poles, SCE would be required to gain permission from LADWP for this installation. SCE would also be required to gain permits from Metrolink and the California Department of Transportation (Caltrans) where the fiber optic routes would cross Metrolink railroad tracks or freeways, respectively.

2.2.9.2 ~~Fiber Optic~~ Telecommunications Installation Routes

Telecommunications Route #1: Newhall Substation to Natural Substation

This route would be constructed overhead on TSPs from the Newhall Substation to the proposed Natural Substation along 66-kV Segments A, B, and C (Figure 2-6). The route would also include use of existing and newly installed underground conduit and structures from the 66-kV racks to the Mechanical and Electrical Equipment Rooms within the Newhall and Natural Substations (Figure 2-1). Optical ~~G~~ground ~~W~~wire would be installed from the proposed Natural Substation to Newhall Substation along Telecommunications Route #1 (SCE 2012).

[10] The fiber optic connection point at the end of Telecommunications Route #4 refers to an access point into a line of underground conduit within Sunshine Canyon Landfill. Telecommunications Route #4 would transition into this line of conduit and connect to a fiber optic line installed as part of the Sunshine Gas Producers Renewable Energy Project. The Final Supplemental Environmental Impact Report for the Sunshine Gas Producers Renewable Energy Project was completed in April 2012 (State Clearinghouse No. 92041053).

Telecommunications Route #2: Chatsworth Substation to Natural Substation

This route would extend approximately 15.3 miles from Chatsworth Substation northeast to the proposed Natural Substation (Figure 2-7). The fiber optic cable along this route would be primarily installed overhead on existing poles and within existing and new underground conduit as follows:

1. From the existing Mechanical and Electrical Equipment Room at Chatsworth Substation, new fiber optic cable would be installed west in existing underground conduit for approximately 100 feet to an existing SCE pole. The cable would rise up the pole and continue overhead southeast toward F Street. It would then continue east on existing overhead poles for approximately 8,700 feet to an SCE pole north of Facility Road. The cable would continue overhead on existing poles for approximately 2,600 feet to an SCE pole located near the intersection of Facility Road and North American Cutoff.
2. At the intersection of Facility Road and North American Cutoff, the fiber optic cable would transition down through a riser and into existing underground conduit. It would continue northeast underground for approximately 10,000 feet along North American Cutoff to an existing SCE pole near the intersection of North American Cutoff and Box Canyon Road.
3. The cable would rise up the existing SCE pole and continue on existing overhead poles northeast for approximately 1,600 feet to an existing SCE pole located on the north side of Santa Susana Pass Road. From the north side of Santa Susana Pass Road, the fiber optic cable would continue northeast on existing overhead poles for approximately 12,800 feet along Santa Susana Pass Road. It would cross from the southeast corner of the City of Simi Valley into the City of Los Angeles. It would also cross a Metrolink ROW.
4. From an existing SCE Pole east of the intersection of Santa Susana Pass Road and Iverson Road, the cable would be installed overhead on existing poles north for approximately 1,200 feet to an existing SCE pole located just south of the SR-118. The cable would cross from the City of Los Angeles to unincorporated Los Angeles County.
5. The fiber optic cable would continue on existing poles east along the south side of SR-118, for approximately 1,500 feet to an existing SCE pole. The cable would then cross SR-118 for approximately 450 feet to an existing SCE pole on the north side of SR-118.
6. The cable would continue overhead on existing poles for approximately 1,500 feet east and then approximately 21,100 feet north through Browns Canyon, crossing Curaco Trail, Saugus Road, Browns Canyon Road, and Oat Mountain Way to Oat Mountain peak.
7. From Oat Mountain peak, the cable would continue southeast for approximately 9,100 feet overhead on existing poles into the storage field. It would then continue on overhead poles along SCE's proposed 16-kV distribution line for approximately 5,300 feet where it would transition to the applicant's existing utility poles.[11]
8. The cable would follow the applicant's existing utility poles approximately 3,500 feet south and then transition to new wood poles for approximately 1,600 feet following the proposed paved road to the proposed Natural Substation. From the last new wood pole, the fiber optic cable

[11] New overhead structures would be installed from east to west within the northern half of the storage field site as part of a separate project (SCE's Gavin Distribution Line Extension Project). The proposed Gavin Distribution Line Extension Project is scheduled for completion before construction of the Natural Substation would commence (Chapter 6, "Cumulative Impacts and Other CEQA Considerations") and would be addressed in accordance with SCE tariff rules and subject to the applicant granting SCE an easement pursuant to CPUC Code Section 851.

would transition down and continue through new underground conduit for approximately 200 feet into the Mechanical and Electrical Equipment Room at the proposed Natural Substation.

Telecommunications Route #3: San Fernando Substation to Fiber Optic Connection Point

This route would extend approximately 5 miles from San Fernando Substation to a fiber optic connection point (#01044/M6-T4) within the ROW of an existing SCE 220-kV subtransmission line corridor. Fiber optic cable would be installed overhead on existing SCE and LADWP wood poles except for approximately ~~1,200~~1,250 feet that would be installed in new underground conduit and structures (Figure 2-8). With the exception of approximately 100 feet of this route, which would be within the footprint of SCE's San Fernando Substation, and approximately 200 feet of this route, which would be within SCE's existing 220-kV ~~200-kV~~ ROW in Sylmar, this route would be located entirely within public ROW. Telecommunications Route #3 would be installed as follows:

1. From an existing structure along an SCE 220-kV subtransmission line, new fiber optic cable would be installed through new underground conduit and structures within SCE's existing 220-kV ROW for approximately 200 feet north to an existing LADWP pole on Gridley Street. The fiber optic cable would rise up the LADWP pole and then continue overhead on existing LADWP poles northeast to Gladstone Avenue. It would then extend approximately 2,600 feet southeast to Maclay Street.

2. The cable would be installed overhead for approximately 300 feet southwest along the north side of Maclay Street to an existing LADWP pole where it would transition down the pole and be installed in ~~on~~ new underground conduit. The cable would extend through the new underground conduit for approximately 700 feet under I-210 to an existing LADWP pole located on the north side of Maclay Street southwest of I-210.

3. The fiber optic cable would rise up the LADWP pole and continue overhead on existing LADWP poles southwest on the north side of Maclay Street and then run overhead northwest along Foothill Boulevard for approximately 4,500 feet to Hubbard Street. The fiber optic cable would continue overhead in a southwesterly direction on the north side of Hubbard Street on existing LADWP and SCE poles for approximately 7,800 feet to First Street. The fiber optic cable would transition from the north side of Hubbard Street to the south side of Hubbard Street near the intersection of Hubbard Street and Herrick Ave.

4. The fiber optic cable would continue overhead southeast along the south side of First Street for approximately 1,900 feet to South Workman Street. It would continue overhead on South Workman Street for approximately 4,000 feet southwest to an alley parallel to the east of Laurel Canyon Boulevard. The cable would cross a Metrolink ROW as it traverses along South Workman Street.

5. The cable would continue overhead southeast along the alley for approximately 1,100 feet and then approximately 430 feet southwest along San Fernando Mission Boulevard to an existing SCE pole where it would transition down to new underground conduit. The cable would be installed through the new underground conduit for approximately ~~200~~180 feet, crossing under I-5 along the north side of the San Fernando Mission Boulevard.

6. The fiber optic cable would rise up an existing SCE pole on the north side of San Fernando Mission Boulevard and then continue overhead for approximately ~~2,200~~1,997 feet southwest to an existing SCE pole located southeast of San Fernando Substation. The cable would ~~traverse overhead for approximately 140 feet northwest to an existing SCE pole inside San Fernando Substation and~~ then be installed in new underground conduit for approximately ~~100~~170 feet

~~southwest~~ into ~~the existing Mechanical and Electrical Equipment Room within~~ San Fernando Substation.

Telecommunications Route #4: San Fernando Substation to Fiber Optic Connection Point

This route would extend approximately 5.6 miles from San Fernando Substation to a fiber optic connection point within a line of underground conduit located at Sunshine Canyon Landfill. Fiber optic cable would be installed overhead on existing SCE and LADWP wood poles, with the exception of one new wood SCE telecommunications pole (45-feet tall) and approximately 2,060 feet that would be installed in new underground conduit (Figure 2-8). Telecommunications Routes #3 and #4 would follow the same path northeast from San Fernando Substation to Truman Street in the City of San Fernando. Telecommunications Route #4 would be located entirely within public ROWs, with the exception of new underground conduit that would be installed within the footprint of SCE's San Fernando Substation. Telecommunications Route #4 would be installed as follows:

1. New fiber optic cable would be installed from where it would connect to existing fiber optic cable located within underground conduit at the entrance to Sunshine Canyon Landfill near the intersection of Sunshine Canyon Road (the landfill entrance road) and San Fernando Road. The new fiber optic cable would transition from an underground position to an existing LADWP pole located at the landfill entrance. From this pole, the cable would extend overhead for approximately 2,340 feet on existing LADWP poles to an LADWP pole located on the west side of San Fernando Road. From there, it would transition into new underground conduit and extend underground to the south for approximately 260 feet to an existing LADWP pole.
2. The new fiber optic cable would transition up the pole and extend overhead on existing LADWP poles on the west side of San Fernando Road for approximately 2,321 feet southeast to a new wood 45-foot-tall wood telecommunications pole that would be installed by SCE at the southwest corner of the intersection of San Fernando Road and Sepulveda Boulevard. The cable would transition down the new pole and extend through approximately 700 feet of new underground conduit, crossing east under I-5 to an existing LADWP pole. From this pole, the cable would transition to an overhead position and extend on existing LADWP poles approximately 1,571 feet. From there, the cable would transition down an LADWP pole and extend in new underground conduit for approximately 750 feet.
3. After transitioning up an existing LADWP pole, the cable would extend overhead on existing LADWP poles southeast for approximately 14,217 feet along the west side of San Fernando Road. Where San Fernando Road becomes Truman Street, the new cable would continue overhead on Truman Street to South Workman Street.
4. From the intersection of Truman Street and South Workman Street, the new fiber optic cable would be installed southwest to San Fernando Substation on the same path as Telecommunications Route #3.

2.2.10 Access Roads

The following new or modified access roads would be required for the proposed project:

For the SoCalGas project elements:

1. An 18-foot-wide access road would be constructed to reach the TSP at the midpoint of the 12-kV Plant Power Line route as shown in Figure 2-2. This road would be approximately 500 feet long.

For the SCE project elements:

1. The existing 1,500-foot dirt road to the proposed Natural Substation site would be modified, graded, and paved (Figure 2-2). Its width would be increased from 12 to ~~18~~ 24 feet. The road extends from an existing wellhead site at the storage field.
2. A drainage channel (approximately 8 inches wide and 6 inches deep) has formed across an existing access road near structures 27, 28, and 29 (Figure 2-12). A crossing and/or culvert would be installed at this location. The channel would be filled within the road boundary. The drainage channel is further discussed in Section 4.4, "Biological Resources."
3. Access roads to existing 66-kV subtransmission line structures 50, 51, and 52 (Appendix D) and others would be widened as needed.
4. New 18-foot-wide access roads would be required along the 66-kV reconductoring routes where new structures would be installed where no structure was previously present.

SCE assumes that no new access roads would be required for the proposed ~~fiber optic~~ telecommunications installations located within existing public ROWs. SCE would use, to the extent feasible, existing access roads for the ~~fiber optic~~ telecommunications installations. Where required, crews would walk into existing and new overhead structure locations that do not have existing access for vehicles.

2.3 Construction

2.3.1 Construction Schedule, Personnel, and Equipment

Construction of the proposed Central Compressor Station and all other components of the proposed project is anticipated to take approximately ~~22~~24 months (Table 2-5)~~, starting August 2012~~. Construction of the Plant Station components, 12-kV Plant Power Line, guardhouse, Natural Substation, ~~and~~ 66-kV subtransmission line reconductoring, and telecommunications routes would begin concurrently.

Table 2-5 Construction Schedule and Peak Number of Workers

Project Site/ Component	Duration of Construction (months)	Number of Workers During Peak Period
Plant Station Components, 12-kV Plant Power Line, and Guardhouse	~~22~~24	150
Natural Substation	12 (concurrent)	40
66-kV Subtransmission Line Reconductoring	18 (concurrent)	37
Fiber Optic Cable Installation	~~3~~5 (concurrent)	5
Total	~~22~~24 months	232 workers (peak)

Source: SoCalGas 2009, ~~2011~~2012

Construction is anticipated to start in ~~August 2012~~October 2013. If the CPUC approves the project, commissioning and operation of the proposed project is anticipated to commence 36 months after the CPUC's decision. After detailed engineering and equipment selection, construction of the storage field elements would commence, and would be expected to take 22-24 months to complete. Construction of the office crew shift buildings and the guard house relocation would begin as soon as possible after the CPUC decision so as to be completed prior to the start of construction of the Central Compressor Station. Construction office crew shift buildings and the guard house relocation is anticipated to be completed within 4 months, and would not take place concurrent with the Central Compressor Station construction schedule. A list of equipment required for construction of the proposed project is provided in Appendix G.

2.3.1.1 Construction Work Days and Hours

Construction would occur at the storage field during daylight hours Monday through Friday and some Saturdays, depending on weather and material delivery. SCE construction activities would be scheduled from 7:00 a.m. to 5:00 p.m., Monday through Friday. SCE does not plan on executing construction activities during nighttime hours unless specifically required by federal, state, or local permits. It is possible, for example, that Caltrans may require nighttime work to reconductor the 66-kV subtransmission line across I-5 (Figure 2-1) and install fiber optic cable across SR-118 (Telecommunications Route #2). In addition, truck deliveries with oversized loads may be restricted to off-peak hours.

2.3.2 Land Disturbance

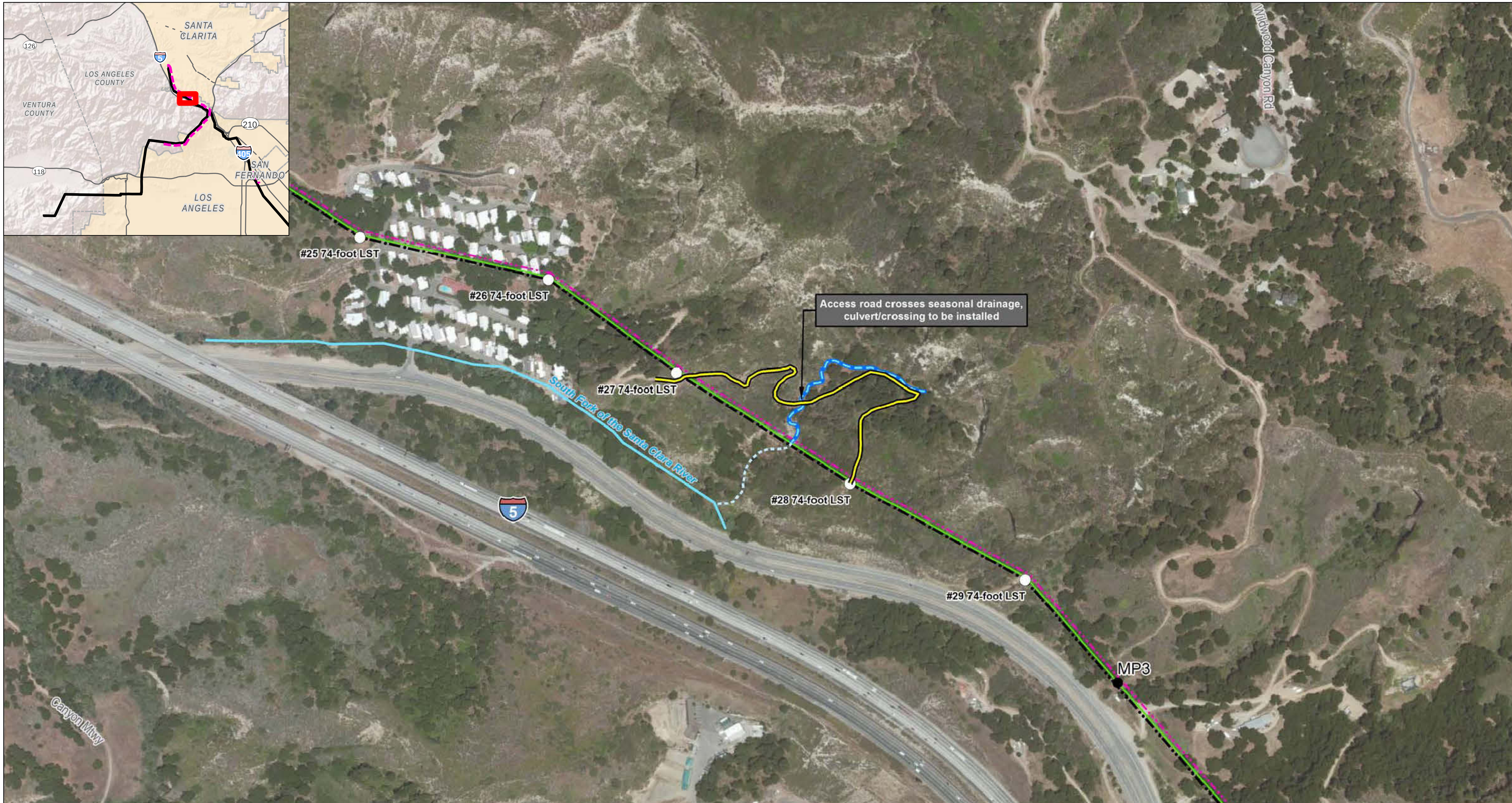
Construction of the proposed project would result in the permanent disturbance of approximately 23 ~~22~~ acres of land (Table 2-6). Approximately 90 percent of this land has been previously disturbed.

2.3.2.1 Additional Environmental Analysis

During final engineering for the proposed project, areas in addition to the identified project areas may be determined to be required, especially for the 66-kV subtransmission line reconductoring and ~~fiber optic~~ telecommunications cable installation project components. If additional areas are required for the proposed project that may result in land disturbance other than that identified in Table 2-6 and other than that which would occur in the locations identified by text and on the figures documented by this EIR, additional environmental analysis may be required.

2.3.2.2 Impervious Surface Area at the Storage Field Site

The Central Compressor Station site would be paved (approximately 1.4 acres). The proposed office facilities site and parking areas would also be paved (approximately 1.3 acres). The road to the proposed Natural Substation is currently a dirt road, and it would be paved and resloped (0.65 acres). Runoff from these sites would be collected and managed through the existing water facilities at the storage field site.



Path: \\prtbhp1\gis\SanFrancisco\Aliso Canyon Natural Gas\Maps\MXD\EIR\Final_EIR_Feb2013\Access_Road_Modification_Drainages.mxd

SOURCES: SoCalGas 2009 to 2012

66-kV Subtransmission Line Reconductoring Route (Proposed)
Telecommunications Route (Proposed)
Existing SCE 66-kV Subtransmission Line
Milepost (MP)
Existing Towers
Existing Access Road
National Hydrological Dataset
Unnamed Seasonal Drainage
Estimated Flow of Unnamed Seasonal Drainage

N

0 500 Feet

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

Figure 2-12

Access Road Modification and Drainage Near Structures 27 and 28

Table 2-6 Land Disturbance

Components of the Proposed Project	Acres of Disturbance	Length	Width	Acres Permanently Disturbed
Proposed Project Facilities				
Proposed Central Compressor Station (Includes Site of Existing Office Facilities and Parking)	1.4	—	—	1.4
Existing Compressor Station to be Decommissioned	1.4	—	—	1.4
18-inch Pipeline to Discharge Header	0.5	550 feet	40 feet [a]	0.1 [a]
24-inch Pipeline to Suction Header	0.5	550 feet	40 feet [a]	0.1 [a]
24-inch Pipeline to Emergency Shutdown System	0.6	600 feet	40 feet [a]	0.1 [a]
Proposed Office Facilities and Parking [b]	1.3	—	—	1.3
Proposed Guardhouse	0.02	—	—	0.02
12-kV Plant Power Line Route	1.1	1,200 feet	40 feet	—
12-kV Plant Power Line TSPs (3)	1.4	200 feet	100 feet	0.2
Natural Substation	1.0	300 feet	150 feet	1.0
Equipment/Structure Installations within Existing Substations	2.3	—	—	2.3
66-kV Subtransmission Line Structure Removal (64)	29 [c]	200 feet	100 feet	—
66-kV Subtransmission Line TPSs (78)	36 [c]	200 feet	100 feet	4.6
Fiber Optic Cable Installation in New Underground Conduit	3.9 ~~1.8~~	3,360 ~~1,600~~ feet	50 feet [d]	—
Fiber Optic Cable Installation on New Structures	Not Provided	—	—	Not Provided
Staging Areas				
Wellhead Site P-42, Wellhead Site P-37, and Porter Fee Road Staging Areas near the Plant Station Site	8.9	—	—	8.9
Excess Excavated Soils Area (Wellhead P-32)	2.8	—	—	—
Natural Substation Staging Area (Wellheads P-40 and PS-42)/Alternate Natural Substation Staging Area/Fiber Optic Cable Installation Staging Area	3.7	—	—	—
66-kV Subtransmission Line Staging Areas	Not Provided	—	—	—
Wire-pulling, Tensioning, and Splicing Sites for 66-kV Subtransmission Line Reconductoring (7) [e, f]	8.4	500 feet [g]	100 feet	—
Other Fiber Optic Cable Installation Staging Areas	Not Provided	—	—	—
Wire-pulling, Tensioning, and Splicing Sites for Fiber Optic Cable Installations [h]	4.8 ~~2.5~~	60 feet	100 feet	—
Roads				
Storage Field Entry Road Widening [i]	0.2	500 feet	12 feet	0.2
12-kV Plant Power Line TSP Access Road (1)	0.2	500 feet	18 feet	0.2
Natural Substation Access Road	0.6	1,500 feet	24~~18~~ feet	~~0.6~~0.8

Table 2-6 Land Disturbance

Components of the Proposed Project	Acres of Disturbance	Length	Width	Acres Permanently Disturbed
66-kV Subtransmission Line Reconductoring Access Roads	Not Provided	—	—	Not Provided
Fiber Optic Cable Installation Access Roads	Not Provided	—	—	Not Provided
Total	110 ~~106~~ acres	—	—	23~~22~~ acres

Source: SoCalGas 2009, ~~2011~~2012
Key: kV = kilovolt
TSP = tubular steel pole
Notes:
[a] The 40-foot-wide work area and 10-foot permanent disturbance width was estimated by the CPUC.
[b] The number of parking spaces at the storage field would not be increased due to construction of the proposed project. In addition, the number of employees at the storage field is not expected to change after completion of the proposed project.
[c] The estimate of total areas in which disturbance could occur; actual disturbance in each of these areas would be smaller.
[d] The estimate assumes that one-half of the 100-foot-wide right-of-way would be disturbed.
[e] Wire-pulling, tensioning, and splicing locations would be sited ~~no more than~~ approximately every 6,000 feet along the 66-kV subtransmission line reconductoring and fiber optic cable installation routes.
[f] Approximately 8.2 miles (43,300 feet) of 66-kV subtransmission line would be reconductored (43,300 feet/6,000 feet = approximately 7 sites for wire-pulling, tensioning, and splicing).
[g] The 66-kV subtransmission line conductor tensioning requires an area of 500 feet within a 100-foot-wide right-of-way. Wire-pulling and splicing activities require 300 feet and 150 feet, respectively, within a 100-foot-wide right-of-way. For this table, the largest disturbance area possible is used for each wire-pulling, tensioning, and splicing site calculation (500 feet by 100 feet).
[h] Approximately 40 ~~20~~ miles (211,000 ~~105,600~~ feet) of fiber optic cable would be installed (211,000 ~~105,600~~ feet/6,000 feet = approximately 35 ~~18~~ sites for wire-pulling, tensioning, and splicing, not including the optical ground wire ~~fiber optic cable~~ installed along 66-kV segments A, B, and C or undergrounded fiber optic cable segments).
[i] Includes an approximately 20-foot-long trench at the existing guardhouse site for modifications to underground conduit within the applicant's Tampa Avenue/Limekiln Canyon Road easement.

2.3.3 General Construction Methods and Materials

2.3.3.1 Commuting, Truck Trips, Parking, and Deliveries

There is insufficient parking capacity at the storage field for 150 additional temporary construction workers (Table 2-5). The storage field has 101 parking spaces: 12 designated employee spaces, 32 company vehicle spaces, and 57 unassigned spaces. Construction workers assigned to temporary construction activities would be brought in by shuttle bus from park and ride areas during peak construction periods and encouraged to carpool to and from the storage field to reduce the number of trips generated and to minimize impacts on local roads. The applicant has determined that an open lot or existing parking lot located between Tampa Avenue and Mason Avenue near SR-118, approximately 3 miles southwest of the storage field entrance, may be suitable for park and ride activities associated with the proposed project. Additional information regarding parking areas associated with the proposed project is presented in Section 4.15, "Transportation and Traffic." The applicant's construction contractor would establish all park and ride areas and negotiate the terms of use with each respective property owner prior to construction.

It is estimated that up to 12, 20-yard dump trucks traveling 24 miles per day would be required for construction of the Central Compressor Station. Excess soil would be dumped at the Excess Excavated Soils Area on the storage field site (Figure 2-2). The proposed project would also require delivery of structures, equipment, concrete, and construction materials (Appendix G). Most truck traffic would use major streets and be scheduled for off-peak traffic hours (Appendix J).

For the 66-kV subtransmission line reconductoring and ~~fiber optic~~ telecommunications cable installation, worker vehicles would be parked at Pardee Substation (~~SCE's~~assumed by SCE to likely be the primary staging area for the proposed project) or at one of the other staging areas described in Section 2.3.13.3. Typically, crews would load materials onto work trucks at the primary staging area and drive to work sites. At the end of the day, workers would return to the primary staging area in work vehicles and depart in private vehicles.

2.3.3.2 Traffic Control and Road Closures

The applicant's and SCE's ~~C~~construction activities completed within public road ROWs would require the use of a traffic control plan. Lane closures would be conducted in accordance with local ordinances and applicable permit conditions. Traffic control measures would be consistent with those published in the California Joint Utility Traffic Control Manual (California Inter-Utility Coordinating Committee 2010) and are further described in Section 4.15, "Transportation and Traffic."

SCE would obtain all encroachment permits and comply with all permit requirements, including those required by Caltrans to cross federal and state highways (e.g., I-5 and SR-118). To accommodate reconductoring of 66-kV Segment C (Figure 2-6), I-5 may need to be closed; and to install fiber optic cable along Telecommunications Route #2 (Figure 2-7), SR-118 may need to be closed. If full or partial closure is necessary, it would be discussed with Caltrans and be subject to the requirements of a Caltrans encroachment permit.

2.3.3.3 Grading, Drainage, and Vegetation Removal

The applicant and SCE would ensure that natural drainage patterns of the sites proposed for the construction of project facilities would be retained to the maximum extent feasible. Detailed civil engineering drawings would be created prior to construction for the specific soil and site characteristics of proposed new construction sites. The engineering plans would account for runoff, drainage, and slope stability. Vegetation clearing and removal would be accomplished using mowers, skip loaders, bulldozers, chippers, and dump trucks, as required.

2.3.3.4 Concrete Use

Concrete would be supplied for the proposed project by an existing, local concrete supply facility. The TSP foundations for 66-kV subtransmission line reconductoring would require 3,400–6,400 cubic yards of premixed concrete using 0.38–0.75 acre-feet of water. Concrete would also be needed for the Central Compressor Station, 12-kV Plant Power Line structures, and other components of the proposed project.

2.3.3.5 Water Use

The storage field currently uses between 20,000 and 25,000 gallons of water for operations per month. Water is provided through a 4-inch metered line by the LADWP. No groundwater or reclaimed water is used at the storage field. Pumps transfer water to water tanks with a capacity of approximately 200,000 gallons that are located on the storage field site. The storage field's water system is capable of and permitted to provide up to 400 gallons per minute.

Additional water required during construction would also be provided by LADWP, pursuant to the storage field's current water use permit for commercial customers. A groundwater well would not be constructed and reclaimed water would not be used for construction or operation of the proposed project. Portable restroom facilities would be used during construction at the storage field. For grading and compaction of the Central Compressor Station site, water use would be up to 16,000 gallons per day or 352,000 gallons per month (22 workdays per month). For other construction activities, water would be used primarily for dust suppression or equipment and roadway wash down (up to 5,000 gallons per day or 110,000 gallons per month). Water use estimates for construction of the facilities proposed by the applicant and SCE are provided in Table 2-7.

Table 2-7 Water Use

Project Site/ Component	Duration (months) [a, b]	Water Use Per Month (gallons)	Total Water Use (gallons)
Storage Field Operations (ongoing)	~~22~~24	25,000	~~550,000~~600,000
Central Compressor Station Grading and Compaction/Increased Dust Control	~~5~~6	352,000	~~1,760,000~~2,112,000
Construction Activities at the Storage Field	~~17~~18	110,000	~~1,870,000~~1,980,000
Natural Substation Grading/Increased Dust Control	4	250,000	1,000,000
Other Natural Substation Construction Activities	8	80,000	640,000
66-kV Subtransmission Right-of-Way Clearing, Access Roads, Tubular Steel Pole Footings (Concrete)/Increased Dust Control	7	500,000	3,500,000
Other 66-kV Subtransmission Activities (e.g., line stringing) and Fiber Optic Cable Installation/Moderate Dust Control	14	170,000	2,380,000
			~~11,700,000~~12,212,000 gallons

Source: SoCalGas 2009, ~~2011~~2012

[a] Duration estimates for months with higher water use (352,000 to 500,000 gallons) are based on the data provided in Appendix B.1, "Air Quality Emission Calculations," of the Proponent's Environmental Assessment (SoCalGas 2009).

[b] Refer to Table 2-5, "Construction Schedule and Peak Number of Workers," for the number of months estimated for construction of the storage field facilities and Natural Substation, 66-kV subtransmission line reconductoring, and fiber optic cable installation.

Hydrostatic Testing of Pipelines

Existing and proposed discharge and suction pipelines at the storage field that are modified or constructed as part of the proposed project (Section 2.2.1.3) would be *hydrostatically tested*—a technique used for testing natural gas and other types of pipelines for leaks and flaws. Approximately 25,000 gallons of water would be required for hydrostatic testing. After testing, the hydrostatic test water would be collected and used for dust control and irrigation or disposed of pursuant to the applicant's Water Quality Construction Best Management Practices Handbook (Sempra Energy Utilities 2002).

2.3.3.6 Nonhazardous Waste

The majority of waste generated during construction of the proposed project would be nonhazardous. Nonhazardous waste from construction at the storage field, including the proposed Central Compressor Station and office facilities, would include wood used for concrete forms and temporary supports, excess concrete, and excess soil. These nonhazardous wastes would be collected and sent to local landfills. All construction debris would be placed in appropriate onsite containers and periodically disposed of in accordance with all applicable regulations.

Nonhazardous waste that would be generated during the construction of the Central Compressor Station would include scrap metal, rags, concrete forms, packaging materials, wooden pallets, and other similar construction-related waste. Up to 40 cubic yards of nonhazardous waste would be generated per month during the construction of the Central Compressor Station.

Decommissioning of the existing turbine-driven compressors would generate waste associated with the removal of equipment associated with the compressor system. Parts of the compressor train, including the turbines, gear reducers, compressors, and gas coolers would be removed and sold for salvage. The remaining piping, air intakes, exhaust stacks, supports, and other equipment would be sold for scrap and recycled. Because the concrete foundations of the turbine-driven compressors, gas coolers, and several smaller foundations include a high concentration of metal rebar, recycling of these foundations is not likely to be feasible, and materials totaling approximately 810 cubic yards from these foundations would be disposed of in an appropriate landfill.

Decommissioning of the existing office trailers would generate up to 150 cubic yards of waste associated with the removal of materials from pre-fabricated units, totaling approximately 4,500 square feet of structures. The trailers would either be hauled to an appropriate waste and recycle facility or would be demolished onsite, if they are determined to be too unstable for removal

During construction of the proposed Natural Substation, approximately 20 cubic yards of nonhazardous construction waste would be generated. For 66-kV subtransmission line reconductoring, approximately 635 tons of nonhazardous waste would be generated and recycled as follows:

- 11 tons of conductor/wire;
- 467 tons of concrete; and
- 157 tons of steel.

Approximately 3,360 ~~1,600~~ linear feet of trenches would be excavated for fiber optic cable installation and up to 440~~210~~ cubic yards of soil and other material would be excavated as part of this trenching.

2.3.3.7 Hazardous Waste

Storage Field Hazardous Waste

Contaminated soil, solvents, and rags, as well as used and residual oil from construction at the storage field would be collected, analyzed, and properly disposed of in accordance with all applicable laws and regulations.

66-kV Subtransmission Line Reconductoring and Structure Replacement

SCE estimates that approximately 20 tons of wood poles, some of which would be treated with chemicals, would be disposed of or recycled for reconductoring of the proposed 66-kV subtransmission line segments.

Fiber Optic Cable Installation and Structure Replacement

~~The~~ SCE's installation of fiber optic cable along Telecommunications Routes #2, #3, and #4~~3~~ (Figures 2-7 and 2-8) may require the replacement of treated wood poles and components of the existing structures on which the fiber optic cable would be installed. The number and location of structures that would need to be replaced would be confirmed after testing related to final engineering is completed. For the purpose of this EIR, it is assumed that any of the structures proposed to support new fiber optic cable may be replaced with structures of a comparable size and type.

The existing wood poles along the two routes range in height from 40 to 80 feet (approximately 1,100 to 3,800 pounds each). On average, it is estimated that each pole weighs approximately 2,500 pounds. Given the length of the telecommunications routes presented in Table 2-4, and assuming that poles are located every 200 feet along the existing lines, it is estimated that there are 350 existing poles along Telecommunications Route #2, ~~and~~ 125 existing poles along Telecommunications Route #3, and 135 poles along Telecommunications Route #4. If all of the poles were replaced, it is estimated that up to 760 ~~590~~ tons of wood poles (610~~475~~ poles at 2,500 pounds each), some of which would be treated with chemicals, would be disposed of or recycled for the construction of Telecommunications Routes #2, #3, and #4~~3~~. This estimate is conservative, and it is anticipated that the removal of fewer wood poles would be required.

Natural Substation Hazardous Waste

The following types and quantities of hazardous waste are estimated for construction of the proposed Natural Substation:

- Concrete curing agent: 20 gallons;
- Aerosol lubricant: 2 gallons; and
- Touch-up paint: 2 gallons.

2.3.4 Central Compressor Station

The proposed site for construction of the Central Compressor Station is located on previously disturbed hillside terrain. Prior to excavation and grading activities, three to four native Coast live oak trees (*Quercus agrifolia*) and other vegetation may need to be removed. Construction activities would include:

1. Clearing and grading;
2. Construction of building and equipment foundations;
3. Ground surface preparation at access points within the equipment area;
4. Erection of structures to house the compressors and associated control equipment;
5. Installation of equipment and piping; and
6. Cleanup and restoration of the site.

Site preparation would include the excavation of approximately 100,000 cubic yards of material that would be hauled to the Excess Excavated Soils Area on the storage field site (Figure 2-2). Approximately 50,000 cubic yards of fill from the Excess Excavated Soils Area would be returned to the Central Compressor Station site to complete grading and compaction.[12] Excess excavated soil would be used onsite or disposed of in an approved manner. No excess soil is expected to be hauled offsite as a result of the proposed project.

After completion of construction, start-up, and testing of the equipment, the proposed Central Compressor Station site would be graded, and disturbed areas would be graveled or paved.

[12] Conservative estimates were used for the amounts of grading and fill necessary for construction of the proposed Central Compressor Station. It is anticipated that less grading and fill would be required.

2.3.5 Decommissioning and Removal of the Existing Compressor Station and Gas Turbine–driven Compressors

Prior to dismantling the gas turbine–driven compressors, the turbines, gears, compressors, coolers, and ancillary equipment would be offered for sale as complete units or parts. The remaining structures, inlet plenum, exhaust stack, piping, controllers, valves, and other components would be sold as scrap metal. The existing compressor station and foundation on which the gas turbine–driven compressors are located would be removed and the site would be leveled to grade. The gas turbine–driven compressors would be salvaged, recycled, or properly disposed of in accordance with all applicable laws and regulations.

2.3.6 Office Facilities Construction

The proposed office facilities would be located on a previously disturbed site with no trees and scattered brush. Clearing, soil compaction, grading, and paving of the proposed office facilities site would occur during site preparation activities for the proposed Central Compressor Station. Upon completion of site grading and preparation of the proposed office facilities site, the existing office facilities (modular trailer facilities) would be recycled or disposed of at facilities authorized to accept the materials associated with the facilities. Demolition onsite would only occur if the office facilities are deemed unstable for removal. The existing office facilities would remain in place until materials and equipment are relocated to the new office facilities.

2.3.7 Guardhouse Construction and Entry Road Widening

Guardhouse construction would be one of the first construction activities to commence upon approval of the proposed project. This would entail site preparation, grading, and entry road widening. The guardhouse would be constructed on the existing entry road pavement (on Limekiln Canyon Road) after excavation required to install utilities for the proposed guardhouse (Figure 2-4). After utility installation, the excavated area would be filled with soil, and concrete would be laid for the guardhouse foundation.

The existing entry road to the storage field road would be widened by approximately 12 feet for approximately ~~500~~ 300 feet between Sesnon Boulevard and the proposed guardhouse site, to provide two lanes for traffic flow. Construction would involve vegetation clearing, excavation, grading, compaction, retaining wall installation, and paving. Vegetation clearing and removal would be accomplished using mowers, skip loaders, bulldozers, chippers, and dump trucks, as required.

The retaining wall would be approximately 165 feet long. To widen the driveway, soil and materials would be excavated and placed onsite/disposed offsite. Soldier piles would be installed along the length of the retaining wall, and clean engineered fill would be placed within the retaining wall.

No work would take place within the bed, bank, or channel of the drainage of Limekiln Canyon**.** Remaining, unpaved, disturbed area would be revegetated. Entry road construction activities would proceed early to facilitate entry into the storage field during construction of the proposed project.

2.3.8 12-kV Plant Power Line Construction

The 12-kV Plant Power Line (~~1,200~~ 1,800 feet long) would be constructed pursuant to applicable CPUC requirements including General Orders 95 and 128. Each of the three TSPs for the line would be mounted on concrete foundations as described in Section 2.3.3.6, and 69-kV insulators would be installed.

2.3.9 Construction of the Natural Substation

The proposed Natural Substation site would be prepared by clearing existing vegetation and installing a temporary chain-link fence to surround the construction site. The temporary fence would be installed approximately 10 feet from the proposed perimeter of the substation. The area outside the proposed footprint would be graded consistent with the overall site grading and drainage design approved by the authorizing jurisdiction. The grading design would incorporate Spill Prevention Control and Countermeasure Plan requirements because of the planned operation of oil-filled transformers at the substation in accordance with 40 Code of Federal Regulations Part 112.1–112.7. Typical Spill Prevention Control and Countermeasure requirements include curbs and berms designed and installed to contain spills.

The proposed substation site is approximately 20 feet higher on the west side than the east side. Approximately 10 feet of the west side of the site would be excavated, and the east side would be raised by approximately 10 feet to create a level surface. An additional 10 feet of excavation and compaction may then be required for installation of the substation foundation and structures, depending on final engineering design. Therefore, the maximum depth of excavation could be up to 20 feet. All equipment foundations would be installed and trenching completed within these parameters, except for the TSPs to be installed near the substation, which would require excavation of up to 30 feet (Section 2.3.10.3).

After the proposed Natural Substation site is graded, below-grade facilities would be installed. Below-grade facilities would include a ground grid, trenches, equipment foundations, utilities, and the footing for the permanent chain-link fence. The design of the ground grid would be based on soil resistivity measurements collected during a geotechnical investigation to be conducted prior to construction. Above-grade facilities (e.g., buses, capacitors, circuit breakers, transformers, and steel support structures) would be installed after the below-grade structures are in place. The transformers would be delivered by heavy-transport vehicles and off-loaded onsite by cranes with support trucks. A traffic control service would be used for transformer delivery, if necessary.

2.3.10 Reconductoring, ~~Fiber Optic~~ Telecommunications Cable Installation, and Structure Replacement

2.3.10.1 Siting for Final Engineering

During the siting process for SCE's reconductoring and structure replacement, a detailed survey of the 66-kV subtransmission lines would be conducted and detailed engineering designs developed. A control centerline would be established, based on field survey measurements. Control monuments, consisting of 2-inch diameter iron pipes sealed with a stamped brass cap, would be set at maximum intervals of approximately 2.0 miles. Visual reference points parallel and perpendicular to the control line would be established so that photogrammetric profiles of the area's topography could be compiled. Approximate structure locations would be spotted on the profiles according to the engineering design criteria. Once approximate structure locations have been selected, exact positions would be field surveyed.

Survey crews would also locate access road centerlines, grades, and TSP soil boring locations. Final determinations of road location curvature, cuts and fills, grades and drainage, and necessary erosion controls would be made in accordance with design standards and best management practices and/or landowner requirements. The siting process for SCE's new ~~fiber optic~~ telecommunications cable facilities would be similar.

2.3.10.2 Removal of Existing 66-kV Structures

SCE proposes that ~~U~~up to 64, 66-kV subtransmission line support structures would be removed as part of the proposed project. The location and number of structures to be removed would be determined after final engineering design is completed.

Existing 66-kV subtransmission line conductor, ground wire, and structures would be removed, including lattice steel towers, lightweight steel poles, wood poles, and associated hardware (e.g., insulators, vibration dampeners, suspension clamps, ground wire clamps, shackles, links, nuts, bolts, washers, cotter pins, insulator weights, and bond wires). To remove the structures, first, the existing conductor would be transferred to the new structures. A crane truck or rough-terrain crane would then be used to remove the existing structure. LST and TSP footings would be removed to a depth of 1 to 2 feet. Wood and lightweight steel poles, including H-frame and 3-pole structures, are typically removed entirely, including the below ground portion, which would be approximately 8 to13 feet deep depending on the length of the pole. Holes would then be backfilled, compacted, and smoothed to match the surrounding grade. Excess soil from TSP installations would be used as backfill where practical; otherwise, clean fill (soil or pea gravel) would be imported for this purpose.

2.3.10.3 Tubular Steel Pole Installation

For SCE's 66-kV subtransmission line reconductoring, up to 78 TSPs would be installed. The location and number of TSPs to be installed would be determined after final engineering design is completed.

Identification of Underground Utilities

By California law, prior to conducting excavation, including drilling boreholes for TSP foundations, SCE or its contractor would be required to contact Underground Service Alert to identify underground utilities in the construction area. If other utilities are located in the construction area, the applicant would contact the owner of the utility to discuss protection and avoidance measures.

Grading, Laydown Areas, and Crane Pads

Construction material laydown areas would be established by SCE for the TSP assembly process and would generally occupy an area of 200 by 100 feet (0.46 acres) at each TSP location. Laydown areas may require grading, leveling, or vegetation clearing to accommodate the new TSP.

Cranes would be used for installation of TSPs. If the terrain is not suitable to support crane activities, a temporary 50- by 50-foot (0.06-acre) crane pad would be constructed. Crane pads would be located adjacent to the TSPs within the ROW. The crane would move along the ROW for TSP erection purposes, as necessary.

Foundation Construction

Each TSP installed as part of the proposed project would require a single, drilled, poured-in-place, concrete footing that forms the structure's foundation. TSPs typically require an excavated hole up to 10 feet in diameter. The holes are drilled using truck- or track-mounted excavators with augers that match the diameter requirements of the TSP. The depth below ground level for TSP installation would be 16 to 30 feet. In residential areas, TSP footings may project above the ground surface approximately 0 to 2 feet, and in uninhabited areas, TSP footings may project 1 to 3 feet above ground level.

The excavated material from each TSP installed would be distributed at the TSP installation site, used to backfill excavations from the removal of 66-kV subtransmission line structures, used at the proposed Natural Substation site, or used for the rehabilitation of existing access roads. Alternatively, the excavated soil may be disposed of at an offsite disposal facility in accordance with all applicable laws. Chemical analysis of soils to be excavated would be conducted concurrent with the final engineering geotechnical soils analysis. Contaminated soils or groundwater would be tested and handled in accordance with all applicable federal, state, and local laws and regulations if encountered during excavation.

If concrete foundations were to be installed in soft or loose soil and below the groundwater level, the borehole may be required to be stabilized with mud slurry during drilling. If this is the case, ~~the applicant~~ SCE would add mud slurry into the borehole ~~after~~ during drilling to prevent the sidewalls from sloughing. The concrete for the foundation would then be pumped to the bottom of the hole, displacing the mud slurry. The mud slurry that is brought to the surface is typically collected in a pit adjacent to the foundation and then pumped out of the pit to be reused or discarded at an offsite disposal facility in accordance with all applicable laws.

Following excavation, steel reinforced cages would be set, survey positioning would be verified, and concrete would then be poured. Steel reinforced cages would be assembled at laydown areas and delivered to each structure location by flatbed truck. Typically, TSP structures would require 30 to 100 cubic yards of concrete delivered to each structure location. Each foundation constructed on elevated terrain takes three to five days to complete. On flat terrain, each foundation takes approximately three days to complete.

The concrete mix typically used by SCE takes 20 ~~working~~ days to cure to an engineered strength. Once this strength has been achieved, crews would be permitted to commence with erection of the TSP on the foundation.

Assembly and Erection

Assembly would consist of hauling in TSP sections from the staging area to their designated laydown site using semi-trucks with 40-foot trailers. A crane would then lay the individual TSP sections on the ground at each location. While on the ground, the top section may be preconfigured with the necessary insulators and wire-stringing hardware. The TSP may either be assembled into a complete structure or set one piece at a time by stacking the pieces and connecting them together. The assembly method used depends largely on the terrain and available equipment. If set one piece at a time, an 80-ton, all-terrain or rough-terrain crane or larger would be used to position the TSP base section into the foundation. When the base section is secured, the top section of the TSP would be placed above the base section. Occasionally, TSPs may be ordered in three sections or more, if needed, to reduce the weight or length of sections to be installed in constrained access areas.

2.3.10.4 Wire Stringing, Pull Sites, and Helicopter Use

The term *wire stringing* refers to ~~the~~ SCE's installation of primary electrical conductors and ground wire, vibration dampeners, weights, suspension assemblies, and dead-end hardware assemblies. Insulators and stringing sheaves (rollers or travelers) would also be installed during wire stringing. The wire-stringing process begins with determining where wire pulls, splicing, and tensioning would occur and wire pull, splicing, and tensioning equipment would be set up.

Wire pull, splicing, and tensioning locations are selected based on availability of dead-end structures at the ends of each pull, geometry of the line as affected by points of inflection, terrain, and suitability of stringing and splicing equipment setups. Typically, wire pulls occur every 6,000 to 13,000 feet. Pulls occur less frequently on rugged terrain. When possible, wire pull, splicing, and tensioning locations would be located on existing level areas and existing roads to minimize the need for grading and cleanup. Generally, pulling locations and equipment set-ups (e.g., pulling cable and breakaway reels) would be in direct line with the direction of the overhead conductors and established a distance approximately three times the height away from the adjacent structure.

After the selection of wire pull, splicing, and tensioning locations, the timing of associated electrical outages would be determined and safety protocols selected. The locations of wire pull, splicing, and tensioning sites; timing of outages; and required safety protocols would be determined during final engineering. Because the existing electrical system configuration includes redundancies, no electric service outages are anticipated to be required during reconductoring activities for the proposed project.

Prior to the initiation of wire-stringing activities, safety devices such as traveling grounds, guard structures, and radio-equipped public safety vehicles and linemen would be in place to ensure the safety of workers and the public.

For major roadway crossings, typically one of the following methods is employed to protect the public: erection of a highway net guard structure system; detour of all traffic off a highway at the crossing position; implementation of a controlled continuous traffic break while stringing operations are performed; or strategic placement of special line trucks with extension booms on the highway deck. Depending on the permitting agency, the use of a secondary, safety take-out sling at highway crossings may be required.

The Wire-Stringing Process

Each of SCE's wire-stringing operation would include a wirepuller positioned at one end and a tensioner and wire reel stand truck positioned at the other end of the line segment to be pulled. Where possible, the conductor being replaced would be used to pull in the new conductor, eliminating the need to install a sock line. If a sock line is required, the following two steps would be implemented:

1. **Sock-line Threading:** Typically, the sock line would be installed by ground crews. In the event that ground crews are unable to install the sock line, a helicopter would be used. A helicopter would fly a lightweight sock line from structure to structure, which would be threaded through the wire rollers in order to engage a cam-lock device that would secure the pulling sock in the roller. This threading process would continue between all structures through the rollers of a particular set of spans selected for a conductor pull.
2. **Pulling:** The sock line would be used to pull in the conductor pulling cable (3/8-inch pulling cable). The conductor pulling cable would be attached to the primary conductor using a special swivel joint to prevent damage to the wire and to allow the wire to rotate freely to prevent complications from twisting as the conductor unwinds off the reel. The primary conductor would then be pulled onto the new TPSs. The old conductor wire would be wound onto breakaway reels as it is removed. The old conductor would be transported to the primary staging area (SCE's Pardee Substation) where it would be prepared for recycling. If possible, the old conductor would be transferred to the new TSPs and then used to pull in the new conductors.

After the new conductor is pulled in, splicing, dead-ending, and clipping is performed.

3. **Splicing, Sagging (tensioning), and Dead-ending:** After the conductor is pulled in, mid-span splicing would be performed. Once the splicing has been completed, the conductor would be sagged to proper tension and dead-ended to structures. Splicing equipment includes skidders and wire crimping equipment. When wire-stringing equipment cannot be positioned at either side of a dead-end structure, *field snubs*—anchoring and dead-end hardware—would be temporarily installed to sag conductor wire to the correct tension.

4. **Clipping In:** After the conductors are attached to the dead-end structures, they would be attached to all of the other structures (clipped in).

The wire-pull locations would also be used to remove temporary pulling splices and install permanent splices once the conductor is strung through the rollers located on each structure, and are necessary as the permanent splices that join the conductor together cannot travel through the rollers. The wire-pull locations would be temporary and the land would be restored to its previous condition or to conditions agreed upon with the landowner following completion of pulling and splicing activities.

Helicopters

Helicopters may be needed in both remote and non-remote areas. The helicopter contractor would determine the helicopter type and coordinate flight paths with local air traffic control.

SCE anticipates that, at minimum, 42 helicopter flights would be required for 66-kV subtransmission line reconductoring and seven would be required for Telecommunications Route #1. Additional flights for Telecommunications Routes #2, #3, and #4~~3~~ are not anticipated by SCE. Helicopters would not be used for TSP installation.

Wire-stringing activities are expected to take approximately 38 days. During stringing activities, helicopters would be used for approximately six hours a day for ~~both~~ the 66-kV subtransmission line reconductoring ~~and fiber optic installation routes~~. Hughes 369 or 500 or comparable helicopters would be used for stringing activities.

Helicopter staging ~~(loading helicopters with conductor materials)~~ would take place at SCE's Pardee Substation. Helicopter fueling would occur at the Pardee Substation (Figure 2-1); or at Whiteman Airport (approximately 2.75 miles southeast of the San Fernando Substation); Van Nuys Airport (approximately 5.5 miles south of San Fernando Substation); or Bob Hope Airport in Burbank, California (approximately 8 miles southeast of the San Fernando Substation), using the helicopter contractor's fuel truck. The helicopter and fuel truck would be supervised by the helicopter fuel service provider.

2.3.10.5 Fiber Optic Cable and Optical Ground Wire Installation

~~Fiber optic cable~~ Optical ground wire would be strung overhead from the proposed 66-kV Segment A, B, and C structures, except for a 200-foot section (Table 2-4) to the proposed Natural Substation (Telecommunications Route #1).[13] For Telecommunications Routes #2, #3, and #4~~3~~, ~~most of the~~ fiber optic cable would be installed. Most of the fiber optic cable would be installed overhead, but some sections would be installed in new underground conduit. Helicopters are not anticipated to be required for fiber optic cable installation along Telecommunication Routes #2, #3, and #4~~3~~. For fiber optic cable installation along Telecommunications Route #3, wire-pull areas would be located within the public ROW.

[13] Optical ground wire is composed of one or more optical fibers surrounded by layers of conductor wire. It combines the functions of electrical grounding and telecommunications within one cable.

Fiber optic cable and optical ground wire stringing on overhead structures would include all of the activities associated with stringing 66-kV conductor described above, but smaller-scale equipment would be used and for shorter duration. Vibration dampeners, suspension assemblies, dead-end hardware assemblies, and stringing sheaves (rollers or travelers) would be installed. Typically, fiber optic cable pulls occur every 6,000 to 10,000 feet. A truck with a cable reel would be set up at one end of the section to be pulled, and a truck with a winch would be set up at the other end. Cable would be pulled onto the structure and secured. Between reels, fiber optic cable from one reel would be spliced to fiber optic cable on the next reel to form one continuous path. One reel typically holds 20,000 feet of fiber optic cable. Existing structures may or may not need to be replaced and new poles may be required to be installed for Telecommunications Routes #2, #3, and #4~~3~~; the number and location of structures to be removed and new poles to be installed would be confirmed after testing is done for final engineering; for the purpose of this EIR, it is assumed that any of the structures may be replaced with structures of a comparable size and type.

For installation in new underground conduit, the fiber optic cable would be installed within high-density polyethylene, smooth-wall inner-duct. The fiber optic cable would be installed within and throughout the length of the new underground conduit (5-inch polyvinyl chloride, schedule 40). New manhole structures (approximately 4 feet wide by 4 feet long by 6 feet deep) would be installed as needed in the areas to be trenched. Trenching for the new underground conduit would require excavating equipment (e.g., backhoes) and dump trucks to dispose of spoils generated by the excavating process. Most trenches would be between 36 and 42 inches deep and would not exceed 72 inches in depth unless an Underground Service Alert check prior to construction indicates that a deeper trench would be required to avoid an existing underground utility. The trenches would be backfilled and restored according to SCE and applicable municipal requirements.

2.3.10.6 Energizing the Reconductored 66-kV Subtransmission Lines

The final construction step for the 66-kV subtransmission lines reconductoring involves energizing the new conductors. To accomplish this, the existing lines would be de-energized so that connections between the existing and reconductored lines can be made. Once the connections are complete, the existing lines would be returned to service and the reconductored lines energized. Because electrical services provided by the lines to be reconductored have alternate power sources available to serve the load during construction, it is not anticipated that de-energizing the existing lines to connect the reconductored lines would require electrical service outages.

2.3.11 Restoration

Areas that are temporarily disturbed by construction of the electrical components of the proposed project, including the staging areas and conductor pulling, splicing, and tensioning sites, would be restored to pre-project conditions where feasible. Other than the TSP proposed at the center of the 12-kV Plant Power Line, all construction sites on the storage field would be located in areas that have previously been disturbed.

Restoration of surface contours to pre-construction conditions would occur as soon after completion of construction activities as practicable. Best management practices would be completed as needed to ensure water quality and minimize erosion.

Areas of native plant communities that are temporarily disturbed during construction would be seeded using a native plant palette appropriate to the surrounding vegetation. Seeding techniques, such as hydroseeding or hand seeding, would be applied during the first appropriate season to facilitate maximum revegetation success. Native seed sources would be collected locally, to the extent practicable, from a local genetic stock. Container plantings of removed tree species would be mitigated at ratios consistent with permit conditions. Revegetation areas would be monitored and managed for a period of at least three years or consistent with permit conditions.

2.3.12 Access Road Construction

New access roads areas would first be cleared and grubbed of vegetation. Roads would then be blade-graded to remove potholes, ruts, and other surface irregularities and recompacted to provide a smooth and dense riding surface capable of supporting heavy construction equipment. Drainage structures such as wet crossings, water bars, over-side drains, and pipe culverts would be installed to allow for construction traffic usage as well as prevent road damage due to uncontrolled water flow. Slides, washouts, and slope failures would be repaired and stabilized by installing retaining walls or other means necessary to prevent future failures. The type of structure to be used would be based on specific site conditions and approval of applicable grading permits from the authorizing jurisdiction.

For new access roads required by SCE, gradients would be leveled so that any sustained grade does not exceed 12 percent. Grades of approximately 14 percent would be permitted when such grades do not exceed 40 feet in length and are located more than 50 feet from any other excessive grade or curve. Access roads constructed to accommodate new construction would be left in place to facilitate future access for operations and maintenance purposes. Construction roads across areas that are not required for maintenance access would be restored after construction is completed. Gates would be installed where required at fenced property lines to restrict general and recreational vehicular entry onto access roads.

2.3.13 Staging Areas

2.3.13.1 Storage Field Staging Areas

Existing disturbed areas and wellhead sites would be used as staging areas to store equipment and materials during construction at the Plant Station site. An additional staging area located on an existing wellhead site would be used for construction of the proposed Natural Substation and interconnection with the 66-kV subtransmission line segments to be reconductored (Figure 2-2). The staging areas would be used for material and equipment storage, pipe spool fabrication, and worker reporting for all construction activities at the storage field. The proposed staging areas would not require security fencing in addition to that already provided at the storage field.

The Excess Excavated Soils Area and other two staging areas northeast of the Plant Station site would not require brush clearing or grading (Figure 2-2). The staging area along Porter Fee Road, however, would require grading and brush clearing due to area’s infrequent use. Small portable generators (50 horsepower each) would be used to power equipment used at the Porter Fee Road staging area. The proposed Natural Substation staging area is an active wellhead site; thus, the area has been previously disturbed.

2.3.13.2 Protection of Wellheads at Work Areas

Four staging areas would be located near existing wellhead sites: the Excess Excavated Soils Area (wellhead site P-32), the staging area at wellhead site P-42 (northwest of the Plant Station site), the staging area at wellhead site P-37 (northeast of the Plant Station site), and the Natural Substation staging area (wellhead sites P-40 and PS-42). Soil is currently processed at the Excess Excavated Soils Area just north of wellhead site P-32 during storage field operations (Figure 2-2). Activities at this area during construction of the proposed project would also occur north of the wellhead site, and the wells at site P-32 would not be disturbed or removed from service. Steel cages would be placed over the wellheads at sites P-37, P-40, and PS-42 for protection if the sites are used for staging areas. The wells would not be removed from service or plugged, and well laterals would not be removed. A large, unobstructed area is available at these sites that would accommodate staging area activities without disturbing the wellheads.

The wellheads at site P-42 would be removed from service and plugged downhole during construction activities. The well laterals would be removed, and steel cages would be placed over the wellheads for protection. The wells would be restored and returned to service immediately after construction of the proposed project is complete. No other wells would be removed from service during construction of the proposed project.

2.3.13.3 Subtransmission and Telecommunications Route Staging Areas

~~The~~ SCE's Northern Transmission/Substation Regional Facility at Pardee Substation in Santa Clarita may be the primary staging area for 66-kV subtransmission line reconductoring ~~would be SCE's Northern Transmission/Substation Regional Facility at Pardee Substation in Santa Clarita~~. SCE or its contractors, however, may use another ~~additional main staging~~ area as the primary staging area if~~as~~ needed to optimize construction efficiency. Final siting of staging areas would depend upon availability of appropriately zoned property that is suitable for this purpose.

Each staging area could be used as a reporting location for workers and for vehicle and equipment parking and material storage. The areas would have temporary offices for supervisory and clerical personnel. Normal maintenance of construction equipment would be conducted at these yards. The maximum number of workers reporting to any one yard is not expected to exceed 42 at any one time. Each yard would be 2 to 20 acres in size, depending on land availability and intended use. Materials stored at the main staging areas would include:

1. Construction trailers and equipment;
2. Steel poles;
3. Conductors, wire reels, and insulators;
4. Optical ground wire cable;
5. Signage;
6. Fuel and joint compound;
7. Storm Water Pollution Prevention Plan materials (e.g., straw wattles, gravel, and silt);
8. Fencing;
9. Portable sanitation facilities; and
10. Waste materials for salvaging, recycling, or disposal.

Additional short-term-use staging areas may be established near construction sites. Where possible, these staging areas would be sited in areas of previous disturbance along the 66-kV subtransmission line routes. Typically, an area of approximately 1 to 10 acres would be required for staging areas.

For Telecommunications Route #1, SCE would use the same staging areas that would be used for 66-kV Segments A, B, and C. For Telecommunications Route #2, SCE would use the Chatsworth Substation and the proposed Natural Substation staging areas (Figures 2-2 and 2-7). For Telecommunications Routes #3 and #4~~,~~ SCE would use the San Fernando Substation staging area (Figure 2-8) and may use some of the staging areas that would be used for 66-kV Segments A, B, and C. However, SCE or its contractors may use additional staging areas as needed to optimize installation efficiency. Final siting of staging areas would depend upon availability of appropriately zoned property that is suitable for this purpose. The staging areas would be used as a lay-down area for all material for the proposed fiber optic cable installations. The fiber optic cable would be delivered by truck. Material would be placed inside the perimeter of the fenced substation or in a designated area during construction. Materials and equipment at the staging areas would include, but not be limited to: fiber optic cable reels and hardware; empty fiber optic cable and inner-duct reels; debris associated with installation of the fiber optic cables; heavy equipment, light trucks, and portable sanitation facilities.

Preparation of additional temporary staging areas, both main and secondary, required for the 66-kV subtransmission line reconductoring and the fiber optic cable installations would include the application of road base, depending on existing ground conditions at the site, and installation of perimeter fencing. Once sites for additional staging areas are proposed, biological and cultural resource reviews would be conducted as required before final staging area site selection. Land disturbed at temporary staging areas, if any, would be restored to preconstruction conditions or to landowner requirements following construction of the proposed project.

2.4 Operation and Maintenance

Approximately 50 full-time employees work at the Aliso Canyon Storage Field. The total number of employees at the storage field is not expected to change after completion of the proposed project. In addition, the number of parking spaces would not be increased due to construction of the proposed project. The Central Compressor Station would be staffed during normal working hours, seven days a week. Operations and maintenance personnel would be on call after the normal working hours. Employees staff the storage field 24 hours a day, seven days a week, including holidays.

The applicant's staff would develop a site-specific Compressor Maintenance Plan with detailed requirements for site inspections, maintenance, and security procedures for the new Central Compressor Station. All operating and inspection personnel would complete training designed specifically for operation of the new compressor equipment. Annual pressure safety-valve inspections would continue to be conducted and recorded at the storage field. High-pressure pipeline inspections and testing would also continue to be conducted and recorded every seven years.

Most of the existing access roads to the proposed Central Compressor Station site are paved. As part of the facility's existing storm water best management practices, V-ditches and drain boxes along the roads would be cleared of debris. Vegetation around the site would be cleared and managed periodically to maintain access.

2.4.1 Water Use and Sanitary Wastewater

The storage field currently uses between 20,000 and 25,000 gallons of water for operations per month. Water is provided by the LADWP. Drinking water is provided in bottles and is not included in this estimate. Storage field water use is not expected to increase with operation of the proposed project. Water would be used during operations for:

1. Showers, toilets, and kitchen areas;
2. Landscape irrigation;
3. Fire protection;
4. Thermal cooling (water/glycol mixture);
5. Dust control;
6. Industrial cleaning (pressure washing, sand jets inside pressure vessels);
7. Well drilling; and
8. Miscellaneous construction activities (e.g., mixing concrete and cleaning).

Water used for fogging inlet air to the gas turbine–driven compressors would not be required after the proposed project is operational.

Sanitary wastewater service is provided by the City of Los Angeles Department of Public Works, Bureau of Sanitation. New restrooms in the facilities to be constructed at the Plant Station site as part of the proposed project would replace existing restroom facilities which would be demolished. A new restroom would be installed inside the proposed guardhouse; there is no restroom in the existing guardhouse. Neither water and sewer connections nor a permanent restroom are proposed for the Natural Substation. The applicant’s restroom facilities at the storage field would be within an acceptable distance from the substation for use by station workers that may be onsite for routine or emergency maintenance purposes.

2.4.2 Nonhazardous and Hazardous Waste

There would be no change in the amount or types of waste generated at the storage field from operation of the proposed project or the proposed increase in the natural gas injection rate. Waste may be reduced due to the reduction of lubricating/seal oil use during injection. Most process waste is generated during withdrawal.

Oil and water recovery are byproducts of natural gas storage operations. Oil and water are removed from natural gas as it is withdrawn from storage. The oil is sold, and the water is pumped into either a flood well or disposal well according to procedures approved by the U.S. Environmental Protection Agency. Six flood wells and two disposal wells are operated onsite.

Average quantities of hazardous waste from storage field operations are as follows:

- ~~Oil recovery from natural gas processing: 200 barrels per day (2006 estimate);~~
- ~~Water recovery from natural gas processing: 300 barrels per day (2006 estimate);~~
- Used engine oil (recycled): 9,000–12,000 gallons per year;
- Filters (recycled): 15–120 per year;

- Tank bottoms (liquids and solids): 200–6,000 gallons per year (10–2600 cubic yards per year);
- Lead paint removed: 1,700–11,000 pounds per year;
- Waste paint: 5–120 gallons per year;
- Contaminated soil: 4,500–21,000 pounds per year;
- Waste grease: 250 pounds per year;
- Antifreeze: 110 gallons per year; and
- Parts cleaner: 80 gallons per year.

Companies who owned the storage field prior to the applicant and operated oil production facilities at the storage field abandoned approximately 20 oil sumps. The applicant remediates one sump site per year by excavating and removing the contaminated soil from the sump. Contaminated soil is disposed of at approved disposal sites and all trucking is completed by companies authorized to haul such waste. Uncontaminated soil is used for backfill and the sump area is returned to normal elevation after remediation.

The following types and quantities of hazardous waste are estimated for operation of the proposed Natural Substation:

- ~~Transformer oil: 6,740 gallons per year;~~
- ~~Sulfur hexafluoride: 328 cf per year;~~
- Battery acid: 300 pounds per year;
- Paints, lubricants, fuels: 2 gallons per year;
- Waste transformer oil: 2 gallons per year;
- Oily debris: 5 pounds per year;
- Waste batteries, fluorescent lights: 2 pounds per year; and
- Trash and metal scrap: 10 pounds per year.

2.4.3 Natural Substation, 66-kV Subtransmission Line, and ~~Fiber Optic~~ Telecommunications Cable Operations and Maintenance

Routine maintenance and emergency repair would be performed at the proposed Natural Substation. The proposed substation would be unstaffed, and electrical equipment within the substation would be remotely monitored and controlled by an automated system. SCE personnel would routinely visit the substation for electrical switching and maintenance purposes. Routine maintenance would include equipment testing, equipment monitoring, and repair three to four times per month.

The reconductored 66-kV subtransmission lines would be routinely patrolled and maintained consistent with CPUC General Orders 95 and 165. The subtransmission lines or ~~fiber optic~~ telecommunications cables may occasionally require emergency repairs, which would be conducted under the direction of or by SCE personnel.

2.4.4 Loss of Electrical Power: Effects on Injection and Withdrawal

~~The storage field's backup generators, which are described in Section 2.1.1.2, would also provide emergency power for the new compressor station.~~ During operation of the proposed project, if electrical power is lost from Chatsworth Substation or because of an event along the 66-kV subtransmission line route from the west side of the storage field, injection capacity could be reduced by up to 50 percent. Injection capacity could also be reduced by up to 50 percent if electrical power is lost from the east side of the storage field. If all electrical power is lost at the storage field, the proposed electric-driven compressors would not have power, and injection would not occur, or would be powered by backup generators. The energy required for the ~~W~~withdrawal of natural gas from the storage field~~, however, would not be affected because energy for the withdrawal of natural gas~~ is provided by the pressure and expansion of gas within the storage reservoir, and no additional energy is needed to withdraw the gas. In the event of a loss of electrical power at the storage field, backup generators would also provide power for the natural gas processing (dehydration) system.

2.5 Plans and Applicant Proposed Measures

The following plans would be developed as part of the proposed project and implemented during construction and/or operations:

- Compressor Maintenance Plan (operations);
- Revegetation Plan (construction);
- Worker Environmental Awareness Training Program (construction);
- Construction Safety and Emergency Response Plan (construction and operations);
- Hazardous Materials Management Plan (construction and operations);
- Grading and Drainage Plan (construction);
- Storm Water Pollution Prevention Plan (construction and operations);
- Spill Prevention Control and Countermeasure Plan (construction and operations);
- ~~Hydrostatic Test Water Management Plan (construction);~~
- Noise Control Plan (construction);
- Storage Field Security Plan (construction and operations);
- Traffic Control Plan (construction); and
- Commuter Plan (construction).

In addition, the applicant has incorporated the following measures into the design of the proposed project (Table 2-8).

Table 2-8 Applicant Proposed Measures

APM No.	Applicant Proposed Measure
APM AE-1	**Night Lighting.** The applicant and SCE will ensure that construction activities occurring at night will use lighting to protect the safety of the construction workers but orient the lights to minimize their effect on any nearby sensitive receptors. The lighting will be directed downward and shielded to eliminate offsite light spill at times when the lighting might be in use.
APM AQ-1	**Maintain Engines in Good Working Condition.** The applicant and SCE will ensure that equipment engines will be maintained in good condition and in proper tune as per the manufacturers' specifications.
APM AQ-2	**Minimization of Equipment Use.** The applicant and SCE will ensure that staff and daily construction activities will be efficiently scheduled to minimize the use of unnecessary/duplicate equipment when possible.
APM AQ-3	**Minimization of Disturbed Areas.** The applicant and SCE will ensure that the amount of area disturbed by clearing, grading, earth moving, or excavation operations is minimized to reduce the amount of fugitive dust that is generated during construction in a manner that meets or exceeds the requirements of the South Coast Air Quality Management District's Rule 403 (Fugitive Dust Regulations).
APM AQ-4	**Watering Prior to Grading and Excavation.** The applicant and SCE will ensure that pre-grading/excavation activities will include watering the area to be graded or excavated before commencement of grading or excavation operations. Application of water (preferably reclaimed, if available) will penetrate sufficiently to minimize fugitive dust during grading activities.
APM AQ-5	**Vehicle Speed Limits.** The applicant will post signs in the storage field along designated travel routes and limiting traffic to 15 miles per hour or less on unpaved roads.
APM AQ-6	**Fugitive Dust from High Winds.** During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), the applicant and SCE will ensure that all clearing, grading, earth moving, and excavation operations during project construction will be curtailed to the degree necessary to prevent fugitive dust created by onsite activities and operations from being a nuisance or hazard, either offsite or onsite.
APM AQ-7	**Cleaning of Paved Roads.** The applicant ~~and SCE~~ will ensure that paved road surfaces will use vacuum sweeping and/or water flushing to remove buildup of loose material to control dust emissions from travel on paved access roads (including adjacent public streets impacted by construction activities) and paved parking areas.
APM BR-1a	**Preconstruction Surveys.** Prior to construction and activities that may include vegetation clearing, staging and stockpiling, or other activities with the potential to directly or indirectly affect wildlife, the applicant and SCE will ensure that preconstruction surveys are conducted by qualified biologists for sensitive biological resources, including special-status wildlife and special-status plant species, in the project component areas, including access roads and staging areas. ~~In the event that special-status wildlife and special-status plants are identified within a proposed project component area or vicinity (survey buffer), buffers will be established by temporary flagging or fencing (this distance may be greater depending on the species and construction activity, as determined by the biologist) between the identified resource and construction activities. Flagging and fencing will be performed or supervised by a qualified biologist to ensure that these activities are conducted without harm to sensitive species, or habitat flagging and fencing will be performed or supervised by a qualified biologist to ensure that these activities are conducted without harm to sensitive species or habitat. The information gathered from these surveys will be used to determine project planning and minimize impacts on sensitive resources from project-related activities. In addition, the results of these surveys will be used to determine the extent to which environmental specialist construction monitors will be required.~~ ~~For nesting birds, a field survey will be conducted by a qualified biologist to determine if active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the construction zone or within a minimum of 100 feet (500 feet for raptors) of the construction zone. In the event of the identification of nesting birds within a proposed project component area or vicinity, a minimum 50-foot exclusionary buffer will be established by temporary flagging or fencing (this distance may be greater depending on the bird species and construction activity, as determined by the biologist) between the nest site and construction activities. Clearing and construction within the fenced area will be postponed or halted (except for vehicle traffic on existing roads), at the discretion of the biological monitor, until the nest is vacated and juveniles have fledged. The biologist shall serve as a construction monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these~~

Table 2-8 Applicant Proposed Measures

APM No.	Applicant Proposed Measure
	~~nests will occur.~~ ~~Biological monitoring will be conducted during construction work in areas in close proximity to native habitat to assure project compliance with all APMs and Mitigation Measures.~~
APM BR-1b	**Exclusionary Fencing to Protect Special-Status Wildlife and Plants.** In the event that special-status wildlife and special-status plants are identified within a proposed project component area or vicinity (survey buffer), buffers will be established by temporary flagging or fencing (this distance may be greater depending on the species and construction activity, as determined by the biologist) between the identified resource and construction activities. Flagging and fencing will be performed or supervised by a qualified biologist to ensure that these activities are conducted without harm to sensitive species, or habitat flagging and fencing will be performed or supervised by a qualified biologist to ensure that these activities are conducted without harm to sensitive species or habitat. The information gathered from these surveys will be used to determine project planning and minimize impacts on sensitive resources from project-related activities. In addition, the results of these surveys will be used to determine the extent to which environmental specialist construction monitors will be required.
APM BR-1c	**Nesting Bird Surveys.** For nesting birds, a field survey will be conducted by a qualified biologist to determine if active nests of bird species protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the construction zone or within a minimum of 100 feet (500 feet for raptors) of the construction zone. In the event of the identification of nesting birds within a proposed project component area or vicinity, a minimum 50-foot exclusionary buffer will be established by temporary flagging or fencing (this distance may be greater depending on the bird species and construction activity, as determined by the biologist) between the nest site and construction activities. Clearing and construction within the fenced area will be postponed or halted (except for vehicle traffic on existing roads), at the discretion of the biological monitor, until the nest is vacated and juveniles have fledged.
APM BR-1d	**Construction Monitoring.** The biologist shall serve as a construction monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests will occur. Biological monitoring will be conducted during construction work in areas in close proximity to native habitat to assure project compliance with all APMs and Mitigation Measures.
APM BR-2	**Designated Work Zones and Sensitive Resource Avoidance.** Prior to ground-disturbing activities, the applicant and SCE will ensure that work zones are clearly staked and flagged. Construction work areas will be identified to ensure that construction activities, equipment, and associated activities are confined to designated work zones and areas supporting sensitive resources (special-status plants and wildlife, and high-value habitats, such as wetlands) are avoided.
APM BR-3	**Post-Construction Restoration for Reconductoring.** SCE will ensure that all areas that are temporarily disturbed during 66-kV subtransmission line reconductoring will be restored as close to preconstruction conditions as possible or to the conditions agreed upon between the landowner and SCE following completion of construction of the proposed project.
APM BR-4	**Preconstruction Gnatcatcher Surveys.** The applicant and SCE will ensure that protocol-level pre-construction surveys will be conducted for coastal California gnatcatcher, in project component areas where suitable habitat exists ~~and for all project activities proposed within U.S. Fish and Wildlife Service designated critical habitat~~ in accordance with the U.S. Fish and Wildlife Service Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Guidelines, February 28, 1997. In the event that coastal California gnatcatcher are observed in pre-construction surveys, a buffer of 500 feet from any active nest will be flagged and maintained by a biological monitor. If infeasible to maintain a buffer of 500 feet from an active gnatcatcher nest work within or near these areas will be performed outside of the breeding and nesting season. Areas of 2 or more contiguous acres of suitable coastal California gnatcatcher habitat will be identified at the time of pre-construction surveys, and work within or near these areas will be performed outside of the breeding and nesting season (coastal California gnatcatcher breeding/nesting season is approximately February 15 through August 30).

Table 2-8 Applicant Proposed Measures

APM No.	Applicant Proposed Measure
APM BR-5	**Exclusionary Fencing to Protect Habitat Areas.** The applicant and SCE will ensure that exclusionary fencing will be installed around work and laydown/staging areas, where necessary, to prevent inadvertent encroachment into the native habitat adjacent to areas of impact. Brightly colored, protective construction fencing and/or silt fencing will be erected surrounding the work area where it abuts native habitat prior to the start of construction and/or demolition.
APM BR-6	**Biological Monitoring.** The applicant and SCE will ensure that biological monitoring will be conducted during construction in all areas within 100 feet of native vegetation that has the potential, or is known, to provide habitat for special status species.
APM BR-7	**Wildlife Relocation and Protection.** During construction activities, wildlife resources that are not considered to have special status and are determined to be in harm's way may be relocated by the applicant and SCE and/or their construction contractors to native habitat near the work area but outside the construction impact zone in order to avoid injury or mortality.
~~**APM BR-8**~~	~~**Inspection of Open Trenches.** For the trench to be excavated in the area of the Central Compressor Station during construction for the purposes of pipeline installation, the applicant will ensure that open trenches are inspected twice daily, once in the morning before activities commence and once at the end of the day before backfilling, to preclude potential impacts to wildlife that may fall into the trench. At the conclusion of each day's trenching activity, the end of the trench would be left ramped at an approximate 2-to-1 slope to allow any wildlife falling into the trench to escape.~~
~~**APM BR-9**~~	~~**Oak Tree Impact Avoidance.** In accordance with City of Santa Clarita/Los Angeles County ordinance and policy guidelines, the applicant and SCE will ensure that loss or impacts to all native oak trees via trimming or ground disturbance within the dripline (i.e., the outermost extent of the canopy) will be avoided using specific measures and/or agency guidance. If impacts cannot be avoided, the applicant or SCE will submit an Oak Tree Permit Application (including an Oak Tree Report) to Los Angeles County and obtain an Oak Tree Permit prior to construction.~~
APM CR-1	**Conductor Pull and Tension Sites.** SCE will ensure that, where feasible, conductor pull and tension sites are located on existing level areas and existing roads to minimize the need for grading and cleanup.
APM CR-2	**Unidentified Cultural Resources.** The applicant and SCE will ensure that, if previously unidentified cultural resources are unearthed during construction activities, construction will be halted in that area and directed away from the discovery until a qualified archaeologist assesses the significance of the resource. If determined to be required by the archeologist, the archaeologist will evaluate the significance of the discovered resources based on eligibility for the California Register of Historical Resources (CRHR) or local registers. Should any cultural resources be identified during construction activities in all project areas (including but not limited to culturally sensitive areas), the applicant and SCE will ensure that qualified archaeologists will monitor cultural resources mitigation and ground-disturbing activities in the area of the find. The size of the area of the find will be determined by the archeologist. The archaeologist will recommend appropriate measures to record, preserve, or recover the resources. Preliminary recommendations of CRHR eligibility made by the archaeologist will be reviewed by ~~the~~ CPUC staff.
APM CR-3	**Human Remains.** The applicant and SCE will ensure that, if human remains are encountered during construction or any other phase of development, work will be halted in the area and directed away from the discovery. The County Coroner will be notified within 24 hours of the discovery. No further disturbance will occur until the County Coroner makes the necessary findings of origin and disposition pursuant to Public Resources Code 5097.98–99, Health and Safety Code 7050.5. If the coroner determines that the burial is not historic, but prehistoric, the Native American Heritage Commission (NAHC) will be contacted to determine the most likely descendent (MLD) for this area. The MLD may become involved with the disposition of the burial following scientific analysis. If the remains are determined to be Native American, the Native American Heritage Commission will be notified within 24 hours as required by Public Resources Code 5097. ~~The~~ CPUC staff will mediate any disputes regarding treatment of remains.
APM CR-4	**Cultural Surveys After Final Project Siting.** Once final siting for SCE project components is completed, SCE or its contractor will complete additional pedestrian surveys for cultural resources, for all areas of proposed disturbance that are not currently located in a built environment within the 66-kV subtransmission line reconductoring route, access roads, and staging areas; and Telecommunications Route #2, access roads, and staging areas. The information gathered from these surveys will be used to determine project

Table 2-8 Applicant Proposed Measures

APM No.	Applicant Proposed Measure
	planning and design in order to avoid sensitive resources and identify measures that would minimize impacts on sensitive resources from project-related activities. In addition, the results of these surveys will be used to determine the extent to which environmental specialist construction monitors will be required. The survey will result in a report detailing the research design, methods and results of the survey. This report will be submitted to ~~the~~ CPUC staff.
APM GE-1	**Geotechnical Studies.** The applicant will ensure that, for the construction of the Central Compressor Station, construction procedures will be conducted as discussed in the recommendations sections of the Preliminary Geotechnical Investigation Reports prepared by Globus (2006) and Mactec (2011) to avoid impacts related to unstable geologic conditions. In addition, pre-engineering geotechnical studies will be completed by the applicant and SCE for the proposed Natural Substation and select TSP locations prior to construction. The pre-engineering geotechnical studies will evaluate the depth to the water table; document evidence of faulting; and determine liquefaction potential, physical properties of subsurface soil, soil resistivity, slope stability, and the presence of hazardous materials. The applicant and SCE will further ensure that, for the construction of the Natural Substation and select TSP locations, construction procedures will be conducted as discussed in the recommendations section of the geotechnical studies report.
~~**APM GE-2**~~	~~**Seismic-resistant Design Measures.** The applicant and SCE will ensure that the proposed project components are designed in accordance with CPUC General Orders and to meet applicable seismic safety standards of the California Building Code and Uniform Building Code standards for Seismic Risk Zone IV. Specific design measures may include, but are not limited to, special foundation design and additional bracing and support of upright facilities. Project facilities and foundations will be designed to withstand changes in soil density. The proposed Natural Substation will be designed consistent with the Institute of Electrical and Electronics Engineers 693 standard, *Recommended Practices for Seismic Design of Substations*.~~
APM GE-2 ~~**APM GE-3**~~	**Erosion and Sediment Control.** The applicant and SCE will ensure that erosion and sediment control measures will be implemented in each of the project component areas during construction activities to reduce the amount of soil displaced and transported to other areas by storm water, wind, or other natural forces. To minimize site disturbance, the applicant and SCE or their respective construction contractors will: • Remove only the vegetation that is absolutely necessary to remove (e.g., trim or mow instead of grub where feasible); • Avoid off-road vehicle use outside work zones; and • Instruct all construction personnel on storm water pollution prevention concepts to ensure they are conscious of how their actions affect the potential for erosion and sedimentation.
APM GHG-1	**Engine Maintenance.** The applicant and SCE will ensure that construction and operations vehicle equipment engines are maintained in good condition and in proper tune according to manufacturer specifications.
APM GHG-2	**Scheduling.** The applicant and SCE will ensure that staff and daily construction activities for each of the project components are efficiently scheduled to minimize the use of unnecessary/duplicate equipment when possible.
APM HZ-1	**Federal Aviation Administration Consultation.** SCE would file the necessary FAA Form 7460 for structures (poles/towers/conductors) that exceed notification requirements outlined in FAA Part 77. SCE would file the form upon completion of final engineering and prior to construction per FAA Part 77. All FAA recommendations, including the marking of conductor and installation of warning lights on TSPs will be implemented into the design of the project as appropriate. ~~SCE will consult with the Federal Aviation Administration as part of the design phase for the SCE-proposed project components to ensure that elevated structures such as TSPs will not pose a hazard for air traffic.~~
~~**APM HZ-2**~~	~~**Plant Power Line Inspection and Maintenance.** After construction, the applicant will inspect and maintain the Plant Power Line on at least a monthly basis for the purpose of reducing wildfire hazards.~~
APM HZ-3	**Hazardous Materials Spill and Release Prevention.** The applicant and SCE will ensure that construction procedures are implemented to minimize the potential for hazardous material spills and releases in each of the project component areas.

Table 2-8 Applicant Proposed Measures

APM No.	Applicant Proposed Measure
APM HZ-4	**Contaminated Soil Disposal.** The applicant and SCE will ensure that any soil from excavation and grading activities that is suspected of being contaminated with oil or other hazardous materials is characterized and disposed offsite at an appropriately licensed waste facility.
APM HZ-5	**Hazardous Materials Use and Storage and Hazardous Waste.** The applicant and SCE will ensure the following during construction of the proposed project components: • All hazardous materials (including fuels, lubricants, and cleaning solvents) will be stored, handled, and used in accordance with applicable regulations. • For all hazardous materials in use at construction sites, Material Safety Data Sheets will be available for routine or emergency use. In addition, the applicant will ensure the following for the storage field project components during construction: • All hazardous materials planned for use or storage at the storage field site during construction of the proposed Central Compressor Station will be preapproved by the applicant's designated safety staff. Approval of hazardous materials will be determined only after full review of the Material Safety Data Sheet for the proposed material. • Hazardous materials storage locations at the storage field will be determined based on the storm water pollution prevention plan and storage field policy. Existing materials are stored within the storage field's hazardous material and hazardous waste storage area. The applicant and SCE will also ensure the following during operation of the proposed project components: • All hazardous and nonhazardous wastes generated during operation of the proposed project (e.g., waste oil and gas condensates from the compressor station) will be classified and managed in accordance with federal and state regulations and site-specific permits. • All hazardous materials (including fuels, lubricants, and cleaning solvents) will be stored, handled, and used in accordance with applicable regulations.
APM HZ-6	**Worker Environmental Awareness Training.** Prior to construction, the applicant and SCE will develop and implement Worker Environmental Awareness Training Programs based on the final engineering design, the results of preconstruction surveys, and a list of mitigation measures developed by ~~the~~ CPUC staff to mitigate significant environmental effects of the proposed project. Prior to start of work, presentations will be prepared by the applicant and SCE and shown to all workers who will be present on the proposed project component sites during construction. A record of all trained personnel (including logs of training sessions signed by all workers who attended each session) will be kept with the construction foreman. ~~The~~ CPUC staff will conduct regular (monthly and random) audits to ensure that workers on the project component sites have received the appropriate training. Audits will include worker tests and/or interviews to confirm adequate instruction in construction procedures and mitigation measures. All construction personnel will receive the following: 1. Instruction for compliance with project component site-specific biological or cultural resource protective measures and mitigation measures that are developed after preconstruction surveys; 2. A list of phone numbers for key personnel associated with the proposed project including the archeological and biological monitors, environmental compliance coordinator, and regional spill response coordinator; 3. Instruction on the South Coast Air Quality Management District Fugitive Dust and Ozone Precursor Control Measures and Portable Engine Operating Parameters; 4. Direction that site vehicles must be properly muffled; 5. Instruction on what typical cultural resources look like, and instruction that if cultural resources are discovered during construction, to suspend work in the vicinity of the find and contact the site supervisor

Table 2-8 Applicant Proposed Measures

APM No.	Applicant Proposed Measure
	and archeologist or environmental compliance coordinator; 6. Instruction on how to work near any Environmentally Sensitive Areas delineated by archeologists or biologists; 7. Instruction on individual responsibilities under the Clean Water Act, the applicant's and SCE's storm water pollution prevention plans, site-specific best management practices, hazardous materials and waste management requirements, and the location of Material Safety Data Sheets as needed for each proposed project component; 8. Instructions to notify the site supervisor and regional spill response coordinator in the event of hazardous materials spills or leaks from equipment or upon the discovery of soil or groundwater contamination; 9. A copy of the truck routes to be used for material delivery; and 10. Instruction that noncompliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the proposed project components.
APM HZ-7	**Wood Pole Recycling and Disposal.** SCE will ensure that utility pole and other utility wood waste is reused by SCE, returned to the manufacturer, disposed of in a Class I hazardous waste landfill, or disposed of in the lined portion of a municipal landfill certified by the associated Regional Water Quality Control Board.
~~**APM HZ-8**~~	~~**Construction Fire Control and Emergency Response Measures.** To address the risk of fire during construction of the proposed project components, the applicant and SCE will develop fire control and emergency response measures as part of the Construction Safety and Emergency Response Plans developed in consultation with their contractors for use during construction of the proposed project components. The Construction Fire Control and Emergency Response Measures will describe fire prevention and response practices that the applicant and SCE will implement during construction of the proposed project components to minimize the risk of fire, and in the case of fire, provide for immediate suppression and notification. SCE's Construction Fire Control and Emergency Response Measures will also be generally consistent with SCE's Specification E-2005-104, Transmission Line Project Fire Plan (February 21, 2006).~~ ~~The Construction Fire Control and Emergency Response Measures shall specify that the applicant and SCE, or the respective construction contractors, shall furnish all supervision, labor, tools, equipment, and material necessary to prevent starting any fire, control the spread of fires if started, and provide assistance for extinguishing fires started as a result of project construction activities.~~ ~~Labor shall include the assignment of Fire Risk Managers who will be present at each proposed project component area during construction activities, whose sole responsibility will be to monitor the contractor's fire-prevention activities, and who will have full authority to stop construction in order to prevent fire hazards.~~ ~~1. The Fire Risk Managers shall:~~ • ~~Be responsible for preventing, detecting, controlling, and extinguishing fires set accidentally as a result of construction activity;~~ • ~~Review the Fire Control and Emergency Response Measures with the fire patrolperson and construction employees prior to starting work at each project area;~~ • ~~Ensure that all construction personnel are trained in fire safety measures relevant to their responsibilities. At a minimum, construction personnel shall be trained and equipped to extinguish small fires;~~ • ~~Be equipped with radio or cell phone communication capability; and~~ • ~~Maintain an updated a key personnel and emergency services contact (telephone and email) list, kept onsite and made available as needed to construction personnel.~~

Table 2-8 Applicant Proposed Measures

APM No.	Applicant Proposed Measure
	~~2. Equipment shall include:~~ ~~a. Spark arresters that are in good working order and meet applicable regulatory standards for all diesel and gasoline internal combustion engines, stationary and mobile;~~ ~~b. One shovel and one pressurized chemical fire extinguisher for each gasoline-powered tool, including but not restricted to compressors, hydraulic accumulators, gardening tools (such as chain saws and weed trimmers), soil augers, rock drills, etc.;~~ ~~c. Fire suppression equipment to be kept on all vehicles used for project construction; and~~ ~~d. An onboard self-extinguishing fire suppression system capable of extinguishing any equipment-caused fire to be kept on heavy construction operating equipment.~~ ~~3. Measures to be undertaken by the applicant, SCE or the respective construction contractors, and monitored and enforced by the Fire Risk Manager, at each of the project areas during construction activities, shall include:~~ ~~a. The installation of fire extinguishers at the proposed Central Compressor Station site;~~ ~~b. The prohibition of smoking at each construction job site as follows: no smoking in wildland areas; no smoking during operation of light or heavy equipment; limit smoking to paved areas or areas cleared of all vegetation; no smoking within 30 feet of any area in which combustible materials (including fuels, gases, and solvents) are stored; no smoking in any project construction areas during any Red Flag Warnings that apply to the area;~~ ~~c. The posting of no smoking signs and fire rules on the project bulletin board at all contractor field offices and areas visible to employees during fire season;~~ ~~d. The maintenance of all construction areas in an orderly, safe, and clean manner. All oily rags and used oil filters shall be removed from project construction areas. After construction activities are completed in each project area, the area shall be cleaned of all trash and surplus materials. All extraneous flammable materials shall be cleared from equipment staging areas and parking areas;~~ ~~e. Confinement of welding activities to cleared areas having a minimum radius of 10 feet measured from place of welding, and observed by the Fire Risk Manager;~~ ~~f. Prevention of the idling of vehicles with hot exhaust manifolds on dirt roads with dead combustible vegetation under the vehicle;~~ ~~g. The provision of portable communication devices (i.e., radio or mobile telephones) as needed to construction personnel and communication protocols for onsite workers to coordinate with local agencies and emergency personnel in the event of fire or other emergencies during construction or operation of the proposed project; and~~ ~~h. Any additional measures as needed during construction to address fire prevention and detection, to lower the risk of wildland fires.~~ ~~4. Measures will also include the following requirements that would involve coordination between the applicant and SCE, and the Fire Departments and CAL FIRE:~~ ~~a. The applicant and SCE or the respective construction contractors shall furnish any and all forces and equipment to extinguish any uncontrolled fire near the project component areas as directed by Fire Department or CAL FIRE representatives;~~ ~~b. The applicant and SCE or the respective construction contractors shall abide by all restrictions to construction activity that may be enforced by the Fire Departments and/or CAL FIRE during Red Flag Warning days; and~~ ~~c. In the event that the applicant and SCE or the respective construction contractors sets fire to incinerate cleared vegetation, the Fire Risk Manager shall notify the Fire Departments and/or CAL~~

Table 2-8 Applicant Proposed Measures

APM No.	Applicant Proposed Measure
	~~FIRE in advance of the burning. Special care shall be taken to prevent damage to adjacent structures, trees, and vegetation.~~ ~~5. Measures will also include additional, special provisions for days when the National Weather Service issues a Red Flag Warning. Standard protocols implemented during these periods will include:~~ ~~a. Measures to address storage and parking areas;~~ ~~b. Measures to address the use of gasoline-powered tools;~~ ~~c. Procedures for road closures as necessary;~~ ~~d. Procedures for use of a fire guard as necessary; and~~ ~~e. Additional fire suppression tools and fire suppression equipment, and training requirements.~~
APM NS-1	**Construction Hours.** The applicant and SCE will ensure that construction of the proposed project components will comply with all applicable City of Los Angeles, City of Santa Clarita, County of Los Angeles, and County of Ventura noise regulations. Construction activities will generally be scheduled during daylight hours (7:00 a.m. to 5:00 p.m.) Monday through Friday and some Saturdays.
APM NS-2	**Construction Noise Control Plan.** SCE will prepare and implement a noise control plan to address all SCE structure installation/replacement and substation modifications associated with the SCE-proposed project components. Construction measures required by the Noise Control Plan will include, but not be limited to, the following: • Stockpiling and vehicle staging areas will be located as far away from occupied residences as possible; • All stationary construction equipment will be operated as far away from residential uses as possible; • To the extent feasible, haul routes for removing excavated materials or delivery of materials from each respective project component site will be designed to avoid residential areas and areas occupied by residential receptors (e.g., hospitals, schools, convalescent homes, etc.); and • Idling construction equipment will be turned off when not in use for periods longer than 15 minutes.
APM NS-3	**Notification Procedures.** At least two weeks prior to construction, the applicant and SCE will notify all ~~sensitive receptors~~ property owners within 300 feet of construction activities ~~of the potential to experience significant noise levels during construction~~.
APM PS-1	**Site Cleanup.** The applicant and SCE will direct construction contractors to perform initial site cleanup immediately following construction activities at each of the proposed project components. Initial site cleanup at each project component area will include the following: • Removal of all construction debris; • Proper disposal or recycling of all construction materials and debris at appropriately licensed landfills and other offsite facilities; and • Inspection of project component sites to ensure that cleanup activities are successfully completed.
APM PS-2	**Nonhazardous Waste Management.** The applicant and SCE will ensure that nonhazardous waste materials, including wood, soil, vegetation, and sanitation waste (portable toilets) that would be generated during construction of the project components will either be re-used at the project component construction sites (e.g., clean soil used for backfill) or disposed of at an appropriately licensed offsite facility.
APM TT-1	**Traffic Control Plan.** The applicant and SCE will prepare Traffic Control Plans in accordance with the latest version of the California Joint Utility Traffic Control Manual. These Traffic Control Plans will be implemented by the applicant and SCE as needed. The Traffic Control Plans will be developed to minimize short-term construction-related impacts on local traffic and potential traffic safety hazards, and will include measures such as the installation of temporary warning signs at strategic locations near access locations for the project components. The signs will be removed after construction-related activities are completed. The Traffic Control Plans may include the following measures: • Coordination with the City of Los Angeles, City of Santa Clarita, County of Los Angeles, or County of

Table 2-8 Applicant Proposed Measures

APM No.	Applicant Proposed Measure
	Ventura on any temporary land or road closures; • Installation of traffic control devices as specified in the California Joint Utility Traffic Control Manual; • Provisions for temporary alternate routes to route local traffic around construction zones; and • Consultation with emergency service providers and development of an Emergency Access Plan for emergency vehicle access in and adjacent to the construction zone.
APM TT-2	**Repair of Damaged Roads.** The applicant and SCE will ensure that damage to existing roads that is the direct result of activities related to construction of the proposed project components will be repaired once construction is complete in accordance with local jurisdiction requirements and/or existing franchise agreements held by the applicant and SCE.
APM TT-3	**Commuter Plan.** The applicant would implement a Commuter Plan that includes a designated offsite parking area that has adequate parking capacity for 150 workers (the peak construction-activity maximum not including SCE workers) and a shuttle that would transport worker crews (approximately 10 workers per trip) from the parking area to worksites.

2.6 Electric and Magnetic Fields

Electric and magnetic fields (EMFs) occur both naturally and as a result of human activity across a broad electrical spectrum. Naturally occurring electric and magnetic fields are caused by the weather and the earth's geomagnetic field. The fields caused by human activity result from the technological application of the electromagnetic spectrum for uses such as communications, appliances, and the generation, transmission, and local distribution of electricity. After several decades of study regarding potential public health and safety risks associated with EMF from power lines, research results remain inconclusive.

In 1993, the CPUC implemented decision D.93 11-013, which requires utilities to use "low-cost or no-cost" EMF reduction measures for EMFs associated with electrical facilities that require certification under CPUC General Order 131-D. The decision directed utilities to use a 4 percent benchmark for low-cost EMF reduction measures~~mitigation~~. This decision also implemented a number of EMF measurement, research, and education programs. The CPUC did not adopt any specific numerical limits or regulation on EMF levels related to electric power facilities. The CPUC's January 27, 2006, decision (D.06-01-042) affirmed the 1993 decision on the low-cost/no-cost policy to mitigate EMF exposure for new utility transmission and substation projects. For further information about EMFs and CPUC guidelines, refer to http://www.cpuc.ca.gov/PUC/energy/Environment/ElectroMagnetic+Fields.

In order to comply with CPUC's January 27, 2006, decision D.06-01-042 addressing EMFs, SCE would incorporate the following low-cost/no-cost measures into the design of the SCE proposed project components:

- A minimum ground clearance of 35 feet would be maintained along all 66-kV subtransmission line routes near schools and residences;
- The reconductored 66-kV subtransmission line conductors would be arranged on each structure to reduce magnetic fields. For example, the six conductors on a double-circuit alternating current subtransmission line would be arranged as follows, where the letters A, B, and C indicate the three different phases of the conductors: the left side of the utility structure would support conductors A, B, and C (top to bottom or equivalent) and the right side would support conductors C, B, and A (top to bottom or equivalent);

- The substation transformers, switchracks, buses, and underground duct banks would be installed away from the easement boundary of the proposed Natural Substation and property line of the San Fernando Substation; and
- The substation transfer and operating buses would be configured such that the transfer bus is closer to the nearest easement boundary of the proposed Natural Substation.

2.7 Permitting and Consultation Requirements

Table 2-9 lists the federal, state, and local permits and consultations that may be required for construction of the proposed project.

Table 2-9 Consultation and Permitting Requirements

Approval/Consultation Requirement	Agency	Purpose
Federal		
Clean Water Act Section 404/Rivers and Harbors Act Section 10: Nationwide Permit	U.S. Army Corps of Engineers	Section 404 regulates discharge off 'fill' into "Waters of the U.S." Section 401 requires that any applicant for a Section 404 Permit also obtain a Clean Water Certification from the state (see below).
Section 7 or 10 of the Federal Endangered Species Act and Consultation	U.S. Fish and Wildlife Service	Special status species survey and mitigation requirements, take authorization (i.e., Incidental Take Permits, if required), and informal or formal consultation.
State		
California Public Utilities Code Section 1001 et seq. and California Public Utilities Commission (CPUC) General Order 131-D	CPUC	CEQA review and overall approval of the proposed project including approval of a Certificate of Public Convenience and Necessity (CPCN) or CPCN exemption and approval of a Permit to Construct
California Public Utilities Code Section 851 (Article 6, "Transfer or Encumbrance of Utility Property")	CPUC	Approval to expand SCE's easement or grant additional easement rights on the storage field site to construct and operate the proposed Natural Substation
Section 401 of the Federal Clean Water Act, National Pollutant Discharge Elimination System General Permit for Discharge of Construction Related Storm Water	State Water Resources Control Board	Management of storm water during construction, Notice of Intent required under Section 401
Section 1600 of the California Department of Fish and Game Code and Consultation	California Department of Fish and ~~Game~~Wildlife	Streambed alteration agreement for construction in bed and bank of streams
Section 2081 of the California Endangered Species Act and Consultation	California Department of Fish and ~~Game~~Wildlife	Special status species survey and mitigation requirements, take authorization (if required), and consultation for Section 2081 of the California Endangered Species Act
California Streets and Highways Code 660 to 711.21, California Code of Regulations 1411.1 to 1411.6	California Department of Transportation (Caltrans)	Caltrans requires that all work done within or spanning a state or interstate highway right-of-way (ROW) receive an encroachment permit. Permits are also required for oversize and/or overweight truckloads that exceed legal load limits as defined by the California Vehicle Code.

Table 2-9 Consultation and Permitting Requirements

Approval/Consultation Requirement	Agency	Purpose
Section 401 of the Federal Clean Water Act, National Pollutant Discharge Elimination System General Permit for Discharge of Construction Related Storm Water	Los Angeles Regional Water Quality Control Board	As directed by State Water Resources Control Board, monitor development and implementation of Stormwater Pollution Prevention Plans and other aspects of the National Pollutant Discharge Elimination System permit and 401 certification program. SWPPPs are required for storm water discharges associated with construction activities that disturb more than 1 acre of land.
Local		
~~Permit to Construct, Permit to Operate, Permit for Alteration/Modification, Emission Reduction Credits, Rule 403 Permit (Fugitive Dust)~~	~~South Coast Air Quality Management District~~	~~Consultation and Permitting for air pollution, including fugitive dust and greenhouse gas emissions; Permits to Construct are for new or relocated equipment as well as alteration (both physical modification and change of operating conditions) of existing equipment~~
~~Section 401 of the Federal Clean Water Act, National Pollutant Discharge Elimination System General Permit for Discharge of Construction Related Storm Water~~	~~Los Angeles Regional Water Quality Control Board~~	~~As directed by State Water Resources Control Board, monitor development and implementation of Stormwater Pollution Protection Plans and other aspects of the National Pollutant Discharge Elimination System permit and 401 certification program. SWPPPs are required for storm water discharges associated with construction activities that disturb more than 1 acre of land.~~
Railroad Crossing Permit	Metrolink/Amtrak	Permission to string fiber optic cable overhead across railroad lines
Consultation	Significant Ecological Area Technical Advisory Committee (Los Angeles County)	The County of Los Angeles Proposed General Plan Update includes Significant Ecological Area boundary changes within the proposed project area.
Building Permit	County of Los Angeles and City of Los Angeles	New construction on the storage field site for Southern California Gas Company buildings
Grading Permit	County of Los Angeles Department of Public Works and City of Los Angeles	Grading for the proposed Central Compressor Station, guardhouse, road widening, and Natural Substation; permits are required for excavations that (1) are more than 2 feet deep or (2) create a cut slope greater than 5 feet high, steeper than a 50-percent slope, and exceeding 50 cubic yards.
Encroachment Permit	County of Los Angeles, City of Los Angeles, City of Santa Clarita, and City of San Fernando	An encroachment permit is required any time there is work being done within the public ROW, including curb drains, lane closures, and utility trenches by utility agencies.
Traffic Control Plan	Caltrans District 7 (City of Santa Clarita, City and County of Los Angeles, County of Ventura)	Traffic management for lane closures during construction

Table 2-9 Consultation and Permitting Requirements

Approval/Consultation Requirement	Agency	Purpose
~~Oak Tree Permit/Tree Permit~~Consultation	County of Los Angeles, County of Ventura, and City of Santa Clarita	Absent the CPUC's jurisdiction over the project, ~~O~~oak trees of a certain size (6-inch diameter at breast height for city; 8-inch for county) ~~may~~ would require a permit for tree removal or trimming or interference within the drip line of an Oak tree. In the County of Ventura, designated historic trees and Oaks and Sycamores 9.5 inches in circumference or larger (measured 4.5 feet above ground) ~~may~~ would require a permit.

Source: SoCalGas 2009, ~~2011~~2012
Key:
CEQA = California Environmental Quality Act
CPCN = Certificate of Public Convenience and Necessity
CPUC = California Public Utilities Commission
ROW = right-of-way
SCE = Southern California Edison
SWPPP = Storm Water Pollution Prevention Plan

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3.0 Description of Alternatives

This chapter describes the alternatives screening process and introduces and describes alternatives to the proposed project. It also describes alternatives that were initially evaluated and eliminated from further consideration and discusses the reasons for their elimination. The discussion in Chapter 5, “Comparison of Alternatives,” compares the environmental advantages and disadvantages of the proposed project with those of the alternatives retained for consideration in this Environmental Impact Report (EIR). The Environmentally Superior Alternative is selected in Chapter 5.

Provisions of the California Environmental Quality Act (CEQA) Guidelines (Section 15126.6) addressing project alternatives in an EIR include the following:

- The range of alternatives required in an EIR is governed by a “rule of reason.” Therefore, the EIR must evaluate only those alternatives necessary to permit a reasonable choice. The alternatives shall be limited to those that would avoid or substantially lessen any of the significant effects of the proposed project.
- The No Project Alternative shall be evaluated, along with its impacts. The No Project Alternative analysis shall discuss the existing conditions at the time the notice of preparation was published, as well as what would reasonably be expected to occur in the foreseeable future if the proposed project were not approved, based on current plans and consistent with available infrastructure and community services. The purpose of describing and analyzing a No Project Alternative is to allow decision-makers to compare the effects of approving the proposed project with the effects of not approving the proposed project.
- An EIR does not need to consider an alternative whose effects cannot reasonably be ascertained and whose implementation is remote and speculative.

3.1 Alternatives Development and Screening Process

An Alternatives Screening Report (see Appendix C) was prepared that describes the alternatives screening analysis that was conducted to determine the range of alternatives to carry forward for consideration in the EIR. It documents the criteria used to evaluate and select alternatives for further analysis, including their feasibility, the extent to which they would meet most of the basic objectives of the proposed project, and their potential to avoid or substantially lessen any of the significant effects of the proposed project.

3.1.1 Alternatives Screening Methodology and Criteria

The screening of alternatives to the proposed project was completed by:

- Determining the proposed project objectives;
- Compiling a preliminary list of potentially significant effects of the proposed project;
- Generating a broad list of potential alternatives that would avoid or reduce the potentially significant effects of the proposed project;
- Clarifying the description of each potential alternative to allow for comparison; and

- Evaluating each alternative pursuant to CEQA Guidelines Section 15126.6 and screening the list of alternatives down to a reasonable range of alternatives for consideration in the EIR.

CEQA Guidelines Section 15126.6 states that "an EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." Accordingly, each alternative on the broad list of alternatives was evaluated against the following criteria:

I. Does the alternative meet most of the basic objectives of the proposed project;

II. Is the alternative potentially feasible; and

III. Does the alternative avoid or substantially lessen any significant effects of the proposed project?

More information about the alternatives screening methodology and criteria is provided in the Alternatives Screening Report (Appendix C).

3.1.2 Alternatives Considered in the Screening Report

Some of the alternatives considered during the screening process were presented in the Proponent's Environmental Assessment (PEA), and others were suggested by the public during scoping or identified by the California Public Utilities Commission (CPUC) Energy Division as a result of the agency's independent review. The alternatives considered included alternative compressor technologies; central compressor station and substation sites; electrical designs; and electrical and telecommunications line routings. The process identified and evaluated potential alternatives to the proposed project, including a Non-wires Alternative and the No Project Alternative.[1]

Each alternative eliminated from further consideration or retained for consideration in this EIR is listed in Table 3-1. Each of the alternatives eliminated from further consideration are described in the Alternatives Screening Report (Appendix C).

[1] Pursuant to California Public Utilities Code Section 1002.3, the CPUC considers cost-effective alternatives to transmission facilities that meet the need for an efficient, reliable, and affordable supply of electricity, including, but not limited to, demand-side alternatives. Alternatives to transmission facilities are sometimes referred to as "Non-wires Alternatives."

Table 3-1 Alternatives Considered in the Screening Report

Alternative	Included in PEA	Meets Basic Objective 1 of the Proposed Project	Meets Basic Objective 2 of the Proposed Project	Feasible	Avoids or Substantially Lessens a Significant Effect	Retained for Consideration in EIR
Design Alternative (Alternate Compressor Drive Type, a Non-wires Alternative)	Yes	Yes	Yes	Yes	• Biological Resources; • Cultural Resources; • Hazards (Fire); and • Noise.	Yes
Electrical Alternative A (220-kV Alternative)	No[1]	Yes	No	Yes	• Biological Resources; and • Noise.	No
Electrical Alternative B (New 16-kV Lines)	Yes	Yes	No	No	• Air Quality; • Cultural Resources; and • Noise.	No
Siting Alternative A (Central Compressor Station at Proposed Office Facilities Site)	No	Yes	Yes	No	• No significant effects reduced	No
Siting Alternative B (Central Compressor Station at Existing Compressor Station Site)	Yes	No	No	No	• Air Quality; and • Biological Resources.	No
Siting Alternative C (Natural Substation Constructed at Water Tower Site)	Yes	Yes	Yes	Yes	• No significant effects reduced	No
Routing Alternative A (Telecommunications: Sylmar Substation to San Fernando Substation)	No[2]	Yes	Yes	Yes	• Noise	Yes[2]
Routing Alternative B (Telecommunications: Existing 66-kV Line from Chatsworth Substation)	Yes	Yes	Yes	No	• No significant effects reduced	No
Routing Alternative C (Southern 12-kV Plant Power Line Route)	Yes[3]	Yes	Yes	Yes	• No significant effects reduced	No
Routing Alternative D (Underground the 12-kV Plant Power Line)	Yes	Yes	Yes	Yes	• No significant effects reduced	No

Table 3-1 Alternatives Considered in the Screening Report

Alternative	Included in PEA	Meets Basic Objective 1 of the Proposed Project	Meets Basic Objective 2 of the Proposed Project	Feasible	Avoids or Substantially Lessens a Significant Effect	Retained for Consideration in EIR
No Project Alternative	Yes	No	No	Yes	• Yes, significant effects would be avoided[4]	Yes

Key:
EIR = Environmental Impact Report
kV = kilovolt
PEA = Proponent's Environmental Assessment
Notes:

1 With only one 220-kV transmission line right-of-way (ROW) to serve the storage field's compressors, in the event of an electrical outage due to an event along the new 220-kV ROW, natural gas services would be disrupted. Although this alternative is potentially feasible, a disruption of natural gas service at the storage field could have a wide-ranging and substantial impact on energy services in the region. See Appendix C for further details.

2 This alternative was proposed by Southern California Edison (SCE) in response to a request by the California Public Utilities Commission (CPUC) for more specific information about the telecommunication line routings during the Environmental Impact Report (EIR) preparation process. SCE later submitted Telecommunications Route #3 (San Fernando Substation to Fiber Optic Connection Point) as the proposed route, and the CPUC chose to consider the original route as an alternative (Routing Alternative A). In comments on the draft EIR, SCE requested that significant portions of this route be incorporated into the Project Description as a minor modification to the Project Description (Telecommunications Route #4). Accordingly, as discussed below, Routing Alternative A was removed from consideration as an alternative.

3 This alternative was included in the PEA as the proposed 12-kV Plant Power Line route. The applicant proposed a modified (northern) routing during the EIR preparation process. The original (southern) routing was retained for consideration as an alternative (Routing Alternative C).

4 The California Environmental Quality Act (CEQA) requires that a No Project Alternative be considered in EIRs (CEQA Guidelines Section 15126.6[e]). The purpose of describing and analyzing a No Project Alternative is to allow decision-makers to compare the effects of approving the proposed project with the effects of not approving the proposed project.

3.2 Alternatives Eliminated from Further Consideration

Alternatives may be eliminated from detailed consideration in an EIR if they fail to meet most of the basic objectives of the proposed project, are infeasible, or do not avoid or substantially reduce significant environmental effects (CEQA Guidelines, Section 15126.6[c]). Alternatives that are remote or speculative, or the effects of which cannot be reasonably predicted, also do not need to be considered (CEQA Guidelines, Section 15126[f][2]). The following alternatives were initially considered in the Alternatives Screening Report and eliminated from further consideration in this EIR:

- Electrical Alternative A (220-kilovolt [kV] Alternative);
- Electrical Alternative B (New 16-kV Lines);
- Siting Alternative A (Central Compressor Station at Proposed Office Facilities Site);
- Siting Alternative B (Central Compressor Station at Existing Compressor Station Site);
- Siting Alternative C (Natural Substation Constructed at Water Tower Site);
- Routing Alternative B (Along Existing 66-kV Line from Chatsworth Substation);
- Routing Alternative C (Southern 12-kV Plant Power Line Route); and
- Routing Alternative D (Underground the 12-kV Plant Power Line).

For a complete description of each of the alternatives eliminated from consideration in this EIR and figures that show the locations of these alternatives, refer to the Alternatives Screening Report (Appendix C).

3.3 Alternatives Retained for Further Consideration ~~Evaluated in this EIR~~

The alternatives to the proposed project ~~carried forward for analysis~~ considered in this EIR are described in this section. ~~The screening process determined that these alternatives would meet most of the objectives of the proposed project, be feasible, and reduce significant environmental effects.~~

3.3.1 Design Alternative (Alternate Compressor Drive Type, a Non-wires Alternative)

For this alternative, which was proposed in the PEA, new gas turbine–driven compressors with greater capacity than the existing gas turbine–driven compressors would be installed in the proposed Central Compressor Station instead of electric-driven, variable-speed compressors. The gas turbine–driven compressors would combust natural gas for power rather than use electricity. The proposed Natural Substation, 66-kV subtransmission line reconductoring, and telecommunications line installations would not be required. Access to the storage field from Sesnon Boulevard would be improved, and the new guardhouse, main office building, and crew-shift building would be constructed as proposed. The Design Alternative is potentially feasible and would meet the basic objectives of the proposed project.

3.3.1.1 New Gas Turbine–Driven Compressors

The three existing compressors are driven by General Electric LM-1500 gas turbines. Each compressor is rated at 15,000 horsepower, and together they are capable of compressing approximately 300 million cubic feet of natural gas per day. To comply with the Settlement Agreement (Objective #1), the applicant has indicated that three new gas turbine–driven compressors, rated at a minimum of 26,000 horsepower each, would be required to compress approximately 450 million cubic feet of natural gas per day. This horsepower rating is slightly higher than what would be required from electric-driven compressors (22,000 horsepower) because of variables that would affect the burning of natural gas to power gas turbine–driven compressors, including temperature at the storage field and elevation. The annual average temperature within the South Coast Air Basin is 62 degrees Fahrenheit. The Aliso Canyon Plant Station site is located at approximately 2,600 feet above sea level (Figure 2-2).

NO_x Emissions

Gas turbine–driven compressor technology has advanced substantially since the 1970s. New gas turbines, such as the Solar Titan 250 gas turbine (Solar Turbines, Inc. 2011a), emit lower quantities of oxides of nitrogen (NO_x) and have lower heat ratings than older models. Annual NO_x emissions from each of the existing General Electric LM-1500 gas turbines have ranged from 52 to 70 tons per year when operating at the storage field. It is anticipated that a new larger-capacity gas turbine (rated at 26,000 horsepower) employing emissions control equipment to reduce emissions would generate NO_x emissions of approximately 8 tons per year when operating at the storage field.

Reliability

The existing gas turbine–driven compressors at the storage field were installed in 1971. Production of the turbines was halted by the manufacturer in the late 1970s, and replacement parts are extremely limited (CPUC 2009). Maintenance issues, such as the occasional required removal of one of the existing compressors from the storage field for repair and the temporary use of a spare, would be substantially reduced with the use of new gas turbine–driven compressors. According to the applicant, in some cases the existing compressors have been removed from service and shipped out for repair after only 1,200 hours of service. Due to the scarcity of parts and other LM-1500 units still in service, the storage field ships their compressors to an original-equipment-manufacturer repair facility located in Canada. The applicant estimates that new gas turbine–driven compressors would operate for up to 30,000 hours without a major maintenance event. Assuming 3,000 hours of run time per year, 30,000 hours would equate to approximately 10 years (SoCalGas 2011).

Efficiency

One measure of efficiency for gas turbines is the *heat rate*—a measurement that indicates how efficiently a power-generating device uses heat energy. The approximate heat rate of each of the three LM-1500 gas turbines was approximately 9,500 British thermal units/horsepower (Btu/hp) per hour when installed in the 1970s; this rating has degraded during their years of service to approximately 13,000 Btu/hp per hour. Comparable new equipment, such as the Solar Mars 100 gas turbine, have heat rates of approximately 7,500 Btu/hp per hour (Solar Turbines, Inc. 2011b). New gas turbines are more efficient than older models because of improvements that have been made to their gearing, power turbine, and compressor components.

3.3.1.2 Emissions Control System Worker and Space Requirements

The emissions control system, which would not be required for the proposed electric-driven compressors, and larger Central Compressor Station footprint would require an additional 8 to 10 workers to construct. The workers would be needed for approximately three months. During operations, at least one additional full-time employee would be required because of specialized operations and maintenance requirements for the emissions control system.

The plot size of the Central Compressor Station that would be associated with the Design Alternative would be approximately 4,000 square feet larger than that for the proposed project to accommodate the Selective Catalytic Reduction and Continuous Emissions Monitoring systems and two 10,000 gallon ammonia tanks that would likely be required to meet emissions permitting requirements. The Central Compressor Station associated with the proposed project would be approximately 26,500 square feet, including 750 square feet for three variable-speed devices; these devices would not be required for the Design Alternative. Therefore, it is estimated that if larger gas turbine–driven compressors were installed instead of the proposed electric-driven compressors, the Central Compressor Station would be approximately 29,750 square feet.

3.3.1.3 Non-wires Alternative

For the Design Alternative, none of the proposed new or modified transmission and telecommunications facilities would be required. Therefore, the Design Alternative serves as a Non-wires Alternative pursuant to California Public Utilities Code Section 1002.3 (see also Section 1.5, "Alternatives to Transmission Facilities").

3.3.2 Routing Alternative A (Telecommunications: Sylmar Substation to San Fernando Substation)

For this alternative, proposed Telecommunications Route #3 would be routed from Sylmar Substation to San Fernando Substation (Figure 3-1). This alternative would overlap with proposed Telecommunications Route #4 (Figure 2-8) from San Fernando Substation approximately 4.7 miles north to the intersection of San Fernando Road and Sepulveda Boulevard. Routing Alternative A would terminate at Sylmar Substation, which is located about 300 feet southwest of the intersection of San Fernando Road and Sepulveda Boulevard. Telecommunications Route #4 would continue north on San Fernando Road past the intersection with Sepulveda Boulevard to the entrance of Sunshine Canyon Landfill, as described in Section 2.2.9 of the revised Draft EIR (Appendix A of the Final EIR).

For both the proposed and alternative routes, new fiber optic cable would be installed primarily overhead on existing Southern California Edison (SCE) and Los Angeles Department of Water and Power electrical distribution line structures. ~~The proposed route~~ Telecommunications Route #3 would be ~~27,018 feet long (5.1 miles)~~ approximately 5.0 miles long and require approximately 900~~1,200~~ feet of new underground conduit. Telecommunications Route #4 would be approximately 5.6 miles long and require approximately 1,710 feet of new underground conduit. The alternative route would be ~~25,560 feet long (4.8 miles)~~ approximately 5.1 miles long and require approximately 1,450~~1,300~~ feet of new underground conduit. The location of all three ~~both~~ routes would be identical for the final 1.4~~25~~ miles into San Fernando Substation, along which approximately 300 feet of new underground conduit would be required.

Routing Alternative A was proposed by SCE in response to a request by the CPUC for more specific information about the telecommunications line routes during the EIR preparation process. SCE later submitted Telecommunications Route #3 (San Fernando Substation to Fiber Optic Connection Point) as the proposed route, and the CPUC chose to consider the original route as an alternative. After circulation of the Draft EIR, Telecommunications Route #4 was proposed by SCE as described in revised Chapter 2, "Project Description," of this EIR.

Path: \\prtbhp1\gis\SanFrancisco\Aliso Canyon Natural Gas\Maps\MXD\EIR\Final_EIR_Feb2013\Telecom_Route_Alternative.mxd

SOURCES: ESRI 2010, SoCalGas 2009 to 2012

- Substation
- Proposed Underground Fiber Optic Cable in New Conduit
- Telecommunications Route from Sylmar Substation to San Fernando Substation (Routing Alternative A)
- Proposed Overhead Fiber Optic Cable / Underground in Existing Conduit

N

0 1 Miles

Figure 3-1

Telecommunications Route #3 Alternative

Because Telecommunications Route #4 and Routing Alternative A would be substantially the same, should Telecommunications Route #4 and Routing Alternative A be constructed instead of Telecommunications Route #4 and Telecommunications Route #3 (as proposed), two diverse telecommunications routes would not be constructed. If an incident (e.g., a fallen tree) were to occur along Telecommunications Route #4, the same event would affect the fiber optic line installed along Routing Alternative A, which would share the overhead structures and underground conduit alignments used by fiber optic line installed along Telecommunications Route #4. Therefore, Routing Alternative A was eliminated from consideration in Chapter 5, "Comparison of Alternatives," as revised and presented in Appendix A of the Final EIR.

3.3.3 No Project Alternative

The No Project Alternative is the circumstance under which the proposed project does not proceed. According to CEQA Guidelines Section 15126.6(e), the No Project Alternative must include (a) the assumption that conditions at the time the Notice of Preparation of an EIR was circulated for public review would not be changed because the proposed project would not be constructed; and (b) the events or actions that would reasonably be expected to occur in the foreseeable future if the proposed project were not approved.

3.3.3.1 The No Project Alternative and Objectives of the Proposed Project

Under the No Project Alternative, the existing gas turbine–driven compressors would not be replaced at the storage field, and the storage field's injection capacity would not be increased. For this alternative, compliance with the terms of the Settlement Agreement would not be achieved (Objective #1). In addition, the reliability and efficiency of storage facility operations would not be maintained or improved (Objective #2).

The existing gas turbine–driven compressors were installed in 1971. Production of the gas turbines was halted by the manufacturer in the late 1970s and replacement parts are extremely limited (CPUC 2009). It is anticipated that maintenance issues requiring compressor replacement parts would take longer to address over time, and that the current level of compressor reliability experienced at the storage field would decrease. Therefore, neither of the basic objectives of the proposed project would be achieved under the No Project Alternative.

3.3.3.2 Reasonably Foreseeable Events or Actions if the Proposed Project is Not Approved

Chapter 6, "Cumulative Impacts and Other CEQA Considerations," evaluates past, present, and reasonably foreseeable future projects within the proposed project area. A number of residential projects and several industrial and commercial projects, all of which would require electricity, are discussed in this section. In addition, the Los Angeles Department of Water and Power's proposed 75-mile-long 230-kV transmission line (the Barren Ridge Renewable Transmission Project), which would extend from northeast of the City of Santa Clarita (Figure 2-1) southwest to Rinaldi Substation, is discussed. Rinaldi Substation is located approximately 1 mile northwest of San Fernando Substation. The Draft Environmental Impact Statement/EIR for the Barren Ridge Project was circulated to the public in August 2011. In addition, the Draft EIR for SCE's proposed 66/16-kV Presidential Substation and 3.5 miles of new subtransmission lines was issued in September 2011.

Under the No Project Alternative, the applicant would continue to operate and maintain the storage field and its three gas turbine–driven compressors in their existing states, and SCE would continue to operate and maintain the existing electrical and telecommunications facilities, including the existing Chatsworth–MacNeil–Newhall–San Fernando and MacNeil–Newhall–San Fernando 66-kV Subtransmission Lines and associated telecommunications lines as well as the Newhall, Chatsworth, San Fernando, and MacNeil Substations. The No Project Alternative is discussed with respect to the environmental impacts of the proposed project in Chapter 5, "Comparison of Alternatives."

References

CPUC (California Public Utilities Commission). 2009. Phase I of the 2009 Biennial Cost Allocation Proceeding (Application A.08-02-001). Appendix A: Settlement Agreement. In the Matter of the Application of San Diego Gas & Electric Company (U 902 G) and Southern California Gas Company (U 904 G) for Authority to Revise Their Rates Effective January 1, 2009, in Their Biennial Cost Allocation Proceeding. August 22.

Solar Turbines, Inc. 2011a. Titan 250. http://mysolar.cat.com/cda/layout?m=177311&x=7. Accessed on October 25, 2011.

______. 2011b. Mars 100. http://mysolar.cat.com/cda/layout?m=41436&x=7. Accessed on November 1, 2011.

SoCalGas (Southern California Gas Company). 2011. Responses to data gap requests from the California Public Utilities Commission about the Proponent's Environmental Assessment for the Aliso Canyon Turbine Replacement Project from 2010–2011.

4.0 Environmental Analysis

This chapter evaluates environmental impacts that would result from construction and operation of the proposed project and alternatives. The chapter includes sections for each of the following resource areas:

4.1	Aesthetics	4.9	Hydrology and Water Quality
4.2	Agriculture and Forestry Resources	4.10	Land Use and Planning
4.3	Air Quality	4.11	Noise
4.4	Biological Resources	4.12	Population and Housing
4.5	Cultural Resources	4.13	Public Services and Utilities
4.6	Geology, Soils, and Mineral Resources	4.14	Recreation
4.7	Greenhouse Gas Emissions	4.15	Transportation and Traffic
4.8	Hazards and Hazardous Materials		

Each resource area is organized under the following headings:

- Environmental Setting;
- Regulatory Setting;
- Methodology and Significance Criteria; and
- Environmental Impacts and Mitigation Measures.

The Proponent's Environmental Assessment (PEA) provided a basis for the setting and impact analyses sections (SoCalGas 2009, ~~2011~~2012). The setting and impacts analysis sections for each resource area considers the following components of the proposed project:

- Components at the storage field including the Central Compressor Station, Natural Substation, main office and crew-shift buildings, guardhouse, and road widening;
- 66-kV Segments A, B, and C and Telecommunications Route #1;
- Telecommunications Route #2;~~ and~~
- 66-kV Segments D and E and Telecommunications Route #3 (Figures 2-1 and 2-6); and
- Telecommunications Route #4.

Issues raised during scoping are also addressed in the setting and impacts analysis sections.

Additional project information was submitted by Southern California Gas Company (the applicant) after the PEA filing date (September 28, 2009) in response to California Public Utilities Commission requests for further information. The applicant's responses occurred over a period of time that began in September

2009 and ended April 2012 when the Notice of Availability of the Draft Environmental Impact Report (EIR) was circulated. The responses have been incorporated into this EIR and will be available in the Administrative Record prepared at the completion of the California Environmental Quality Act (CEQA) process. The full PEA is available for public review at http://www.cpuc.ca.gov/Environment/info/ene/aliso_canyon/aliso_canyon_home.html.

Setting

Pursuant to CEQA Guidelines Section 15125(a), the baseline conditions described in the environmental and regulatory settings sections of this chapter reflect the conditions at the time the Notice of Preparation of this EIR was published (October 26, 2010).

Methodology

This chapter evaluates the environmental impacts of construction and operation of the proposed project. The impacts analysis is based on a set of significance criteria that were selected for each resource area. Further information about the methodologies applied to the analysis conducted for each resource area is presented in each resource area section (Sections 4.1 through 4.15).

Significance Criteria

The significance criteria used for the analysis of environmental impacts are based on Appendix G of the CEQA Guidelines. The criteria serve as a benchmark for determining if the proposed project would result in significant impacts when evaluated against the baseline conditions established in the setting sections for each resource area. According to the State CEQA Guidelines (Section 15382), a "'significant effect on the environment' means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project."

Environmental Impacts and Mitigation Measures

When significant impacts are identified, feasible mitigation measures have been presented to avoid or reduce the impacts. The effectiveness of a mitigation measure is subsequently determined by evaluating the impact remaining after its application. Implementation of more than one mitigation measure may be needed to reduce an impact to below a level of significance. The mitigation measures recommended in this document are identified within each resource area (Sections 4.1 through 4.15) and are presented in the Mitigation Monitoring Plan in Chapter 7.

Applicant Proposed Measures, Project Description, and Mitigation Monitoring

In the Proponent's Environmental Assessment (SoCalGas 2009, ~~2011~~2012), the applicant identified Applicant Proposed Measures (APMs) that would be implemented to avoid or reduce potential impacts of the proposed project. The APMs are listed in Table 2-9 of this document. In addition, the Project Description (Chapter 2) incorporates procedures or protocols that relate directly to how the proposed project would be constructed, and which were considered as part of the proposed project during preparation of this EIR. Both the APMs and Project Description, therefore, upon adoption of the Final EIR, become part of the Mitigation, Monitoring, Compliance, and Reporting ~~Plan~~ Program, and the construction components and methods therein would be monitored by the CPUC.

Alternatives, Cumulative Impacts, and Other CEQA Considerations

Alternatives, cumulative impacts, and other CEQA consideration are discussed in Chapters 3, 5, and 6. Chapter 3 provides a description of the alternatives evaluation process, description of alternatives considered in this EIR, and rationale for eliminating some of the alternatives from further analysis. Chapter 5 provides a discussion of the relative advantages and disadvantages of the proposed project and alternatives and identifies the CEQA Environmentally Superior Alternative. Chapter 6 identifies cumulative projects and provides an analysis of cumulative impacts and growth-inducing impacts.

References

SoCalGas (Southern California Gas Company). ~~2011~~2012. Responses to data gap requests from the California Public Utilities Commission about the Proponent's Environmental Assessment for the Aliso Canyon Turbine Replacement Project from 2010 ~~2011~~2012.

______. 2009. Proponent's Environmental Assessment for the Aliso Canyon Turbine Replacement Project. September.

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4.1 Aesthetics

This section describes the environmental and regulatory setting and discusses potential impacts associated with the construction and operation of the proposed project with respect to aesthetic resources. For the purposes of evaluating aesthetic resources in the project area, the project will be referred to in this section by the project components as described in Chapter 2, "Project Description," with the exception of the following project components, located at the Aliso Canyon Natural Gas Storage Field (storage field), which may also be treated here as one project area or component and are referred to as the "storage field" or "storage field components":

- The existing compressor station and office facilities,
- The site of the proposed Central Compressor Station and office relocation,
- The site of the proposed guardhouse relocation,
- Construction staging areas,
- Soil mixing area,
- Access roads, and
- The 12-kV Plant Power Line.

Impacts related to the area of Telecommunications Route #1 are described under impacts related to the 66-kilovolt (kV) subtransmission line reconductoring area because these two project components overlap. "Structures," as discussed in this section, refer to supporting structures for the 66-kV subtransmission line that will be reconductored; these are shown in Appendix D.

4.1.1 Environmental Setting

4.1.1.1 Existing Visual Setting

The proposed project components would be constructed primarily within a mountainous region that divides the Santa Clarita Valley to the north and the San Fernando Valley to the south (see Section 2.1, "Setting and Location of the Proposed Project," Figure 2-1) within the vicinity of the Newhall Pass area where Interstate 5 (I-5) is a boundary between the Santa Susana Mountains to the west and the San Gabriel Mountains to the east. The Santa Susana Mountains are an east-west running transverse mountain range that crosses both Ventura and Los Angeles Counties. The San Gabriel Mountains are also a transverse range that divides the greater Los Angeles area from the Mojave Desert to the north. The area of the proposed project components is characterized by canyons, hills, and mountain ranges that provide an open space greenbelt between suburban development within the Santa Clarita and San Fernando Valleys.

The visual character of the existing storage field can be described as industrial in the central portion of the site where the existing compressor station, office facilities, paved roadways and plant station are located (see Section 2.1, "Setting and Location of the Proposed Project," Figure 2-2). The remainder of the storage field surrounding this area is undeveloped and can be characterized visually as open space.

The storage field is immediately north of a residential area (Porter Ranch), at the base of the Santa Susana Mountains. The storage field area is situated on high terrain with elevations ranging from 1,880 to 1,970 feet above mean sea level (AMSL) within Aliso Canyon. Surrounding hills obscure the storage field from view from public roadways. A ridgeline separating the Los Angeles River and Santa Clara River Watersheds (see Section 4.9, “Hydrology and Water Quality”) extends along the northern border of the storage field site. This ridgeline, which is undeveloped, ranges in elevation from approximately 2,700 feet AMSL to 3,400 feet AMSL.

The existing entry road to the storage field is located approximately 500 feet north of Sesnon Boulevard. A guardhouse is located at the entrance to the facility. Sesnon Boulevard is a main road with two lanes of traffic in each direction that provides access to residential subdivisions within the Chatsworth and Granada Hills areas. Immediately across Sesnon Boulevard from where the existing guardhouse is located is a recreation facility with tennis courts and trails. Land surrounding the storage field site comprises a mix of suburban development and undeveloped mountainous terrain. Portions of the 66-kilovolt (kV) subtransmission line and Telecommunications Route #1 route run from the Santa Clarita Valley north of Newhall Pass (Figure 2-1) to the proposed Natural Substation site. This area is characterized by suburban development in the vicinity of the City of Santa Clarita and undeveloped mountainous terrain between the Sunshine Canyon Landfill and the storage field.

Telecommunications Route #2 runs between the storage field and the Chatsworth Substation. This proposed project component is characterized by mountainous, rural terrain between the storage field and State Route 118 (Ronald Reagan Freeway), where the route passes through an area of residential development before crossing beneath the freeway, and passing through another area of residential development. South of the Ronald Reagan Freeway and west of areas developed with residential uses, the route extends into hilly, rural terrain that characterizes the remainder of the alignment.

Telecommunications Route #3 comprises installation of a new fiber optic cable on existing overhead Southern California Edison (SCE) and Los Angeles Department of Water and Power wood poles and in new underground conduit from the San Fernando Substation east to tap an existing fiber optic cable within the right-of-way of an existing SCE 220-kV subtransmission line corridor. The existing San Fernando Substation is located adjacent to a high school, across the road from Brand Park, and less than 0.1 miles from both residential development and the San Fernando Mission. Telecommunications Route #3 extends from the San Fernando Substation through an area of residential development, then crosses the I-5 corridor, where it proceeds through a heavily urbanized area characterized by general commercial and additional residential development.

Telecommunications Route #4 would initially follow the same route as Telecommunications Route #3 east of San Fernando Substation. Fiber optic cable would be installed on existing overhead wood poles owned by SCE and the Los Angeles Department of Water and Power, or in new underground conduit, to Truman Street in the City of San Fernando. The route would follow Truman Street north to where it merges with San Fernando Road and then continues northwest along San Fernando Road on existing wood poles through residential areas. As the proposed route approaches I-5, it would cross through industrial areas. It would be installed in new underground conduit in several locations, including new underground conduit that would cross under I-5. The proposed route would continue northwest on San Fernando Road from I-5 through industrial areas, to where it would connect to an existing underground fiber optic cable located at Sunshine Canyon Landfill. One new 45-foot-tall wood telecommunications pole would be installed along Telecommunications Route #4 just west of I-5 and Interstate 210 (I-210) at the intersection of San Fernando Road and Sepulveda Boulevard.

4.1.1.2 Existing Light and Glare

Current sources of nighttime light in the area are primarily from the I-5 freeway and from residential, commercial, and business areas within the Cities of Los Angeles, San Fernando, Santa Clarita, and Simi Valley. Additionally, nighttime lighting is operated at the storage field in the areas of the existing office buildings and compressor station. Nighttime lighting is also operated at the Newhall, San Fernando, and Chatsworth Substations.

4.1.1.3 Sensitive Viewer Groups

Sensitive viewer groups are people within or close to the proposed project component areas that could be affected by the visual changes introduced by the project. These viewers are described in terms of their exposure to the project components and levels of sensitivity. Viewer exposure considers the distance of the viewer to the project, the position of the viewer in terms of relative elevation, the direction of the view, approximate numbers of viewers, and the duration and frequency of views. Usage volume is estimated based on the size of the viewer group where quantifiable (e.g., number of residences or traffic counts) or based on the amenities offered in the case of a recreation facility (e.g., an auditorium would have a high usage volume compared to an unstaffed park without amenities). Duration of views is estimated based on the amount of time the typical viewer would be able to see a project component. For example, a motorist on a winding road through undulating terrain would have shorter views of a project component than a motorist on a straight stretch of highway through flat terrain. Frequency of views is estimated based on the frequency with which a typical viewer would be present in the location that defines the viewer group. For example, a residential viewer group would have high view frequency compared to the relatively low view frequency of motorists or temporary visitors.

Viewer sensitivity or expectation describes a viewer's expectation of a view based on viewer activity and awareness, any local or cultural significance of the site, and any scenic designations associated with the viewing locations, such as a scenic highway designation.

Figure 4.1-1 shows the open space and recreation areas in the vicinity of the proposed project components as well as designated scenic roadways. Table 4.1-1 lists the sensitive viewer groups associated with these and other sensitive locations; defines their geographic proximity to the project components; estimates the number of viewers, frequency of views, and duration of views; and assesses the sensitivity of each viewer group.

Table 4.1-1 Sensitive Viewer Groups in the Vicinity of the Proposed Project Components

		Viewer Exposure			
Viewer Group	Viewer Sensitivity	Approximate Location Relative to Project Components	Usage Volume	Duration of Views	Frequency of Views
Santa Clarita Woodlands Park	High	0.2 miles southwest of the 66-kV subtransmission line component; 1.75 miles north of Central Compressor Station site; 1.9 miles north of Natural Substation and Plant Power Line	Low	Low	Low
Michael D. Antonovich Open Space Preserve	High	66-kV subtransmission line component adjacent to southeastern boundary of preserve; 1.2 miles northeast of Natural Substation and Plant Power Line; 1.0 miles northeast of Central Compressor Station site	Low	Low	Low

Table 4.1-1 Sensitive Viewer Groups in the Vicinity of the Proposed Project Components

Viewer Group	Viewer Sensitivity	Viewer Exposure			
		Approximate Location Relative to Project Components	Usage Volume	Duration of Views	Frequency of Views
O'Melveny Park	High	66-kV subtransmission line component adjacent to northwestern boundary of preserve; 1.2 miles west of the Plant Power Line and Natural Substation; 1.0 miles west of the Central Compressor Station site	Low	Low	Low
Holleigh Bernson Park	High	1.2 miles southwest of Natural Substation, Plant Power Line, and 66-kV subtransmission line component; 1.4 miles southwest of Central Compressor Station site	Low	Low	Low
Moonshine Canyon Park	High	1.0 miles southwest of Natural Substation, Plant Power Line, and 66-kV subtransmission line component; 1.2 miles southwest of Central Compressor Station site; 0.2 miles from Telecommunications Route #2	Low	Low	Low
Corriganville Regional Park	High	Telecommunications Route #2 traverses this park	Low	Low	Low
Limekiln Canyon Park	High	0.75 miles south of Central Compressor Station site; 0.7 miles south of Natural Substation, Plant Power Line, and 66-kV subtransmission line component	Low	Low	Low
Palisades Park	High	0.95 miles south of Central Compressor Station; 0.9 miles south of Natural Substation, Plant Power Line, and 66-kV subtransmission line component	Low	Low	Low
Aliso Canyon Park	High	0.8 miles southeast of Central Compressor Station site; 0.75 miles southeast of Natural Substation, Plant Power Line, and 66-kV subtransmission line component	Low	Low	Low
Eddleston Park	High	1.8 miles southeast of Central Compressor Station site; 1.8 miles southeast of Natural Substation, Plant Power Line, and 66-kV subtransmission line component	Low	Low	Low
Viking Park	High	1.75 miles southeast of Central Compressor Station site; 1.67 miles southeast of Natural Substation, Plant Power Line, and 66-kV subtransmission line component	Low	Low	Low
Zelzah Park	High	2.18 miles southeast of Central Compressor Station site; 2.22 miles southeast of Natural Substation, Plant Power Line, and 66-kV subtransmission line component	Low	Low	Low
Brand Park	High	Adjacent to San Fernando Substation and Telecommunications Routes #3 and #4	Low	Low	Low
Mission San Fernando Rey de España	High	0.1 miles west of San Fernando Substation	High	Low	Low
Residents along Wiley Canyon Road in Newhall	High	Adjacent to 66-kV subtransmission line component	High	High	High

Table 4.1-1 Sensitive Viewer Groups in the Vicinity of the Proposed Project Components

Viewer Group	Viewer Sensitivity	Viewer Exposure			
		Approximate Location Relative to Project Components	Usage Volume	Duration of Views	Frequency of Views
Residents at Crescent Valley Mobile Estates	High	Adjacent to 66-kV subtransmission line component	High	High	High
Residents north of Porter Ranch	High	0.7 miles southwest of Central Compressor Station site; 0.6 miles south of Natural Substation, Plant Power Line, and 66-kV subtransmission line component	High	High	High
Residents on Sesnon Boulevard and surrounding streets	High	Adjacent to old guardhouse and proposed road widening at entrance to storage field site. South of new guardhouse site.	High	High	High
Motorists on Sesnon Boulevard	High	0.75 miles southwest of Central Compressor Station site; 0.65 miles south of Natural Substation, Plant Power Line, and 66-kV subtransmission line component	High	Medium to High	Medium
Motorists on I-5	Low	Adjacent to 66-kV subtransmission line component where component crosses I-5 and along Telecommunications Route #4	High	Medium to High	Medium

4.1.2 Regulatory Setting

4.1.2.1 Federal

There are no federal regulations, plans, or standards addressing aesthetics and visual resources that are applicable to the proposed project.

4.1.2.2 State

California State Scenic Highway

The California Department of Transportation administers the State Scenic Highway Program to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways (California Streets and Highways Code §260 et seq.). The State Scenic Highway System includes a list of highways that have been designated as scenic highways or are eligible for such designation. These highways are identified in Streets and Highways Code §263. The program entails the regulation of land use and density of development; attention to the design of sites and structures; attention to and control of signage, landscaping, and grading; and the undergrounding of utility lines within the view corridor of designated scenic roadways. The local jurisdiction is responsible for adopting and implementing such regulations. If a highway is listed as eligible for official designation, it is also part of the Scenic Highway System and care must still be taken to preserve its eligible status. Several eligible state scenic highways are located within a mile of some project components, including portions of I-210, I-5, and State Route 118 (SR-118), as shown on Figure 4.1-1. ~~There are no designated or eligible state scenic highways within the viewshed of the proposed project components.~~

4.1.2.3 Regional and Local

Proposed project components with characteristics that have the potential to affect the aesthetics of the surrounding environment include those components that would be developed at the storage field site, the reconductoring of the 66-kV subtransmission line, and the installation of Telecommunications Route #2, including replacement of the subtransmission line tower structures and telecommunications line support structures. These project components would cross through land managed according to the County of Los Angeles General Plan, the City of Los Angeles General Plan, and the City of Santa Clarita General Plan. The goals and policies of these plans that pertain to aesthetic resources and apply to the proposed project are described below.

County of Los Angeles General Plan

The Los Angeles County General Plan was adopted in 1980 and has governed land use in unincorporated Los Angeles County for nearly 30 years. Proposed revisions to the General Plan were released in 2008 and are currently pending adoption.

The following policy from the Conservation and Open Space Element of the existing adopted General Plan applies to portions of the proposed project's 66-kV subtransmission line reconductoring component route and Telecommunications Route #2 that traverse unincorporated Los Angeles County areas, and to the proposed Natural Substation, which would be located in an unincorporated area of Los Angeles County:

> ***Policy 16:*** *Protect the visual quality of scenic areas including ridgelines and scenic views from public roads, trails and key vantage points* (Los Angeles County 1980).

The Scenic Highway Element of the existing adopted General Plan identifies the portion of I-5 in the vicinity of the proposed project as proposed for further evaluation ~~for~~, with first priority.

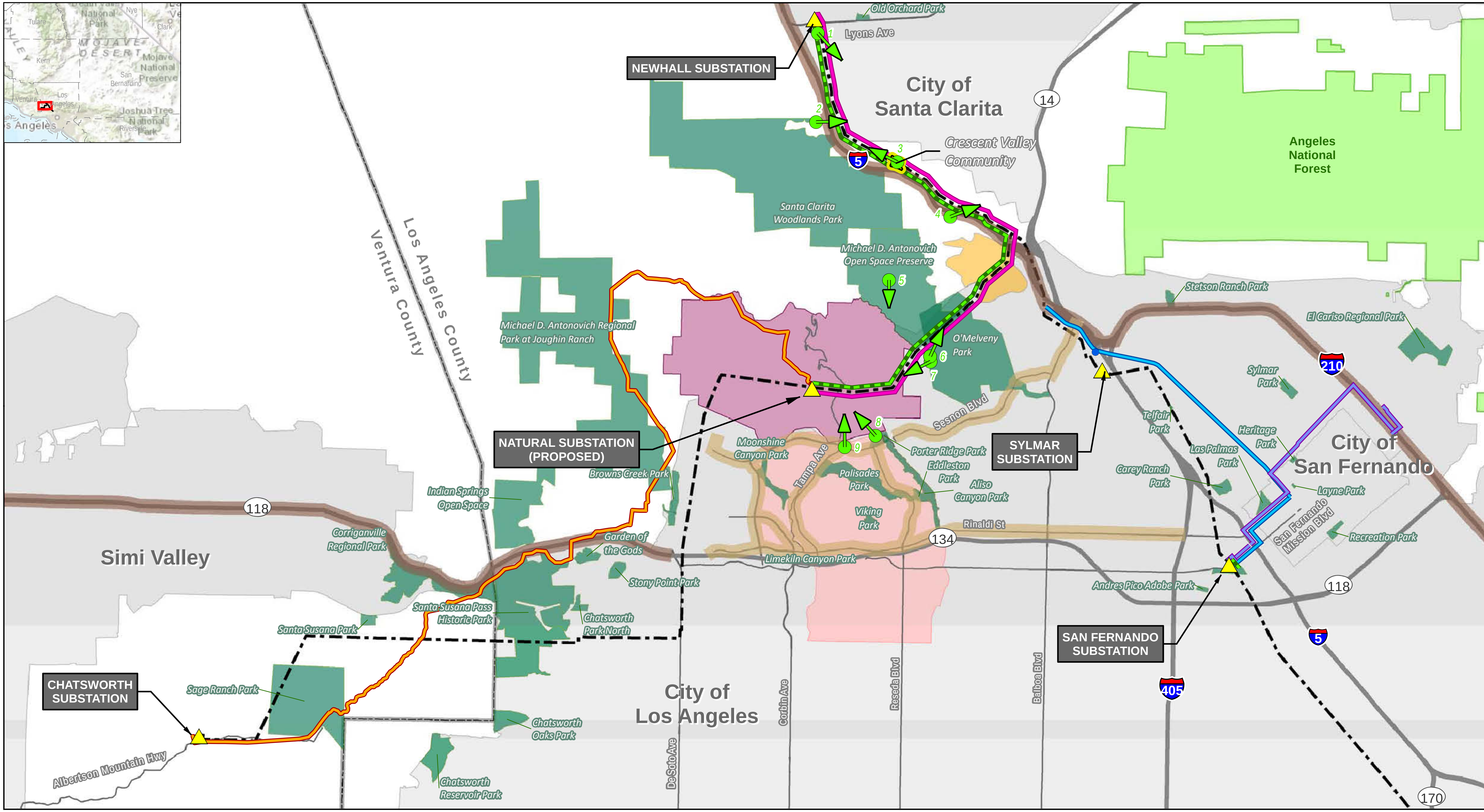
City of Los Angeles General Plan

The City of Los Angeles General Plan was re-adopted in 2001. Chapter 6, Open Space and Conservation, of the Citywide General Plan Framework Element discusses the benefits of natural open space. The following policy would apply to portions of the proposed project component routes that traverse City of Los Angeles lands:

> ***Policy 6.1.2 (c):*** *Coordinate City operation and development policies for the protection and conservation of open space resources by preserving natural view sheds, whenever possible, in hillside and coastal areas.*

~~T~~With regard to roadways within the viewshed of the proposed project components, the Transportation Element of the City's General Plan designates a portion of Sesnon Boulevard and a portion of Rinaldi Street (State Route 134) ~~and I-5 (from I-210 north to the City/County Line)~~ as scenic highways, as shown on Figure 4.1-1, which~~. Figure 4.1-1~~ shows locally designated scenic highways in the vicinity of the project site. The following policies from the Transportation Element would apply to portions of the route of the proposed 66-kV subtransmission line reconductoring component that would traverse or be visible from City of Los Angeles lands:

> ***Policy 11.2:*** *Provide for protection and enhancement of views of scenic resources along or visible from designated scenic highways through implementation of guidelines set forth in this Transportation Element.*



SOURCES: City of Los Angeles 2001, 2011, City of San Fernando 2011, City of Santa Clarita 2011, ESRI 2011, LADPW 2001, Los Angeles County GIS 2012, Simi Valley 2007, SoCalGas 2009 to 2012, Ventura County 2011

66-kV Subtransmission Line Reconductoring Route (Proposed)
Telecommunications Route #1
Telecommunications Route #2
Telecommunications Route #3
Telecommunications Route #4
Existing 66-kV Subtransmission Line
New Wood Telecommunications Pole (45-feet tall)
Substation
Viewpoints
Sunshine Canyon Landfill
Porter Ranch Community
Crescent Valley Community
Aliso Canyon Storage Field
Designated City of Los Angeles Scenic Highway
Eligible State Scenic Highway (Not Officially Designated)
National Forest

0 2 Miles

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.
Refer to Figure 4.10-1 for Significant Ecological Area locations and areas designated for Open Space land uses.

Figure 4.1-1

Viewpoints and Aesthetic Resources

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> ***Policy 11.3:*** *Consider aesthetics and scenic preservation in the design and maintenance of designated scenic highways and of those scenic byways designated in Community Plans.*

City of Santa Clarita General Plan

The City of Santa Clarita General Plan, adopted on June 26, 1991, provides the framework for development in Santa Clarita. The Community Design Element of the General Plan discusses the resources that are visually and aesthetically important to the City of Santa Clarita. Specifically, this element identifies significant ridgelines as features that require protection. The Community Design Element also discusses the many transportation corridors through the Santa Clarita Valley as also serving as view corridors, in which the I-5 freeway is identified as offering scenic vistas. The following policies apply to the portions of the proposed project component routes that would traverse the City of Santa Clarita:

> ***Policy 5.1:*** *Retain designated landforms, such as ridgelines, natural drainage ways, streams, rivers, valleys, and significant vegetation, especially where these features contribute to the overall community identity.*

> ***Policy 5.3:*** *Where possible, incorporate attractive natural amenities, such as rock outcroppings, vegetation, streams, and drainage areas, into the development of future projects to protect the environment and provide landscape opportunities, visual interest, scale and/or recreational opportunities.*

County of Ventura General Plan

The Ventura County General Plan (lasted amended in April 2010) contains goals and policies in Section 1.7, Scenic Resources, that address the protection of significant views and visual resources within the County. The plan specifically identifies Scenic Resource Areas which would be subject to additional provisions and standards for development. Because the proposed project would not be located within a Scenic Resource Area as identified on maps provided in the Ventura County General Plan, these provisions and standards would not apply to the proposed project (Ventura County 2010).

City of Simi Valley

The City of Simi Valley General Plan (updated in June 2012) provides a framework for development in the City of Simi Valley and includes a Natural Resources Chapter, which identifies policies to protect visual resources within the City of Simi Valley. The following policies are included in this chapter (City of Simi Valley 2012):

> ***Policy LU-3.8 Preservation of Natural Features.*** *Maintain significant natural landmarks, such as prominent ridgelines visible from the valley floor, and other natural scenic features in their natural state, to the extent feasible.*

> ***Policy LU 4.4-Hillside Development.*** *Locate and design development to maintain the existing visual character of the hillsides as a natural backdrop.*

> ***Policy LU 4.6-Hillside Development Density.*** *Maintain land outside the valley floor having a slope of over 20 percent as permanent open space. Commercial and industrial development shall be limited to slopes of 10 percent or less, unless otherwise allowed under the Hillside Performance Standards of the Simi Valley Municipal Code, or approved by a specific plan that justifies and provides appropriate design measures for the development of these areas, in which case development shall be limited to slopes of 20 percent or less.*

Policy LU 4.7-Development Compatibility with Hillside Character. *Ensure the compatibility of proposed structures with the surrounding terrain in hillside areas by using varying setbacks, building heights, building forms, and other applicable features.*

Policy LU 4.9-Building Colors in Hillsides. *Use earth tones or subdued colors for development in hillside areas with bright hues used only as accents so they will complement the natural setting.*

City of San Fernando

The City of San Fernando General Plan (revised in June 2009) guides development within the City of San Fernando. Review of the Land Use, Circulation, Housing, Open Space/Conservation/Parks and Recreation, Safety, and Noise Elements in the General Plan indicated that no designated scenic resources or vistas are within the vicinity of the proposed project components within the City of San Fernando.

4.1.3 Methodology and Significance Criteria

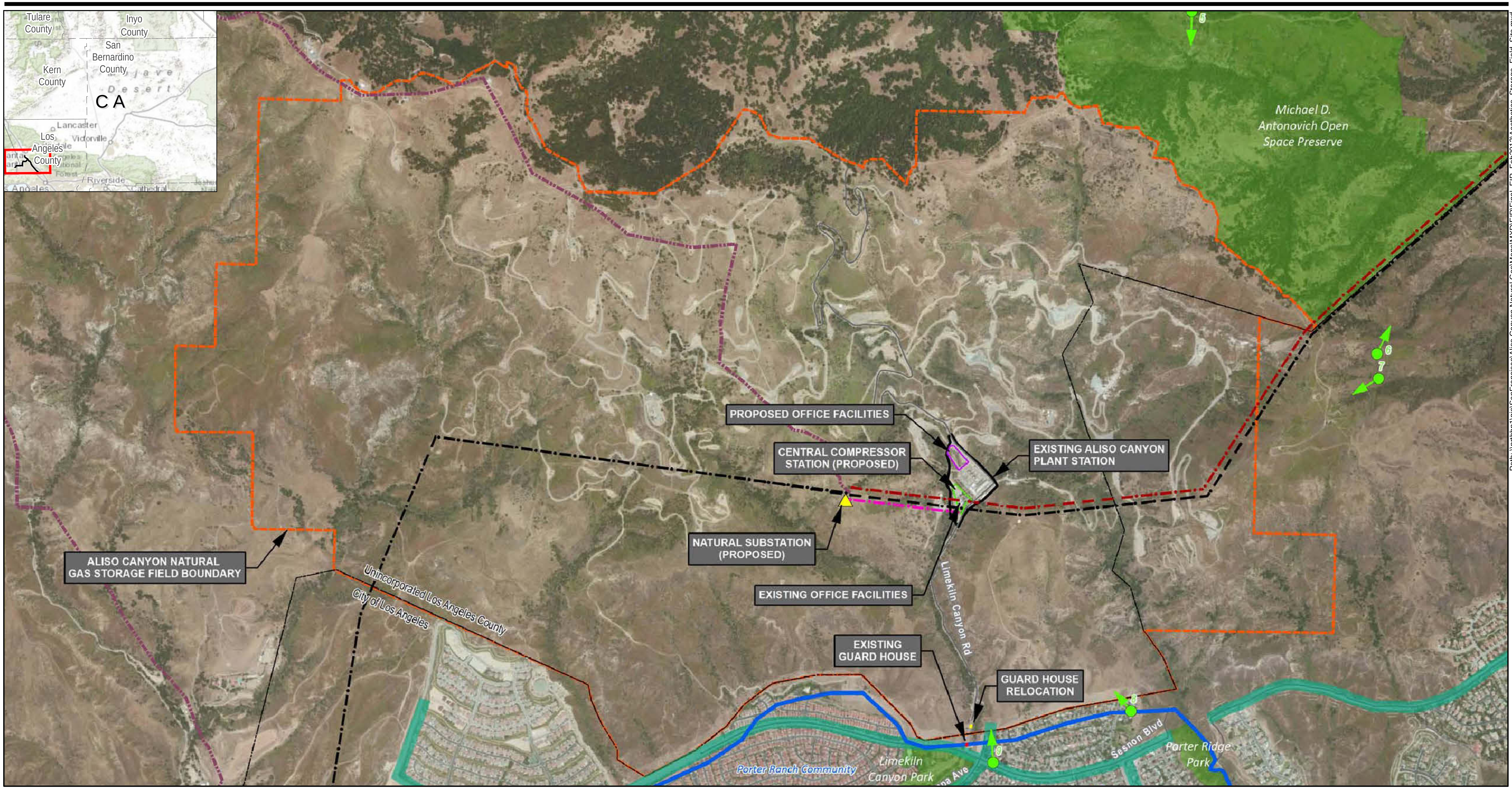
4.1.3.1 Methodology

Viewpoints for the visual analysis conducted for the proposed project were selected to represent typical views of the project components (including the 66-kV sub-transmission reconductoring, the storage field, and San Fernando Substation) and views from sensitive locations, including those discussed in Section 4.1.1.3. The location of each viewpoint with respect to the project area is shown in Figure 4.1-1. Ten viewpoint locations were used to provide a variety of perspectives and angles to assess the visual effects of the proposed project (Figures 4.1-2 through 4.1-11).

In order to assess the visual impact of the project, analysts compared the project's potential to change the visible landscape and likely viewer responses to those changes using simulations of the project components prepared for each viewpoint. The simulations were systematically compared to the baseline conditions to determine the nature and degree of potential impacts on visual resources. The impact assessment also takes into account viewer exposure, sensitivity, and expectation, as described in Section 4.1.1.3.

The photographic visual simulations were developed from a combination of color photographs and computer-generated modeling of the project components in order to depict the approximate height, mass, and location of proposed visual changes to the existing project site. Visual simulations of the proposed tubular steel poles (TSPs) are based on the typical TSP design, as shown in Figure 2-11 (Section 2.2, "Components of the Proposed Project"). The intent of the visual simulations is to show potential changes to the area's current visual character from the selected viewpoint locations.

Simulations were prepared for six~~five~~ of the viewpoints that best represent typical and sensitive views of project components. Simulations were not provided for viewpoints located further than two-thirds of a mile from the proposed project components because these components would not appear distinct at distances further than this, nor would incremental increase in tower heights be distinguishable.



SOURCES: City of Los Angeles 2001, 2011, ESRI 2010, LADPW 2001, Los Angeles County GIS 2012, SoCalGas 2009 to 2012

Substation
66-kV Subtransmission Line Reconductoring Route (Proposed)
12-kV Plant Power Line (Proposed)
Existing 66-kV Subtransmission Line
Telecommunications Route #2
Designated Scenic Highway
Viewpoints
Parks
Porter Ranch Community Boundary
Aliso Canyon Plant Station

0 2 Miles

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

Figure 4.1-2

Aliso Canyon Natural Gas Storage Field

Source: SoCalGas 2009–2012

002975.CP13.04.a.ai (Lacie Archive #2) 03/14/2013

Figure 4.1-3

Viewpoint 1: Wiley Canyon Road (Facing Southeast)

Source: SoCalGas 2009–2012

002975.CP13.04.b.ai (Lacie Archive #2) 03/14/2013

Figure 4.1-4

Viewpoint 2: Towsley Canyon Park (Facing East)

Source: SoCalGas 2009–2012

Figure 4.1-5

Viewpoint 3: Crescent Valley Road Mobile Home Park (Facing Northwest)

Source: SoCalGas 2009–2012

Figure 4.1-6

Viewpoint 4: Michael D. Antonovich Open Space Trailhead (Facing East)

Source: SoCalGas 2009–2012

002975.CP13.04.e.ai (Lacie Archive #2) 03/14/2013

Figure 4.1-7

Viewpoint 5: Michael D. Antonovich Open Space (Facing South)

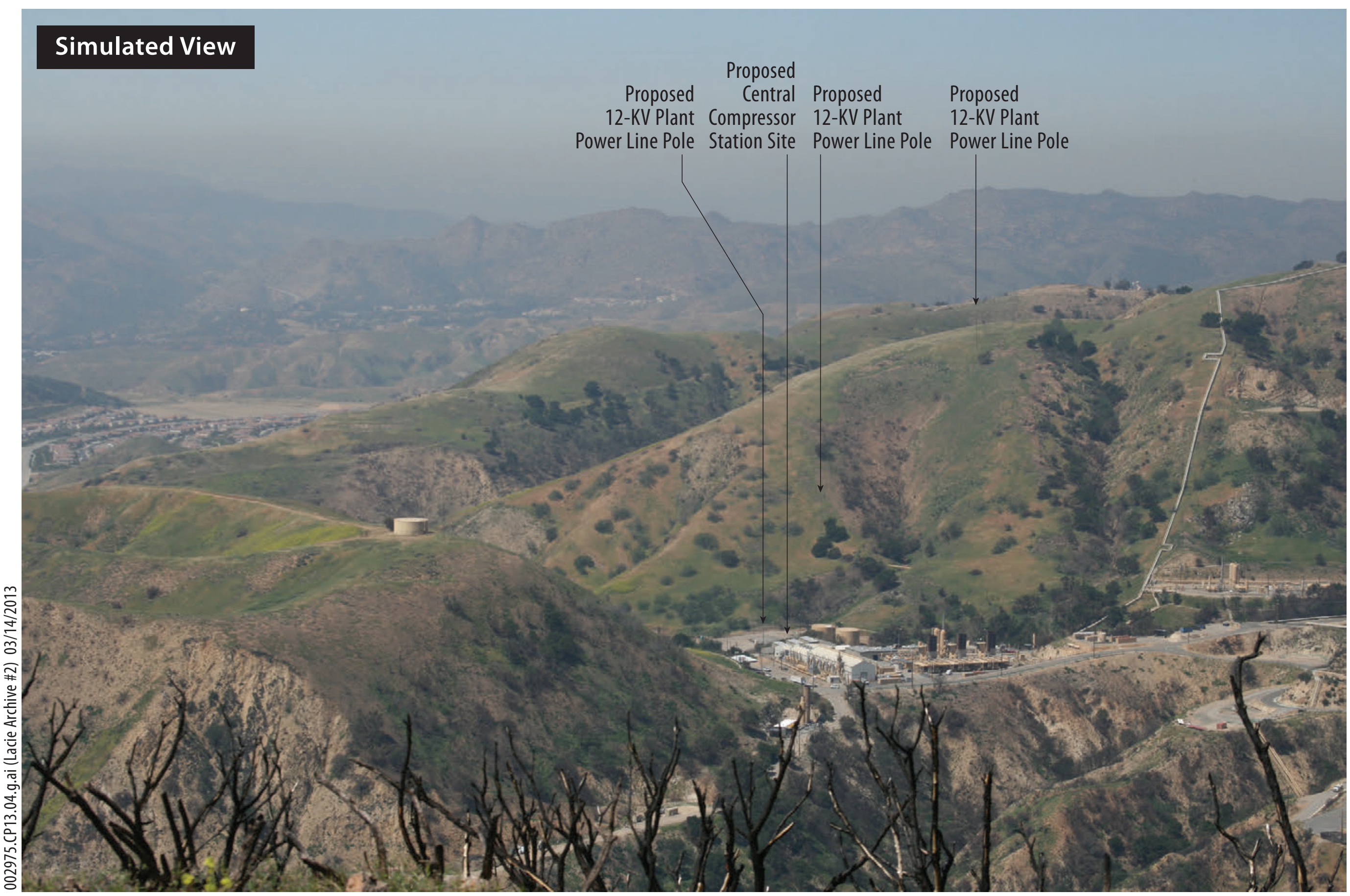
Source: SoCalGas 2009–2012

002975.CP13.04.f.ai (Lacie Archive #2) 03/14/2013

Figure 4.1-8

Viewpoint 6: O'Melveny Park (Facing Northeast)

Source: SoCalGas 2009–2012



002975.CP13.04.g.ai (Lacie Archive #2) 03/14/2013

Figure 4.1-9

Viewpoint 7: Aliso Canyon Gas Storage Field from O'Melveny Park (Facing Southwest)

Source: SoCalGas 2009–2012

Figure 4.1-10 **Viewpoint 8: End of Ormskirk Avenue (Facing Northwest)**

Figure 4.1-10 **Viewpoint 9: Tampa Avenue and Sesnon Boulevard (Facing North)**

002975.CP13.04.h.ai (LaCie HD 2) 03/14/2013

Source: SoCalGas 2009–2012

002975.CP13.04.i.ai (LaCie HD 2) 03/14/2013

Figure 4.1-11 **Viewpoint 10: San Fernando Substation (Facing Northwest)**

For project components whose final number, configuration, and heights of proposed modifications are not yet known, simulations either were not prepared or were prepared to represent maximum possible dimensions. These include TSPs at the San Fernando Substation (Viewpoint 10, Figure 4.1-11) and those proposed along Wiley Canyon Road. TSPs along Wiley Canyon Road are proposed to be a maximum of 85 feet high, and the existing lattice steel tower (LSTs) that would be replaced along Wiley Canyon Road are approximately 40–65 feet high. The visual simulation of TSPs along Wiley Canyon Road (Viewpoint 1, Figure 4.1-3) shows the TSPs at this proposed 85-foot height. To present a worst-case scenario, heights of all existing LSTs, other than along Wiley Canyon Road, were assumed to be 100 feet tall. Because proposed TSPs could range in height from 55 feet to 150 feet, the heights of all proposed TSPs, other than those on Wiley Canyon Road, were simulated at 150 feet tall (50 percent taller than the height of existing structures).

4.1.3.2 Significance Criteria

Potential impacts on visual resources were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the California Environmental Quality Act Guidelines. The proposed project would cause a significant impact on visual resources if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings, or
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

The County of Los Angeles, the City of Los Angeles, and the City of Santa Clarita do not have any significance criteria for visual resources in addition to those shown above.

4.1.4 Environmental Impacts and Mitigation Measures

Applicant Proposed Measures

The applicant has committed to the following applicant proposed measure~~s~~ (APM~~s~~) as part of the design of the proposed project. See Section 2.5, “Plans and Applicant Proposed Measures,” Table 2-8 for a full description of this~~each~~ APM.

- **APM AE-1: Night Lighting.**

Impact AE-1: **Substantial adverse effect on a scenic vista.**
LESS THAN SIGNIFICANT

No designated scenic vistas are located within the vicinity of the proposed project components. However, the General Plans for Los Angeles County and the Cities of Los Angeles and Santa Clarita indicate that a number of scenic vistas occur in the vicinity of the proposed project components due to the presence of large open space areas and ridgelines, both of which are noted for their scenic and aesthetic values. Areas in the vicinity of the proposed project components that could be considered scenic could include open space areas where there are existing electrical towers that would be replaced with taller structures of a different configuration, or where the proposed Natural Substation would be constructed.

Construction

During construction, the following activities would be visible to sensitive viewer groups: removal of vegetation, construction of buildings, removal of poles, grading and excavation of pole footings, replacement of poles, trenching to install underground conduit, rehabilitation of dirt roads, and the use of various types of construction-related heavy equipment. However, because the new project components at the storage field (see Section 2.2, “Components of the Proposed Project”), the Plant Power Line, and the Natural Substation would be located at least 0.5 miles from the nearest sensitive receptors (see Table 4.1-1), and impacts on visual resources associated with construction would be temporary, construction of these project components would result in short-term impacts that would not be significant. Reconductoring activity, installation of the telecommunications lines under- and aboveground, and upgrades within the existing substations would occur adjacent or within close proximity to a number of sensitive receptors (see Table 4.1-1). However, development in these areas already exists, work on the subtransmission line and telecommunications lines would not occur at any single location for extended periods of time, and all construction activity would be temporary. Therefore, construction of these project components would result in short-term impacts that would not be significant. While the guardhouse would be constructed within close proximity to some sensitive receptors located in the vicinity of the storage field entrance (Table 4.1-1), activities associated with the construction of the new guardhouse would be temporary. Therefore, construction of this project component would not result in a significant impact under this criterion.

Operation

During operation, both the Plant Power Line and the Natural Substation would be located within the storage field. The 12-kV Plant Power Line would extend for approximately 1,800 feet from the Aliso Canyon Plant Station along a ridgeline to the proposed Natural Substation site, which is located at an elevation of 2,400 AMSL in a relatively undeveloped area. The Plant Power Line would be installed on three TSPs, ranging in height from 100 to 120 feet, and the substation would employ a low-profile design. The Plant Power Line would extend away from an area characterized by industrial development toward an area of the storage field that is characterized as undeveloped open space except for the existing 66-kV subtransmission line that crosses the facility.

Although the proposed project would introduce components that would create permanent change to existing visual characteristics, this would not result in a significant impact on scenic vistas. The existing storage field is predominately undeveloped and primarily used for industrial natural gas storage activities. Views of the proposed Central Compressor Station, office building, and guardhouse would not be considered scenic due to the disturbed viewshed that already exists and includes office facilities, a compressor station, guardhouse, and paved roadways. Additionally, because the Natural Substation would be located approximately 0.5 miles from the nearest sensitive receptors in Porter Ranch and would be obscured from view by topography, vegetation, and development, the substation component of the project would not substantially degrade the existing character or quality of views. Therefore, impacts of the new project components on scenic vistas would be less than significant under this criterion.

The proposed project would also involve the reconductoring and structure replacement for several existing 66-kV subtransmission lines. Overview maps showing the existing poles that would be replaced as part of the project are shown in Appendix D and Table 2-3 lists the height (ranging from 40 to 109 feet tall) and type (wooden poles, LSTs, and H-frame structures) of the existing poles that would be replaced. The replacement poles would be TSPs ranging in height from approximately 55 to 150 feet.

Approximately 8.2 miles of double-circuit 66-kV subtransmission line would be replaced between the existing Newhall Substation, located in the Santa Clarity Valley north of Newhall Pass, and the proposed Natural Substation site (Segments A, B, and C; see Section 2.2, “Components of the Proposed Project,” Figure 2-6). These segments of reconductoring would be installed on approximately 64 TSPs and would originate in an area characterized by suburban development before paralleling I-5, running adjacent to the Sunshine Canyon Landfill, and crossing through undeveloped mountainous terrain and entering the storage field. The proposed project would also include replacement of structures ~~supporting~~ along Telecommunications Route~~s~~ #2 and, if necessary (e.g., to withstand wind loading), along Telecommunications Routes #3 and #~~3~~4; replacement structures would be similar to existing structures in appearance. One new 45-foot-tall wood telecommunications pole would be installed along Telecommunications Route #4.

Figure 4.1-1 shows open space areas and locally designated significant ridgelines in the project vicinity alongside the alignment of the proposed 66-kV subtransmission modification. As described under Impact AES-3 and shown on Viewpoints 1 through 4 and 6 (Figures 4.1-3 through 4.1-6 and 4.1-8), although the reconductored subtransmission line and telecommunications lines would be visible within open space areas and along locally designated significant ridgelines, the impact on visual resources would be less than significant because the visual change from current conditions would be very minor. As the reconductoring component of the project would require the replacement of existing electrical towers, this would result in an incremental increase in the number and height of towers, but the incremental change in tower height, type, and spacing would not substantially degrade from the existing character or quality of views. The telecommunications components would not be noticeable in most locations because they would be ~~underbuilt~~ overbuilt on existing and new towers or installed in underground conduit. Therefore, although elements of the project would be sited along ridgelines and in undeveloped open space areas, the project would result in a less than significant impact on scenic vistas under this criterion.

Impact AE-2: **Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway.** *LESS THAN SIGNIFICANT*

~~The proposed project would not be located within the viewshed of a designated or eligible state scenic highway. However, the~~With regard to roadways within the viewshed of the proposed project components, the Transportation Element of the City of Los Angeles’s General Plan designates portions of Sesnon Boulevard and Rinaldi Street~~and I-5 from I-210 north to the Los Angeles County line~~ as scenic highways. ~~This~~ A section of I-5 from I-210 north to the Los Angeles County line was also identified by Los Angeles County for further study in the Scenic Highway Element of the County’s General Plan. ~~Additionally, t~~The I-5 freeway is identified in the Santa Clarita Community Design Element as providing scenic views. Additionally, I-210 within the City of Los Angeles, highway sections from the intersection of I-210 and I-5 north to the intersection of I-5 and State Route 126 in the County of Los Angeles, and portions of SR-118 in Los Angeles and Ventura counties are designated as Eligible State Scenic Highways, as shown on Figure 4.1-1.~~As these roadways have been identified in planning documents as having scenic value, this analysis considers Sesnon Boulevard and I-5 to be similar to state scenic highways.~~

The only project components that would be visible from either Sesnon Boulevard, Rinaldi Street, I-210, SR-118, or I-5 are the subtransmission line reconductoring component and~~,~~ Telecommunications Route #1, sections of Telecommunications Routes #3 and #4, and the guardhouse and entry road widening element of the project. Although the Central Compressor Station, the main office and crew shift buildings, and the Natural Substation would all be located within relative proximity to Sesnon Boulevard (i.e., within less than 1 mile of the roadway), these components would not be visible due to existing development, vegetation, and topography. Telecommunications Routes #2, ~~and~~ #3, and #4 would add additional fiber optic line to existing poles or to poles that would be replaced by poles of the same type. Accordingly, any changes resulting from these project components would be largely indistinguishable from existing conditions. Therefore, potential impacts on visual resources are limited to construction and operation of the subtransmission line reconductoring component and~~,~~ Telecommunications Routes #1, #3, and #4, and the guardhouse and entry road improvements.

Construction

During construction, activities associated with construction of the guardhouse, widening of the entrance to the storage facility, and reconductoring would be visible to sensitive viewer groups (Table 4.1-1). As noted above, reconductoring and installation of Telecommunications Route #1 would take place within the right-of-way for the existing 66-kV subtransmission line.~~,~~ Installation of Telecommunications Lines #3 and #4 would occur within existing distribution line rights-of-way (ROW). ~~w~~Work on the subtransmission and telecommunications lines would not occur at any single location for extended periods of time, all construction activity would be temporary, and any land disturbed for trenching the telecommunications line would be restored to its original condition. Therefore, construction activity associated with reconductoring and installation of the telecommunications lines would not result in a significant visual impact. Similarly, while the guardhouse would be constructed within close proximity to some sensitive receptors, visual impacts associated with construction activities would be temporary in nature and would not result in a significant impact on visual resources under this criterion.

Operation

During operation, as shown on Figure 4.1-10~~9~~, there is only one view along Sesnon Boulevard where the alignment of the existing 66-kV subtransmission line is visible. For the majority of Sesnon Boulevard, views of the existing subtransmission route are obscured by residential development. In this location, implementation of the proposed project would include replacing existing LSTs with new upgraded TSPs. The reconductoring component of the project would run adjacent to I-5 for approximately 3.5 miles in the Newhall Pass area. However, although the reconductored subtransmission line would be visible from these roadways, the impact on visual resources would be less than significant because the visual change from current conditions would be very minor. Because the reconductoring component of the project would require the replacement of existing electrical towers, the reconductoring component of the project would result in an incremental increase in the number and height of towers, but the incremental change in tower height, type, and spacing would not substantially degrade the existing character or quality of views. The fiber optic cables installed for the telecommunications components of the project would not be noticeable ~~from these locations~~ because they~~it~~ would be largely ~~underbuilt~~ overbuilt on support structures for the proposed subtransmission line or existing distribution lines or installed in underground conduit.

One new 45-foot-tall wood telecommunications pole would be installed along Telecommunications Route #4 just west of I-5 and I-210 at the intersection of San Fernando Road and Sepulveda Boulevard (Figure 4.1-1). I-210 and I-5, north of its intersection with I-210, are designated as State Scenic Highways or Eligible State Scenic Highways. The base of the new wood pole would be well below the elevated highway overpasses at the proposed location. Although the top of the proposed 45-foot pole may be visible from the highway overpasses, it is not likely that the wood pole would be noticeable because of numerous other vertical elements (e.g., lattice steel towers) in the foreground, middleground, and background that are larger and more dominant features within the viewshed. Although the pole's dark brown color would contrast somewhat with lighter gray colors of the other vertical elements, its form and line would be similar to and not contrast strongly with those of the other vertical elements. Also, views of the proposed wood pole would likely be of very short duration because traffic on the two interstate highways generally travels at high speed.

Therefore, the impact of the project would be less than significant under this criterion.

Impact AE-3: Substantially degrade the existing visual character or quality of the site and its surroundings.
LESS THAN SIGNIFICANT

Construction

Construction of the proposed project, including the Central Compressor Station, the office and guardhouse relocation, the Plant Power Line and Natural Substation, the subtransmission line reconductoring component, the telecommunications line components, and modifications to the existing Newhall, Chatsworth, and San Fernando Substations would result in a less than significant impact on visual character and quality.

During the ~~22~~24-month construction period, the following activities would be visible to sensitive viewer groups: removal of vegetation, construction of buildings, removal of poles, grading and excavation of pole footings, replacement of poles, trenching to install underground conduit, rehabilitation of dirt roads, and the use of various types of construction-related heavy equipment (Table 4.1-1). These activities would degrade the existing visual character and quality of the construction sites and their surroundings by introducing visual clutter, including but not limited to equipment storage, exposed soils, and signage.

Potential visual impacts from construction would be greatest at the Central Compressor Station, the Natural Substation and Plant Power Line location, main office and crew-shift buildings, and guardhouse because the duration of activities and the amount of equipment and disturbance required would be greatest at these locations. Due to the temporary nature of these activities, the project would not substantially degrade the existing visual character or quality of the site and its surroundings. Additionally, these activities would not occur within close proximity of any sensitive locations and, with the exception of construction of the guardhouse, would be largely obscured from view by vegetation, development, and topography. There would be no permanent impacts on the existing visual setting as a result of construction activities.

The 66-kV subtransmission line reconductoring component of the project and installation of Telecommunications Routes #1, #2, ~~and~~ #3, and #4 would be visible to a greater number of sensitive viewer groups, including motorists, recreation users, and local residents; Table 4.1-1 shows the proximity of sensitive viewer groups to these project elements. However, while construction activities associated with reconductoring and installation of the telecommunications components would degrade the existing visual character and quality of the site, this would be limited in duration and there would be no permanent impacts on the existing visual setting as a result of construction activities. Therefore, under this criterion, construction of the project would result in a less than significant impact under this criterion.

Operation

Operation of the project would not substantially degrade the existing character or quality of the site and its surroundings. Specific visual impacts on the existing character and quality of the landscape are described below as seen in the simulations prepared for the aesthetic resources analysis. Figures 4.1-1 and 4.1-2 provide a key map for the location of viewpoints used in this analysis. Figures 4.1-3 through 4.1-11 depict photographs of the 10 selected existing views as well as simulated views of the proposed project for six~~five~~ of the viewpoint locations.

In addition to road widening to accommodate the new guardhouse and to increase access to the Aliso Canyon Storage Facility, existing roadways within the Aliso Canyon Natural Gas Storage Field would be upgraded, through grading and with excavation, access roads to the existing 66-kV subtransmission lines would be widened to allow access for construction vehicles, and a new access road would be constructed to provide access to the 12-kV Plant Power Line. One of these roadways would begin approximately 0.15 miles from Sesnon Boulevard on Tampa Road, near the location of the proposed guardhouse and extend north away from Sesnon Boulevard. A haul route loop beginning near the existing compressor station and extending toward the northeast would also be improved. This route would not be visible from public roadways. An existing 1,500-foot dirt road to the proposed Natural Substation site would be graded, paved, and widened from 12 to 18 feet, and a new 18~~-inch~~foot access road would be constructed from the Aliso Canyon Plant Station to the mid-point of the Plant Power Line. These features would be located approximately at the elevations listed above for the Natural Substation and the Plant Power Line. In addition, new 18-foot-wide access roads would be required along the 66-kV reconductoring routes where new structures would be installed where no structure was previously present. The 66-kV subtransmission line access roads would be constructed roughly adjacent to the right-of-way for the reconductoring component of the project.

Installation of Telecommunications Routes #2, ~~and~~ #3, and #4 is not discussed here because all impacts associated with installation of these telecommunications components would be temporary. These lines would be installed underground or ~~underbuilt~~ overbuilt on already existing structures. Any structures that would be replaced would be similar or identical in appearance to existing structures. Visual impacts associated with these project components would be less than significant under this criterion.

Figure 4.1-3, Viewpoint 1: Wiley Canyon Road (Facing Southeast). Viewpoint 1 shows existing conditions and a simulation of the project at the intersection of Wiley Canyon Road at Evans Avenue/La Glorita Circle facing southeast. This viewpoint is located just south of the Newhall Substation, which is the northernmost point of the proposed substation upgrade and shows a location where the existing subtransmission line would be reconductored and strung on TSPs. Sensitive receptors at this viewpoint location are the existing residents along Wiley Canyon Road, who are considered to have high levels of both exposure and sensitivity (Table 4.1-1).

Two existing LSTs are shown in the existing conditions view, one in the foreground on the left side of the view and one in the background. Both LSTs are located in close proximity to residential housing along the high-traffic-volume Wiley Canyon Road. The visual character of this view can be described as developed suburban residential with sidewalks, large trees and shrubs lining the street, and some views of undeveloped rolling hills in the background. The existing LSTs are a dominant visual feature within this view due to their size and strong vertical lines.

In the simulated view, the existing LSTs have been replaced with TSPs. The TSPs are slightly taller than the existing LSTs (85 versus 70 feet tall, respectively) and thus represent an incrementally larger scale. However, the TSPs would introduce fewer linear elements into the view because the TSP design includes no lattice framework. This design difference creates a more streamlined appearance. Additionally, the footings of the proposed TSPs would be less intrusive to the residential properties than the four-legged LSTs. Overall, while the TSPs are incrementally taller than the existing LSTs, the general visual character of the view has not changed. The view would continue to have the dominant presence of electrical infrastructure within the suburban development. The fiber optic line that would be ~~underbuilt~~overbuilt on the towers at this location would not be distinguishable from the transmission conductor due to distance and the fact that the telecommunications line would be smaller. Therefore, despite the fact that viewer exposure and sensitivity is considered high for this location, the change in visual character and quality resulting from implementation of the proposed project is less than significant under this criterion.

Figure 4.1-4, Viewpoint 2: Towsley Canyon Park (Facing East). Viewpoint 2 shows existing conditions and a simulation of the project from the parking lot of Towsley Canyon Park facing east. This viewpoint shows a location where the existing subtransmission line would be reconductored and strung on TSPs and represents views of both users of Towsley Canyon Park (which is located within Santa Clarita Woodlands Park) and motorists on I-5. Although located within close proximity to where reconductoring would occur, users of Santa Clarita Woodlands Park, which encompasses Towsley Canyon Park, are considered to have a low level of viewer exposure due to lower usage levels, duration, and frequency of views. However, these viewers are considered to have a high level of sensitivity. Conversely, motorists on I-5 are considered to have a medium to high level of exposure but a low level of sensitivity (Table 4.1-1)

In the existing conditions view, the edge of a parking lot is visible in the foreground, the Old Road and some low buildings and trees are visible beyond the parking lot in the middleground, the I-5 freeway is visible beyond the trees, and there are two existing LSTs located on top of the ridge in the background. This viewpoint is located west of, and looks across, the I-5 freeway. The visual character of this view is characterized by a random distribution of trees and shrubbery over otherwise disturbed bare ground, transportation infrastructure that bisects the view and creates a horizontal line, and the dominant jagged peaks in the background topped with two LSTs, which introduce vertical linear elements into the view.

In the simulated view, the existing LSTs have been replaced with TSPs. The TSPs are slightly taller than the existing LSTs and thus represent an incrementally larger scale. However, this difference in size is minor due to the distance between the viewpoint and the proposed tower locations. Because the structure would be a solid mass rather than a lattice design, the TSP appears darker and creates an incrementally stronger vertical line. However, the difference in the lines created by the LSTs and the TSPs is also minor due to the distance between the viewpoint and the proposed tower locations. The fiber optic line that would be ~~underbuilt~~ overbuilt on the towers at this location would not be distinguishable from the transmission conductor due to distance and the fact that the telecommunications line would be smaller.

These visual changes would be less than significant for both users of Santa Clarita Woodlands Park, which encompasses Towsley Canyon Park, and motorists on I-5. While park users have a high degree of sensitivity, viewer exposure is low. Additionally, the viewpoint location is on the edge of the parking lot of Towsley Canyon Park, which represents the worst case scenario view because it is closest to the proposed TSP locations. The TSPs would appear smaller or would not be visible from more distant parts within Towsley Canyon Park. Because of the low levels of viewer exposure and because the visible changes would be minor, the project would result in a less than significant impact on this viewer group. While motorists on I-5 would have increased viewer exposure, the viewer sensitivity of motorists is considered low. Because of the low sensitivity and because visible changes would be minor, the project would result in a less than significant impact on this viewer group as well. Therefore, from this viewpoint, the change in visual character and quality resulting from implementation of the proposed project is less than significant under this criterion.

Figure 4.1-5, Viewpoint 3: Crescent Valley Mobile Home Park (Facing Northwest). Viewpoint 3 shows existing conditions and a simulation of the project from a street within the Crescent Valley Mobile Home Park, facing northwest. The Crescent Valley Mobile Home Park is located within a small canyon. There are two existing LSTs on the hills that surround the canyon, and the conductor from the existing subtransmission line spans the mobile home park. One of the existing LSTs is shown in Viewpoint 3.

Sensitive receptors at this viewpoint location are the existing residents within the mobile home park community, who are considered to have a high level of exposure and a high level of sensitivity.

The existing conditions view shows a quasi-rural area, which is characterized by a combination of undeveloped land and a mobile home, roadway, and manicured vegetation. The foreground of the view is dominated by the road that diagonally bisects the view and the vertical elements of the landscaping in front of the mobile home. The middleground of the view is dominated by the existing LST. All three of these features create strong linear elements in the view.

In the simulated view, the existing LST has been replaced with a TSP. The TSPs are slightly taller than the existing LSTs and thus represent an incrementally larger scale. However, the TSPs would introduce fewer linear elements into the view because the TSP design includes no lattice framework. This design difference creates a more streamlined appearance. The fiber optic line that would be ~~underbuilt~~ overbuilt on the towers at this location would not be distinguishable from the transmission conductor due to distance and the fact that the telecommunications line would be smaller. While the viewer exposure and sensitivity at this location are both high, the overall contrast introduced by the project would be very minor. Therefore, from this view location, the impact of the project is less than significant under this criterion.

Figure 4.1-6, Viewpoint 4: Michael D. Antonovich Open Space Trailhead (Facing East). Viewpoint 4 shows existing conditions and a simulation of the project from the trailhead to the Michael D. Antonovich Open Space, facing east. This viewpoint is located west of, and looks across, the I-5 freeway. Sensitive receptors at this viewpoint location are Michael D. Antonovich (MDA) Open Space trail users, who are considered to have high sensitivity levels and low levels of viewer exposure, and motorists on I-5, who are considered to have low sensitivity levels and high levels of viewer exposure.

As shown in the existing conditions view, there are two existing LSTs situated along the ridgeline that forms the viewshed’s horizon. The view is characterized by undeveloped hillsides with views of the San Gabriel Mountains in the distance and the I-5 freeway and the Old Road in the foreground. The undeveloped hillsides and the jagged ridgeline that forms the horizon are the dominant visual features. The clutter of construction spoils and vehicular traffic in the foreground detracts from the congruity of these background views, as does the vertical linear element of the two existing LSTs in the view.

In the simulated view, the existing LSTs have been replaced with TSPs. The TSPs are slightly taller than the existing LSTs and thus represent an incrementally larger scale. However, this difference in size is minor due to the distance between the viewpoint and the proposed tower locations. Because the structure would be a solid mass rather than a lattice design, the TSP appears darker and creates an incrementally stronger vertical line. However, the difference in the lines created by the LSTs and the TSPs is also minor due to the distance between the viewpoint and the proposed tower locations. The fiber optic line that would be ~~underbuilt~~ overbuilt on the towers at this location would not be distinguishable from the transmission conductor due to distance and the fact that the telecommunications line would be smaller.

These visual changes would be less than significant for both users of the MDA Open Space area and for motorists on I-5. While park users have a high degree of sensitivity, viewer exposure is low. Additionally, the viewpoint location is on the edge of the park, which represents the worst case scenario view because it is closest to the proposed TSP locations. The TSPs would appear smaller or would not be visible from more distant parts within the park. Because of the low levels of viewer exposure and because the visible changes would be minor, the project would result in a less than significant impact on this viewer group. While motorists on I-5 would have increased viewer exposure, the viewer sensitivity of motorists is considered low. Because of the low sensitivity and because visible changes would be minor, the project would result in a less than significant impact on this viewer group as well. Therefore, from this viewpoint, the change in visual character and quality resulting from implementation of the proposed project is less than significant under this criterion.

Figure 4.1-7, Viewpoint 5: Michael D. Antonovich Open Space (Facing South). Viewpoint 5 shows existing conditions from the trail within the MDA Open Space, facing south. This viewpoint is located near the middle of the MDA Open Space and was selected as a viewpoint because it is one of the few locations on the trail where this section of the 66-kV subtransmission alignment is visible. Sensitive receptors at this viewpoint location are MDA Open Space trail users, who are considered to have high sensitivity levels and low levels of viewer exposure.

There are two existing LSTs in this view: one located on the highest part of the ridge in the middle of the view and the other lower on the ridge to the left of the first LST. The view from this location is characterized by landscape and vegetation views ranging from vibrant to dark with dense vegetation in the background and patchy vegetation in the foreground. The terrain slopes gently toward the photographed location. The LSTs do not attract the viewer's attention, and they create a weak linear line in the background. The fiber optic line that would be ~~underbuilt~~overbuilt on the towers at this location would not be distinguishable from the transmission conductor due to distance and the fact that the telecommunications line would be smaller.

The impact of the project on visual resources for this location would be similar to the impact discussed for Viewpoint 4. While the TSPs would be slightly taller and would appear as a more solid mass, due to the extreme distances between trail users and the existing LSTs, the visual change would be minor. Additionally, while viewer sensitivity at this location would be high, viewer exposure would be low. Because of the low levels of viewer exposure and because the visible changes would be minor from this viewpoint, the change in visual character and quality resulting from implementation of the proposed project is less than significant under this criterion.

Figure 4.1-8, Viewpoint 6: O'Melveny Park (Facing Northeast). Viewpoint 6 shows existing conditions and a simulation of the project from O'Melveny Park, facing northeast. This viewpoint is located near the westernmost border of O'Melveny Park. Sensitive receptors at this viewpoint location are O'Melveny Park users, who are considered to have high sensitivity levels and low levels of viewer exposure.

The existing conditions view contains existing LSTs, one in the foreground and the other on the ridge in the middleground. The view from this location is characterized by largely undeveloped hillsides and ridges with views of the Sunshine Canyon Landfill beyond the nearest ridge and the San Gabriel Mountains in the distance. Existing electrical infrastructure is visible in this view; however, the undeveloped hillside and the line created by the ridgeline in the middle of the view dominates the viewshed.

In the simulated view, the existing LSTs have been replaced with TSPs. While the TSPs would be slightly taller and would appear as a more solid mass, the visual character of the view has not changed substantially because the undeveloped hillside and ridgeline in the middle of the view continues to be the dominant feature. The fiber optic line that would be ~~underbuilt~~overbuilt on the towers at this location would not be distinguishable from the transmission conductor due to distance and the fact that the telecommunications line would be smaller than the transmission conductor it would be attached to. Additionally, while viewer sensitivity at this location would be high, viewer exposure would be low. Because of the low level of visual change, and because visible changes would be minor from this view location, the change in visual character and quality resulting from implementation of the proposed project is less than significant under this criterion.

Figure 4.1-9, View Point 7: Aliso Canyon Gas Storage Field from O'Melveny Park (Facing Southwest). Viewpoint 7~~6~~ shows existing conditions and a simulation of the project from the extreme western edge of O'Melveny Park, facing southwest. This viewpoint was selected because this western portion of O'Melveny Park is the only public area with views of the storage field property. Sensitive receptors from this location include visitors to O'Melveny Park, who are considered to have high sensitivity levels and low levels of viewer exposure.

The project elements that would be visible in this view include the Central Compressor Station (consisting of three new electric-driven compressor trains), proposed Natural Substation with the proposed Plant Power Line serving the proposed Central Compressor Station, and the relocated onsite office trailers and guardhouse. The visual character of this view can be described as largely undeveloped undulating hillsides and ridges in the background with an industrial plant on the floor of the canyon. The industrial appearance of the plant distracts from the open space character of the view.

The simulated view shows the three poles associated with the Plant Power Line that would extend from the Natural Substation to the proposed Central Compressor Station, which is visible in the lower central part of the view. The poles are difficult to discern due to their distance from the viewpoint location. The proposed Natural Substation would be located behind the ridge upon which the most distant proposed Plant Power Line pole would be located. The ridge would block the view of the proposed substation. Additionally, these visual changes would be similar to the appearance of existing development within the canyon. The change in the view would be very minor, and the overall visual character of this view would remain similar to the existing conditions. Moreover, while viewer sensitivity is considered high, viewer exposure levels are considered low for this location. Because visual changes would be minor, because these changes would mimic the appearance of existing development within the canyon, and because viewer exposure is low, from this view location, the change in visual character and quality resulting from implementation of the proposed project is less than significant under this criterion.

Figure 4.1-10 (Top), View Point 8: End of Ormskirk Avenue (Facing Northwest). Viewpoint 8 shows existing conditions from the end of Ormskirk Avenue within the Los Angeles City community of Porter Ranch, facing northwest. This viewpoint was selected because it is one of two locations within the residential community of Porter Ranch where the alignment of the proposed SCE 66-kV sub-transmission modification is visible. Sensitive receptors at this viewpoint include residents and visitors of Porter Ranch, who are considered to have high levels of both sensitivity and exposure.

There are two existing LSTs in this view, located near the top of the hill in the middle of the view. The view is characterized by gently rolling undeveloped hillsides with a fine texture created by dense grasses in the foreground and middleground and patchier vegetative cover in the background. While viewer exposure and sensitivity for this location are considered high, due to the distances between private residences and the existing LSTs, replacement of the LSTs with TSPs would result in a very minor change to this view. The fiber optic line that would be ~~underbuilt~~overbuilt on the towers at this location would not be distinguishable from the transmission conductor due to distance and the fact that the telecommunications line would be smaller than the transmission conductor it would be attached to. Therefore, from this view location, the change in visual character and quality resulting from implementation of the proposed project is less than significant under this criterion.

Figure 4.1-10 (Bottom), Viewpoint 9: Tampa Avenue and Sesnon Boulevard (Facing North). Viewpoint 9 shows existing conditions from the intersection of Tampa Avenue and Sesnon Boulevard within the Los Angeles City community of Porter Ranch, facing north. This viewpoint was selected because it is one of two locations within the residential community of Porter Ranch where the alignment of the proposed SCE 66 kV sub-transmission modification is visible and because it is the only location of the alignment visible from Sesnon Boulevard. Sensitive receptors at this viewpoint include residents of Porter Ranch and motorists on Sesnon Boulevard. Porter Ranch residents are considered to have high levels of both exposure and sensitivity, and motorists on Sesnon Boulevard are considered to have high levels of sensitivity and medium to high levels of exposure.

There are two existing visible LSTs in this view; both are located near the top of the hill in the middle of the view and motorists on Sesnon Boulevard. Similar to the view from Viewpoint 8, Viewpoint 9 is characterized by gently rolling undeveloped hills with a mix of fine texture created by dense grasses punctuated by dark green trees and shrubs. As described for Viewpoint 8, due to the distances between private residences/motorists on Sesnon Boulevard and the existing LSTs, replacement of the LSTs with TSPs would result in a very minor change to this view. The Natural Substation would not be visible from this location. The fiber optic line that would be ~~underbuilt~~overbuilt on the towers at this location would not be distinguishable from the transmission conductor due to distance and the fact that the telecommunications line would be smaller than the transmission conductor it would be attached to. Therefore, from this view location, the change in visual character and quality resulting from implementation of the proposed project is less than significant under this criterion.

Figure 4.1-11, View Point 10: San Fernando Substation (Facing Northwest). Viewpoint 10 shows existing conditions at the San Fernando Substation taken from Brand Park, facing northwest. The San Fernando Substation is located just west of the I-5 freeway on San Fernando Mission Boulevard. Sensitive receptors at this viewpoint location are park users at Brand Park, which is separated from the substation by San Fernando Mission Boulevard, residences located along San Fernando Mission Boulevard, and visitors to the Mission San Fernando Rey de España, which is located just west of the substation. The San Fernando Mission is a building of historic significance and is listed as a national historic landmark and a California historical landmark on the National Register of Historic Places and the California Office of Historic Preservation, respectively. The San Fernando Substation is visible from the approach and entrance to the San Fernando Mission. Viewer sensitivity at Brand Park is high, and viewer exposure is considered low. Viewer sensitivity at the San Fernando Mission is considered high, and viewer exposure ranges from low to high.

The view is characterized by industrial uses, dominated by the cluttered appearance of the existing substation and the lines created by the multiple transmission lines connecting to the substation. Other elements in the viewshed include the greens of trees in the foreground, middleground, and background; the road that creates a horizontal line across the foreground; and a structure to the right of the substation.

~~The fiber optic line that would be underbuilt on the towers at this location would not be distinguishable from the transmission conductor due to distance and the fact that the telecommunications line would be smaller than the transmission conductor it would be attached to.~~Implementation of the proposed project would require electrical upgrades, new fiber optic cable, and one LST to be replaced with two TSPs within the San Fernando Substation. Overall, the general visual character of the view would not change, as the appearance of electrical infrastructure within an urban environment would continue to dominate the view. Therefore, from this view location, the change in visual character and quality resulting from implementation of the proposed project is less than significant under this criterion.

Impact AE-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.
LESS THAN SIGNIFICANT

Construction of the proposed project would occur during daylight hours under normal circumstances. However, there is a possibility that construction would occur at night, requiring temporary artificial illumination. The applicant would implement APM AE-1 to orient the lights in a manner that minimized their effects on any nearby sensitive receptors. With implementation of APM AE-1, light and glare impacts related to construction would be less than significant under this criterion.

Operation of the proposed project would not introduce any new sources of substantial light or glare that could adversely affect day or nighttime views in the area. The proposed Natural Substation would not include night lighting; the facility would be an unmanned substation; and night lighting would not be required during general operations. Night lighting would only occur during rare occurrences of night repair activities and would not be visible from any public receptor locations.

SCE would file the necessary Federal Aviation Administration (FAA) Form 7460 for structures (e.g., subtransmission line poles) that meet the notification requirements outlined in FAA Part 77 for Objects Affecting Navigable Airspace. SCE would file the form prior to start of construction upon completion of final engineering for the proposed project. If proposed structure heights would exceed 200 feet above ground level, marker balls or lights would be installed if required by the FAA. Because the proposed TSPs would be constructed in existing ROW, in which lighted structures are already present, any additional lighting on TSPs installed as part of the proposed project would represent only, at most, an incremental increase in nighttime light in the project area and would not result in a significant impact.

Outdoor lighting installed for the proposed office and crew-shift buildings would be controlled by photocells that would automatically turn on at night and off during the day. Lighting inside the main office and crew-shift buildings would be controlled automatically by occupancy sensors. Exterior lighting for the guardhouse would also be controlled automatically by photocells. Lighting would also be installed for the Central Compressor Station. However, the facilities proposed within the storage field would be located adjacent to existing facilities with similar lighting; therefore, the installation of lighting for the proposed main office and crew-shift building, guardhouse, and Central Compressor Station represent an incremental increase in source of light rather than a new source of light. Additionally, as discussed previously, the project components located in the storage field site would be located within a valley surrounded by hills that would obscure views for the majority of sensitive receptors.

Therefore, impacts to visual resources would be less than significant under this criterion.

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4.2 Agriculture and Forestry Resources

This section describes the environmental and regulatory settings and discusses potential impacts associated with the construction and operation of the proposed project with respect to agriculture and forestry resources.

4.2.1 Environmental Setting

In Los Angeles County, agriculture accounted for a gross value of approximately $270,915,000 in 2006 (Los Angeles County Farm Bureau 2008). The county primarily produces ornamental trees and shrubs, bedding plants, root vegetables, orchard fruit, and alfalfa hay, with nursery products being the number one crop. Although much of the county is developed, according to the California Department of Conservation (CDC), an estimated 229,475 acres are suitable for grazing lands (CDC 2009a). According to the California Farm Bureau Federation, the value of Los Angeles County agriculture ranked 32nd in California in 2009 (California Farm Bureau Federation 2009a).

In Ventura County, agriculture accounted for a gross value of approximately $1,623,857,000 in 2009, a 0.7 percent increase from 2008 (Ventura County Farm Bureau 2009). The leading crop in this county is strawberries, with an estimated value of $515,406,000. According to the California Farm Bureau Federation, the value of Ventura County agriculture ranked eighth in California in 2009 (California Farm Bureau Federation 2009b).

Section 21060.1 of the California Environmental Quality Act (CEQA) defines agricultural land as “prime farmland, farmland of statewide importance, or unique farmland, as defined by the United States Department of Agriculture land inventory and monitoring criteria, as modified for California.” The State of California requires lands to have been irrigated at some point in the four years prior to being classified as Prime Farmland or Farmland of Statewide Importance (CDC 2007). Approximately 2 percent of the total acreage of Los Angeles County (Table 4.2-1) and 10 percent of the total acreage of Ventura County (Table 4.2-2) is classified as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance (Important Farmland).

Table 4.2-1 Summary of Important Farmland in Los Angeles County

	Inventoried Acreage in Los Angeles County[1]	Percent of Total Acreage in Los Angeles County[2]
Prime Farmland	32,408	2%
Farmland of Statewide Importance	1,228	< 1%
Unique Farmland	1,178	< 1%
Farmland of Local Importance	7,193	< 1%
Important Farmland Total	42,007	2%

Sources: [1]CDC 2009a, [2]California Association of Counties 2010

Table 4.2-2 Summary of Important Farmland in Ventura County

	Inventoried Acreage in Ventura County[1]	Percent of Total Acreage in Ventura County[2]
Prime Farmland	43,790	4%
Farmland of Statewide Importance	33,841	3%
Unique Farmland	28,643	2%
Farmland of Local Importance	16,218	1%
Important Farmland Total	122,492	10%

Sources: [1]CDC 2009b, [2]California Association of Counties 2010

As shown on Figure 4.10-2 (see Section 4.10, "Land Use and Planning"), the vast majority of land within the areas of the proposed project components in Los Angeles County has a zoning designation of A-2 (Heavy Agriculture). According to the county zoning code, the A-2 district is intended to accommodate a variety of agricultural uses. Permitted uses include dairies, crop fields, animal hospitals, greenhouses, and the grazing of cattle, horses, sheep, llamas, and goats. Other permitted uses include oil wells and "the storage, handling, recycling and transportation of oil, gas and water to and from the premises" (Los Angeles County 2010). Under the A-2 district, "electric distribution substations, electric transmission substations and generating plants" are considered ~~permitted uses, provided a conditional use permit has been obtained~~uses subject to permits (Section 22.24.150 of the Los Angeles County Code). The Aliso Canyon Storage Field (storage field) is zoned for A-2 Heavy Agriculture use; however, it is not designated Prime Farmland and is not currently being used for agriculture. According to the County of Los Angeles General Plan (2008), Figure 6.4, Agricultural Resource Areas, the storage field has been primarily identified as an "unincorporated area" surrounded by grazing lands. Telecommunications Route #1 and the majority of the existing SCE 66-kilovolt subtransmission line route passes through county lands zoned as A-2 Heavy Agriculture (82.72 acres), and a small portion (less than half of one acre) crosses City of Los Angeles lands zoned A-1 Agricultural. Telecommunications Route #3 does not pass through lands zoned for agricultural uses.

Telecommunications Route #2 crosses land in both unincorporated Ventura County and the City of Simi Valley. Those parcels within unincorporated Ventura County are designated Open Space and Existing Community according to the Ventura County General Plan and zoned for Open Space (OS), Rural Agricultural (RA), and Agricultural Exclusive (AE). The parcels within the City of Simi Valley that are crossed by the telecommunications route are all zoned for Open Space (OS). Figure 4.10-2 depicts General Plan land use and Figure 4.10-3 depicts zoning (see Section 4.10, "Land Use and Planning"). The RA zoning district is intended "to provide for and maintain a rural setting where a wide range of agricultural uses are permitted while surrounding residential land uses are protected," and the AE zoning district is intended "to preserve and protect commercial agricultural lands as a limited and irreplaceable resource, to preserve and maintain agriculture as a major industry in Ventura County and to protect these areas from the encroachment of nonrelated uses which, by their nature, would have detrimental effects upon the agriculture industry" (Ventura County Zoning Ordinance). Within lands zoned AE, maintenance and routine/minor repairs to buildings (provided there are no structural alterations) are allowable and are exempt from obtaining a Zoning Clearance approval.

Telecommunications Route #4 crosses 1.25 miles of land designated for agriculture in unincorporated Los Angeles County (RA) and the City of Los Angeles (A1).

Because of limits on uses related to regional topography, several designated agricultural areas within the proposed project component areas are not currently used for agricultural purposes (City of Santa Clarita 2009). The proposed project components do not traverse any Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance or forest land or timberland. No Williamson Act contracted lands are present in the project area.

4.2.2 Regulatory Setting

4.2.2.1 Federal

Congress passed the Farmland Protection Policy Act (FPPA) in 1981 in response to a substantial decrease in the amount of open farmland (7 United States Code [U.S.C.] 4201 et seq.). Under the FPPA, the Secretary of Agriculture established criteria for use by federal agencies to consider effects on farmland. As stipulated by the FPPA, federal agencies are to: (1) use the criteria to identify and account for the adverse effects of their programs on the preservation of farmland; (2) consider alternative actions, as appropriate, that could lessen adverse effects; and (3) ensure that their programs, to the extent practicable, are compatible with state, units of local government, and private programs and policies to protect farmland (7 U.S.C. 658.1).

4.2.2.2 State

Conservation of agricultural land in California is supported at the state level through the Division of Land Resource Protection and specifically through the Farmland Mapping and Monitoring Program (FMMP) and the California Land Conservation Act of 1965 (commonly referred to as the Williamson Act). For the FMMP, U.S. Department of Agriculture soils surveys and existing land use observations recorded during even-numbered years are used to determine the nature and quality of farmland in 10-acre minimum units across the state. FMMP mapping categories for the most important statewide farmland include Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. Other classifications include Farmland of Local Importance and Grazing Land. FMMP data are used in elements of some county and city general plans and associated environmental documents as a way of assessing the impacts of development on farmland and in regional studies for assessing impacts due to agricultural land conversion.

The Williamson Act enables local governments to enter into ongoing, minimum 10-year contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or compatible uses. In return, restricted parcels are assessed for property tax purposes at a rate consistent with their actual farming and open space uses, as opposed to potential market value.

4.2.2.3 Regional and Local

Lands within the proposed project area are administered by the County of Los Angeles, City of Los Angeles, City of Santa Clarita, City of San Fernando, and Ventura County. The section below provides an overview of regional and local plans, policies, and regulations that pertain to agriculture. The City of Los Angeles General Plan Framework and Community Plans, Santa Clarita Valley Area Plan, and the City of Santa Clarita General Plan do not contain policies related to agriculture that are applicable to the proposed project. For more information about land use policies related to the proposed project, see Section 4.10, "Land Use and Planning."

County of Los Angeles

The adopted 1980 County of Los Angeles General Plan Land Use Element includes Land Use Policy Statement 21, which is intended to "[p]rotect identified Potential Agricultural Preserves by discouraging inappropriate land division and allowing only use types and intensities compatible with agriculture" (Los Angeles County 1993). In addition, according to the Land Use Element, compatible uses within the Open Space land use classification include a variety of agricultural, recreational, mineral extraction, and public and semi-public activities and services. Compatible uses within non-urban hillside management areas (lands characterized by natural slopes of 25 percent or greater) include certain industrial, extractive, agricultural, and public uses, which can be appropriately located in remote hillside areas.

County of Ventura

The Farmland Resources section of the Ventura County General Plan (Ventura County 2010) contains several goals and policies related to agriculture. In particular, Goal 1 is to "[p]reserve and protect irrigated agricultural lands as a nonrenewable resource to assure the continued availability of such lands for the production of food, fiber and ornamentals." In addition, the following policies may be applicable:

> ***Policy 1:*** *Discretionary development located on land designated as Agricultural (see Land Use Chapter) and identified as Prime Farmland or Farmland of Statewide Importance on the State's Important Farmland Inventory, shall be planned and designed to remove as little land as possible from potential agricultural production and to minimize impacts on topsoil.*

> ***Policy 6:*** *Discretionary development adjacent to Agricultural-designated lands shall not conflict with agricultural use of those lands.*

In addition, the Public Facilities and Services Chapter of the Ventura County General Plan contains one policy related to agriculture, stipulating that "[a]ll transmission lines should be located and constructed in a manner which minimizes disruption of … agricultural activities" (Policy 4.5.2 [2], Ventura 2010).

4.2.3 Methodology and Significance Criteria

Potential impacts on agricultural and forest resources were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the CEQA Guidelines. The proposed project would cause a significant impact on agricultural resources if it would:

a) Conflict with existing zoning for agricultural use or a Williamson Act contract; or

b) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use.

Appendix G of the CEQA Guidelines also includes the following checklist items:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use;
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)); and
- Result in the loss of forest land or conversion of forest land to non-forest use.

The proposed project, however, would not disturb lands designated as Prime, Unique, or Statewide Importance; or forest land or timberland; or land zoned for forest land or timberland. In addition, the proposed project would not conflict with existing zoning for or cause rezoning of forest land or timberland because no such land is traversed by any proposed project components. In addition, no Williamson Act contracted lands are present in the area of the proposed project components. Therefore, these items are not applied as criteria in the analysis of environmental impacts presented in the following section.

4.2.4 Environmental Impacts and Mitigation Measures

Applicant Proposed Measures

The applicant has not proposed any applicant proposed measures related to agricultural or forest resources.

Impact AG-1: Conflict with existing zoning for agricultural use.
LESS THAN SIGNIFICANT

The proposed project would temporarily disturb up to ~~174.66~~175.86 acres of land zoned Agriculture, and up to ~~50.18~~50.22 acres of land zoned Open Space in Los Angeles and Ventura Counties; however, the proposed project components would be located within existing SCE rights-of-way where land is not currently being used for active agricultural purposes, and/or entirely on previously disturbed land that would revert to its previous use after construction. Therefore, this impact would be less than significant without mitigation under this criterion.

Impact AG-2: Conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use.
LESS THAN SIGNIFICANT

The proposed project would temporarily disturb up to ~~174.66~~175.86 acres of land zoned Agriculture and up to ~~50.18~~ 50.22 acres of land zoned Open Space in Los Angeles and Ventura counties; however, the proposed project components would not disturb land used for active agricultural purposes. Further, land would revert back to previous use after construction. In addition, the proposed project does not traverse land zoned as forest land or timberland. Therefore, this impact would be less than significant without mitigation under this criterion.

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4.3 Air Quality

This section describes the environmental and regulatory settings and discusses potential impacts associated with the construction and operation of the proposed project with respect to air quality resources.

4.3.1 Environmental Setting

Air quality is dependent on the quantities of air pollutants emitted from human-made and natural sources, as well as surface topography and prevailing meteorological conditions. California is divided into 15 air basins that were established by grouping counties or portions of counties with similar geographic and/or meteorological features. Most of the proposed project components are located in western Los Angeles County, and some are located in eastern Ventura County. The western portion of Los Angeles County is ~~These areas are~~ part of the South Coast Air Basin, which comprises all of Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside ~~C~~counties. Ventura County is part of the South Central Coast Air Basin, which comprises all of Ventura, Santa Barbara, and San Luis Obispo counties.

4.3.1.1 Climate

South Coast Air Basin

The distinctive climate of the South Coast Air Basin is determined by its terrain and geographical location. The basin is made up of a coastal plain with connecting broad valleys and low hills and is bounded by the Pacific Ocean in the southwest quadrant. High mountains form the remainder of the perimeter of the basin. The general region lies in the semi-permanent high pressure zone of the eastern Pacific Ocean. As a result, the climate is mild, tempered by cool sea breezes. This usually mild climate is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The annual average temperature varies little throughout the South Coast Air Basin, averaging 62 degrees Fahrenheit (^{o}F). However, the eastern portion of the basin has a less pronounced oceanic influence, and thus exhibits greater variability in annual and maximum temperatures. The City of San Bernardino, for example, has an annual average temperature range from 37ºF to 97ºF, while the City of Santa Monica has an annual range between 47ºF to 75ºF. All portions of the basin have recorded maximum temperatures above 100ºF. January is usually the coldest month, and July and August are usually the warmest months (SCAQMD 1993).

Almost all of the rainfall in the South Coast Air Basin falls between November and April. Summer rainfall is normally restricted to widely scattered thundershowers near the coast and slightly heavier showers in the east and over the mountains. Annual average rainfall varies from approximately 9 inches in Riverside to 14 inches in downtown Los Angeles, but heavier rainfall totals are measured at foothill locations. Monthly and yearly rainfall totals are extremely variable. Rainy days vary from five to 10 percent annually in the basin, with a higher frequency of such days near the coast. Downtown Los Angeles wind speeds average approximately six miles per hour (mph) with little seasonal variation. Summer wind speeds average slightly higher than winter wind speeds. Inland areas record slightly lower wind speeds than downtown Los Angeles, while coastal wind speeds average about two mph higher than those in downtown Los Angeles. The dominant daily wind pattern is a daytime sea breeze (predominantly from the southwest) and a nighttime land breeze (predominantly from the northeast). This regime is broken only by occasional winter storms and infrequent strong northeasterly Santa Ana flows from the mountains and deserts north of the air basin (SCAQMD 1993).

South Central Coast Air Basin

The South Central Coast Air Basin includes Ventura, Santa Barbara, and San Luis Obispo counties, and is strongly influenced by its proximity to the Pacific Ocean. Like the South Coast Air Basin, the South Central Coast Air Basin has a generally mild climate with infrequent, variable rainfall.

Dispersion of air pollutant emissions in the air above Ventura County is limited by persistent temperature inversions and mountain ranges that inhibit horizontal movement of air, among other factors. During the "smog season" (May through October), air temperatures can be higher, and sunlight more intense, resulting in many exceedances of state and federal ozone standards (VCAPCD 2003).

4.3.1.2 Ambient Air Quality

The topography and climate of Southern California combine to make the South Coast Air Basin an area of high air pollution potential. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap over the cool marine layer and inhibits the pollutants in the marine layer from dispersing upward; light winds during the summer can also further limit ventilation. Sunlight then triggers the photochemical reactions which produce ozone (SCAQMD 2007a).

Air Pollutants

The United States Environmental Protection Agency (EPA) has set National Ambient Air Quality Standards (NAAQS) for widespread pollutants from numerous and diverse sources considered harmful to public health and the environment. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against visibility impairment; and damage to animals, crops, vegetation, and buildings. The EPA periodically reviews the science upon which the standards are based and the standards themselves. The EPA has set NAAQS for seven principal pollutants, which are called "criteria" pollutants:

- Carbon monoxide (CO);
- Lead;
- Nitrogen dioxide (NO_2);
- Ozone;
- Particulate matter less than or equal to 10 microns in diameter (PM_{10});
- Particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$); and
- Sulfur dioxide (SO_2).

Ozone is not emitted directly from emission sources but rather created near ground level by a chemical reaction between oxides of nitrogen (NO_x) and reactive organic gas (ROG) in the presence of sunlight. As a result, NO_x and ROGs are often referred to as ozone precursors and are regulated as a means to prevent ground-level ozone formation. ROGs are sometimes also referred to as volatile organic compounds (VOCs).

The State of California has established California Ambient Air Quality Standards (CAAQS) for these criteria pollutants, as well as ambient air quality standards for sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particles (VRPs). NAAQS and CAAQS are summarized in Table 4.3-1.

Table 4.3-1 Summary of National and California Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS[a]		CAAQS[b]
		Primary	Secondary	
CO	8-hour	9 ppm	–	9 ppm
	1-hour	35 ppm	–	20 ppm
Lead	3-month (rolling average)	0.15 µg/m³	0.15 µg/m³	–
	Quarterly	1.5 µg/m³	1.5 µg/m³	–
	30-day	–	–	1.5 µg/m³
NO_2	Annual	0.053 ppm	0.053 ppm	0.030 ppm
	1-hour	0.100 ppm[(c)]	–	0.18 ppm
Ozone	8-hour	0.075 ppm[(d)] (0.08 ppm[e])	0.075 ppm[(d)] (0.08 ppm[e])	0.070 ppm
	1-hour	–	–	0.09 ppm
PM_{10}	Annual	–	–	20 µg/m³
	24-hour	150 µg/m³ [(f)]	150 µg/m³ [(f)]	50 µg/m³
$PM_{2.5}$	Annual	~~15.0~~12.0 µg/m³ [(g)]	15.0 µg/m³ [(g)]	12 µg/m³
	24-hour	35 µg/m³ [(h)]	35 µg/m³ [(h)]	–
SO_2	Annual	0.03 ppm	–	0.03 ppm
	24-hour	0.14 ppm	–	0.04 ppm
	3-hour	–	0.5 ppm	–
	1-hour	0.075 ppm[(i)]	–	0.25 ppm
Sulfates	24-hour	–	–	25 µg/m³
H_2S	1-hour	–	–	0.03 ppm
Vinyl chloride	24-hour	–	–	0.01 ppm
VRP	8-hour	–	–	See note below[(j)]

Sources: Code of Federal Regulations (40, Part 50); Code of California Regulations (17, Section 70200)
Key:
µg/m³ = micrograms per cubic meter
CAAQS = California Ambient Air Quality Standards
CO = Carbon monoxide
H_2S = Hydrogen sulfide
NAAQS = National Ambient Air Quality Standards
NO_2 = Nitrogen dioxide
PM_{10} = Particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = Particulate matter less than or equal to 2.5 microns in diameter
ppm = parts per million
SO_2 = Sulfur dioxide
VRP = Visibility-reducing particles
Notes:
[a] Short-term standards (averaging times of 24 hours or less) for CO and SO_2 are not to be exceeded more than once per year.
[b] Standards for ozone, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, 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.
[c] The 3-year average of the 98th percentile of the daily maximum 1-hour average must not exceed 0.100 ppm.
[d] 2008 standard. The 3-year average of the 4th highest daily maximum 8-hour average concentration over each year must not exceed 0.075 ppm.
[e] 1997 standard. The 3-year average of the 4th highest daily maximum 8-hour average concentration over each year must not exceed 0.075 ppm. This standard and the implementation rules for this standard will remain in place as the EPA undertakes rulemaking to address the transition from the 1997 standard to the 2008 standard.
[f] Not to be exceeded more than once per year on average over 3 years.
[g] The 3-year average of the weighted annual mean $PM_{2.5}$ concentrations must not exceed 15.0 µg/m³.
[h] The 3-year average of the 98th percentile of 24-hour concentrations within an area must not exceed 35 µg/m³.
[i] The 3-year average of the 99th percentile of the daily maximum 1-hour average must not exceed 0.075 ppm.
[j] Extinction coefficient of 0.23 per kilometer—visibility of 10 miles or more due to particles when relative humidity is less than 70 percent.

The South Coast Air Quality Management District (SCAQMD) is the local air pollution control agency for the South Coast Air Basin and the portions of the Salton Sea Air Basin in Riverside County. The SCAQMD operates 38 air quality monitoring stations that collect ambient air quality measurements for specific pollutants. The closest air monitoring stations to the proposed project components are located in Santa Clarita and Reseda. These stations are located approximately 5.5 miles northeast and 7.5 miles south, respectively, from the proposed Central Compressor Station site at the Aliso Canyon Natural Gas Storage Field (storage field). An air monitoring station is also located in Burbank, approximately 17 miles southwest of the storage field site. Historical air pollutant measurements at these air quality monitoring stations are presented in Table 4.3-2.

Table 4.3-2 Air Pollutant Measurements at Air Quality Monitoring Stations in the Proposed Project Area

		Gas Air Pollutant Measurements[1] (ppm)									Particulate Air Pollutant Measurements[2] ($\mu g/m^3$)			
		CO		NO_2		Ozone		SO_2			PM_{10}		$PM_{2.5}$	
Station	Year	1-hr	8-hr	1-hr	Ann	1-hr	8-hr	1-hr	24-hr	Ann	24-hr	Ann	24-hr	Ann
Santa Clarita (No. 13)	2006	2	1.3	0.08	0.018	0.16	0.112	–	–	–	53	23.4	–	–
	2007	2	1.2	0.08	0.020	0.135	0.101	–	–	–	131	29.9	–	–
	2008	2	1.1	0.07	0.017	0.160	0.108	–	–	–	91	25.8	–	–
	2009	2	1.4	0.13	0.015	0.140	0.103	–	–	–	56	23.4	–	–
Reseda (No. 6)	2006	5	3.4	0.07	0.017	0.16	0.105	–	–	–	–	–	32.0	12.9
	2007	4	2.8	0.08	0.019	0.129	0.092	–	–	–	–	–	33.4	13.1
	2008	4	2.9	0.09	0.018	0.123	0.095	–	–	–	–	–	26.2	11.9
	2009	4	2.8	0.07	0.017	0.135	0.093	–	–	–	–	–	27.2	11.4
Burbank (No. 7)	2006	4	3.5	0.10	0.027	0.17	0.099	0.01	0.004	0.001	71	35.6	43.4	16.6
	2007	4	2.8	0.09	0.029	0.116	0.088	0.01	0.003	0.001	109	40.0	47.7	16.8
	2008	3	2.6	0.11	0.029	0.133	0.092	0.01	0.003	0.001	66	35.6	34.6	14.1
	2009	3	2.9	0.09	0.027	0.096	0.086	0.01	0.003	-	80	39.2	34.4	14.4
Simi Valley (Cochran Street)	2009	–	–	0.05	–	0.116	0.092	–	–	–	77	25.5	20.5	10.2
	2010	–	–	0.05	–	0.098	0.087	–	–	–	35	18.8	17.4	10.0
	2011	–	–	0.04	–	0.108	0.085	–	–	–	46	19.6	19.5	9.8

Sources: SCAQMD 2007b, SCAQMD 2008, SCAQMD 2009, SCAQMD 2010, CARB 2013, EPA 2013

Key:
$\mu g/m^3$ = micrograms per cubic meter
ann = annually
CO = Carbon monoxide
NO_2 = Nitrogen dioxide
PM_{10} = Particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = Particulate matter less than or equal to 2.5 microns in diameter
ppm = parts per million
SO_2 = Sulfur dioxide

Notes:
1 1-hr CO, 8-hr CO, 1-hr NO_2, and 1-hr ozone reported as maximum concentrations. 8-hour ozone reported as fourth-highest concentration.
2 24-hr PM_{10} reported as maximum concentration. 24-hour $PM_{2.5}$ reported as 98th percentile concentration.

The Ventura County Air Pollution Control District (VCAPCD) is the local air pollution control agency for Ventura County. The VCAPCD operates 5 air quality monitoring stations that collect ambient air quality measurements for specific pollutants. The closest air monitoring station in Ventura County to the proposed project components is located in Simi Valley. Historical air pollutant measurements at this air quality monitoring station are presented in Table 4.3-2.

The EPA compares ambient air criteria pollutant measurements to NAAQS to assess the status of the air quality of regions within the U.S. Similarly, the California Air Resources Board (CARB) compares air pollutant measurements in California to CAAQS. Based on these comparisons, regions within the states of the U.S. are designated as one of the following categories for the criteria air pollutants:

- **Attainment.** A region is designated as "attainment" if monitoring shows that ambient concentrations of a specific pollutant are less than or equal to NAAQS or CAAQS. An attainment area for a NAAQS that has been redesignated from nonattainment is classified as a "maintenance area" for a 10-year period to ensure that the air quality improvements are sustained.
- **Nonattainment.** If the NAAQS or CAAQS is exceeded for a pollutant, then the region is designated as "nonattainment" for that pollutant. Nonattainment areas can be further classified based on the severity of the exceedance of the relevant standard.
- **Unclassifiable.** An area is designated as "unclassifiable" if the ambient air monitoring data are incomplete and do not support a designation of attainment or nonattainment.

The proposed project is generally situated in the Los Angeles County portion of the South Coast Air Basin and in Ventura County. The attainment status for ~~this area~~these portions of Los Angeles and Ventura counties under both the NAAQS and CAAQS is summarized in Table 4.3-3.

Table 4.3-3 Attainment Status in the ~~South Coast Air Basin (Los Angeles County)~~South Coast Air Basin (Los Angeles County) and South Central Coast Air Basin (Ventura County)

Pollutant	Attainment Status			
	NAAQS		CAAQS	
	SCAQMD	VCAPCD	SCAQMD	VCAPCD
CO	Unclassifiable/Attainment	Unclassifiable/Attainment	Attainment	Attainment
Lead	Nonattainment	Unclassifiable/Attainment	Nonattainment	Attainment
NO_2	Unclassifiable/Attainment	Unclassified/Attainment	Nonattainment	Attainment
Ozone	Nonattainment (Severe)	Nonattainment (Serious)	Nonattainment	Nonattainment
PM_{10}	Nonattainment (Serious)	Unclassifiable/Attainment	Nonattainment	Nonattainment
$PM_{2.5}$	Nonattainment	Unclassifiable/Attainment	Nonattainment	Nonattainment
SO_2	Attainment	Attainment	Attainment	Attainment
Sulfates	–	–	Attainment	Attainment
H_2S	–	–	Unclassified	Unclassified
VRP	–	–	Unclassified	Unclassified

Sources: 40 CFR 81.305; CARB 2011.
Key:
CAAQS = California Ambient Air Quality Standards
CO = Carbon monoxide
H_2S = Hydrogen sulfide
NAAQS = National Ambient Air Quality Standards
NO_2 = Nitrogen dioxide
PM_{10} = Particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = Particulate matter less than or equal to 2.5 microns in diameter
SO_2 = Sulfur dioxide
VRP = Visibility-reducing particles

Toxic Air Contaminants

Toxic air contaminants (TACs) are air pollutants suspected or known to cause cancer, birth defects, neurological damage, or death. With the exception of lead, no ambient air quality standards have been established for TACs. Instead, the compounds are managed on a case-by-case basis, depending on the quantity and type of emissions and proximity of potential receptors. Statewide and local programs identify industrial and commercial emitters of TACs and require reductions of these emissions. Federal programs also require control of certain categories of TACs. CARB also recently identified diesel particulate matter (PM) as a TAC. Diesel engines emit a complex mix of pollutants, the most visible of which are very small carbon particles or “soot,” known as diesel PM.

4.3.2 Regulatory Setting

Ambient air quality and air pollutant emissions from stationary and mobile sources are managed under a framework of federal, state, and local rules and regulations.

4.3.2.1 Federal

The EPA is the principal federal agency responsible for air quality management in the U.S. The Clean Air Act (CAA) is the law that defines EPA responsibilities for protecting and improving the nation’s air quality and the stratospheric ozone layer. The last major change in the law, the CAA Amendments of 1990, was enacted by Congress in 1990. Legislation passed since then has resulted in several minor changes. The CAA, like other laws enacted by Congress, was incorporated into the United States Code (as Title 42, Chapter 85). Under the CAA, the EPA oversees implementation of federal programs for permitting new and modified stationary sources, controlling toxic air contaminants, and reducing emissions from motor vehicles and other mobile sources. The sections of the CAA that are most applicable to the proposed project include Title I (Air Pollution Prevention and Control), Title II (Emission Standards for Mobile Sources), and Title V (Permits).

Title I of the CAA requires establishment of NAAQS, air quality designations, and plan requirements for nonattainment areas. States are required to submit a state implementation plan (SIP) to the EPA for areas in nonattainment with NAAQS. The SIP, which is reviewed and approved by the EPA, must demonstrate how state and local regulatory agencies will institute rules, regulations, and/or other programs to achieve attainment with NAAQS.

Title II of the CAA contains a number of provisions regarding mobile sources, including requirements for reformulated gasoline, new tailpipe emission standards for cars and trucks, standards for heavy-duty vehicles, and a program for cleaner fleet vehicles.

Title V of the CAA requires an operating permit program for larger industrial and commercial sources that release pollutants into the air. Operating permits include information on which pollutants are being released, how much may be released, and what kinds of steps the source’s owner or operator is required to take to reduce the pollutants. Permits must include plans to measure and report the air pollutants emitted.

4.3.2.2 State

The California Clean Air Act (CCAA) outlines a statewide air pollution control program in California. CARB is the primary administrator of the CCAA, while local air quality districts administer air rules and regulations at the regional level. CARB is responsible for establishing the CAAQS, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and preparing the SIP.

Many of the pertinent state air regulations are codified in Title 13 and Title 17 of the California Code of Regulations (CCR).

Sulfur Content of Diesel Fuel

Pursuant to 13 CCR §§2281–2285, the sulfur content of vehicular diesel fuel sold or supplied in California must not exceed 15 parts per million by weight. As stipulated in 17 CCR §93114, non-vehicular diesel fuel is also subject to the sulfur limits specified in 13 CCR §§2281–2285. Diesel supplied in California for the proposed project's vehicles and equipment would be subject to this regulation; therefore, it must have a sulfur content less than or equal to 15 parts per million by weight.

4.3.2.3 Regional and Local

Local air districts in California are responsible for issuing stationary source air permits, developing emissions inventories, maintaining air quality monitoring stations, and reviewing air quality environmental documents required by the California Environmental Quality Act (CEQA). The CCAA also designates air districts as lead air quality planning agencies, requires them to prepare air quality plans, and grants them authority to implement transportation control measures.

SCAQMD

The SCAQMD is the administrator of air pollution rules and regulations within the South Coast Air Basin. The SCAQMD is responsible for implementing measures and local air pollution rules that ensure NAAQS and CAAQS are achieved and maintained. Every three years, the SCAQMD prepares an air quality management plan (AQMP) for air quality improvement to be submitted for inclusion in the California SIP. The AQMP analyzes air quality at a regional level and identifies region-wide attenuation methods and policies to achieve attainment levels with respect to air quality standards. Each successive iteration of the AQMP is an update of the previous plan. The Final 2007 AQMP was adopted by the AQMD Governing Board in June 2007.

SCAQMD Rule 403: Fugitive Dust Regulations

The purpose of Rule 403 is to reduce the amount of PM entrained in the ambient air as a result of human-caused fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. The rule also requires construction activities to use applicable best available control measures to minimize fugitive dust emissions from a wide variety of construction activities, including backfilling, clearing, earth-moving activities, stockpiling, and vehicle traffic.

SCAQMD Regulation II (Rules 200 to 223): Permits

Regulation II includes Rules 200 to 223 which outline the requirements for obtaining and maintaining permits to construct and permits to operate stationary emission sources within the SCAQMD. The type of information and the level of detail required of a permit applicant will vary depending on the scope of the proposed project, predicted emissions, and potential health effects.

VCAPCD

The VCAPCD regulates emissions generated in Ventura County by stationary and mobile sources. The 2007 Air Quality Management Plan (AQMP) was approved by the VCAPCD Board on May 13, 2008. Stationary emission sources are regulated through VCAPCD's permitting process.

VCAPCD Rule 55: Fugitive Dust

Rule 55 applies to activities that would generate fugitive dust, including construction and demolition. Under this rule, fugitive dust generators are required to implement measures to control and limit the amount of dust from earth moving, vehicle track-out, and truck hauling.

VCAPCD Rule 55.1: Paved Roads and Public Unpaved Roads

Rule 55.1 requires the removal of visible roadway accumulation of fugitive dust within 72 hours of any written notification from the VCAPCD. The rule also limits the amount of dust from any construction or earthmoving activity on a public, unpaved road. The use of blowers is completely prohibited.

4.3.3 Methodology and Significance Criteria

The air pollutant emissions generated by construction equipment and maintenance vehicle usage during construction and operation of the proposed project were calculated using standard methodologies and based on estimates of equipment and vehicle use and on-road and off-road (2010) emissions factors promulgated by CARB and provided by EPA in AP-42, *Compilation of Air Pollutant Emission Factors*.

Projected decreases in air pollutant emissions due to the removal of the existing gas turbine–driven compressors were estimated based on past equipment use, past air testing data, and published emission factors.

Potential impacts on air quality were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the CEQA Guidelines. The proposed project would cause a significant impact on air quality if it would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);

d) Expose sensitive receptors to substantial pollutant concentrations; or

e) Create objectionable odors affecting a substantial number of people.

To assist with the identification of significant impacts under CEQA, SCAQMD has developed regional and localized significance thresholds (Table 4.3-4). SCAQMD has also developed a localized significance threshold (LST) methodology to be used for analyzing localized impacts associated with project-specific activities.

The VCAPCD recommends the following quantitative significance thresholds for ozone precursor emissions:

- 25 pounds per day of ROG; or
- 25 pounds per day of NO_x

Table 4.3-4 SCAQMD CEQA Air Quality Significance Thresholds

Threshold Category	Pollutant	Construction	Operations
Mass Daily Thresholds	NO_X	100 lbs/day	55 lbs/day
	VOC	75 lbs/day	55 lbs/day
	CO	550 lbs/day	550 lbs/day
	PM_{10}	150 lbs/day	150 lbs/day
	$PM_{2.5}$	55 lbs/day	55 lbs/day
	Lead	3 lbs/day	3 lbs/day
	SO_X	150 lbs/day	150 lbs/day
TAC and Odor Thresholds	TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Hazard Index ≥ 1.0 (project increment)	
	Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality Standards	NO_2[1]	1-hour average: 0.18 ppm (State) Annual average: 0.03 ppm (State) and 0.0534 ppm (Federal)	
	PM_{10}	24-hour average: 10.4 μg/m³ Annual average: 1 μg/m³	24-hour average: 2.5 μg/m³ Annual average: 1 μg/m³
	$PM_{2.5}$	24-hour average: 10.4 μg/m³	24-hour average: 2.5 μg/m³
	SO_2	1-hour averages: 0.25 ppm (State) and 0.075 ppm (Federal – 99th percentile) 24-hour average: 0.04 ppm (State)	
	Sulfates	24-hour average: 1 μg/m³ (State)	
	CO[1]	1-hour averages: 20 ppm (State) and 35 ppm (Federal) 8-hour average: 9.0 ppm (State/Federal)	
	Lead	30-day average: 1.5 μg/m³ (State) Rolling 3-month average: 0.15 μg/m³ (Federal) Quarterly average: 1.5 μg/m³ (Federal)	

Source: SCAQMD 2011
Key:
$\mu g/m^3$ = micrograms per cubic meter
CO = Carbon monoxide
H_2S = Hydrogen sulfide
lbs = pounds
NO_2 = Nitrogen dioxide
NO_x = Oxides of nitrogen
PM_{10} = Particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = Particulate matter less than or equal to 2.5 microns in diameter
ppm = parts per million
SCAQMD = South Coast Air Quality Management District
SO_2 = Sulfur dioxide
SO_x = Oxides of sulfur
TAC = Toxic air contaminants
VOC = Volatile organic compounds
Note:
1 SCAQMD is in attainment; a project is significant if it causes or contributes to an exceedance of significance thresholds.

4.3.4 Environmental Impacts and Mitigation Measures

Overview of Construction Impacts

Air pollutant emissions would be generated during the various activities associated with construction of the proposed project. Air pollutants would be emitted from the engine exhaust of diesel and gasoline-fueled construction equipment and on-road vehicles (i.e., delivery trucks and worker vehicles). Onsite construction activities and vehicle travel on local/access roads would also generate fugitive dust emissions. The applicant and SCE propose~~s~~ to pave all access roads within the construction zones for all project components except the 66-kV subtransmission line reconductoring and the telecommunications project components; thus, unpaved road fugitive dust emissions would not be generated during construction of the Central Compressor Station, Natural Substation, Plant Power Line, office and crew-shift buildings, and guardhouse. The applicant and SCE will abide by applicable air quality regulations that address fugitive dust, including SCAQMD Rule 403 and VCAPCD Rules 55 and 55.1. The paving of roads with asphalt would generate VOC emissions.

Daily emissions were calculated for each construction activity. Emissions occurring within Ventura County (i.e., related to the portion of Telecommunications Route #2) are presented and assessed separately from the emissions that would result from the rest of the project components, which would be located in Los Angeles County.

Los Angeles County (SCAQMD)

The potential construction phases that could occur concurrently in Los Angeles County were identified based on preliminary construction schedules. Seven scenarios (i.e., Scenarios 1 through 7) were developed to represent the concurrent construction phases. Daily emissions from these concurrent activities were then combined in these seven scenarios. Scenarios 1 through 7 represent worst-case daily scenarios based on the overlap of schedules during the proposed project:

- **Scenario 1:** Guardhouse, main office, and crew-shift building construction; survey for proposed Natural Substation; staging area preparation; right-of-way clearing; subtransmission line survey; and subtransmission line access roads.
- **Scenario 2:** Survey for proposed Central Compressor Station; survey for proposed Natural Substation and subtransmission line; subtransmission line access roads; and subtransmission structure framing and setting, tubular steel pole footing installation, line assembly, and line restoration.
- **Scenario 3:** Proposed Central Compressor Station site clearing and preparation; proposed Natural Substation civil and fencing; and subtransmission guard structure installation, survey, access roads, structure framing and setting, tubular steel pole footing installation, and line assembly.
- **Scenario 4:** Proposed Central Compressor Station civil; proposed Natural Substation mechanical and electrical equipment room, electrical, wiring, transformer installation, testing, maintenance, paving and landscaping; and all subtransmission line construction activities.
- **Scenario 5:** Proposed Central Compressor Station mechanical and electrical; proposed Natural Substation mechanical and electrical equipment room, electrical, wiring, transformer installation, testing, maintenance, paving and landscaping; and all subtransmission line construction and structure removal activities.

- **Scenario 6:** Proposed Central Compressor Station paving; 12-kilovolt (kV) Plant Power Line installation, fencing and landscaping; subtransmission guard structure removal; 66-kV subtransmission line reconductoring; and fiber optic/telecommunications installation.
- **Scenario 7:** Dismantling of existing compressors and associated hauling, site clearing, and grading.

Daily construction emissions were calculated for each scenario: this includes the combination of emissions from concurrent activities that occur in different locations throughout the areas of the proposed project components. Peak daily construction emissions are summarized in Table 4.3-5. Detailed emission calculations are presented in Appendix H. As construction schedules are finalized, actual construction emissions are expected to be lower than presented in the following analysis. Emissions are expected to be lower as a result of a longer timeframe with less construction activities occurring on the same day.

Table 4.3-5 Daily Construction Emissions (Los Angeles County) and SCAQMD Significance Thresholds

Scenario	Peak Daily Construction Emissions (pounds/day)					
	CO	NO_x	ROG	PM_{10}[1]	$PM_{2.5}$[1]	SO_2
1	165	413	46	34	17	0.6
2[2]	~~219~~221	~~577~~579	68	~~52~~95	25	0.8
3	260	566	69	~~34~~77	23	0.7
4	291	573	71	~~39~~81	23	0.7
5	309	562	80	~~35~~78	33	0.8
6	123	330	42	~~17~~19	22	0.5
7	26	56	21	16	4	61.4
Peak Daily[3]	309	~~577~~579	80	52	25	61.4
SCAQMD Significance Threshold	550	100	75	150	55	150
Exceeds Threshold?	No	Yes	Yes	No	No	No

Sources: SoCalGas 2009, 2011; SCAQMD 2011

Key:
CO = Carbon monoxide
NO_x = Oxides of nitrogen
PM_{10} = Particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = Particulate matter less than or equal to 2.5 microns in diameter
ROG = Reactive organic gas
SCAQMD = South Coast Air Quality Management District
SO_2 = Sulfur dioxide

Notes:
1 Per additional information submitted by the applicant after circulation of the Draft EIR, these estimates have been corrected to account for travel on unpaved roads (emissions from travel on unpaved roads were not included in Table 4.3-5 of the Draft EIR). Revised air quality emission estimates are presented in revised Appendix H (Appendix B of this Final EIR).
2 Includes emissions estimated to be associated with the construction of Telecommunications Route #4, and includes the conservative assumption that the construction of this project component would take place during the scenario with the overall highest daily emissions.
3 Represents the peak value of the seven scenarios.

Ventura County (VCAPCD)

Approximately 4 miles of the 15.3-mile alignment of Telecommunications Route #2 would be constructed in Ventura County, within the jurisdiction of the VCAPCD. Peak daily construction emissions that would take place in Ventura County were calculated and are summarized in Table 4.3-6. Detailed emission calculations are presented in Appendix H.

Table 4.3-6 Daily Construction Emissions (Ventura County) and VCAPCD Significance Thresholds

Peak Daily Construction Emissions (pounds/day)						
Pollutant	ROC	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Peak Daily	0.32	2.17	2.09	0.00	0.22	0.09
VCAPCD Threshold[1]	25	NA	25	NA	NA	NA
Exceed VCAPCD Threshold?	No	-	No	-	-	-

Sources: SoCalGas 2012; VCAPCD 2003
Key:
NA = not applicable
Notes:
[1] VCAPCD has established CEQA thresholds for ROG and NO_x, and has not established thresholds for the other criteria pollutants presented in the table.

As construction schedules are finalized, actual construction emissions from all project components are expected to be lower than presented in the analysis above. Emissions are expected to be lower as a result of a longer timeframe with less construction activities occurring on the same day.

Overview of Operations Impacts

The proposed project would include the replacement of three gas turbine-driven compressors with three new electric-driven variable-speed compressor trains. The proposed project would not include any additional fuel combustion sources or emission increases in existing emission sources. The removal of the three existing gas turbine-driven compressors would result in a net decrease in air pollutant emissions at the storage field.

Regular maintenance checks, consisting of approximately four visits per month, would take place at the unmanned Natural Substation as part of the proposed project. Mobile source exhaust and road dust emissions would be generated from employees commuting for these maintenance checks.

Maintenance of the other project components (main office building and crew shift buildings, new guardhouse, Plant Power Line, reconductored 66-kV subtransmission line, telecommunications routes, and the modified SCE substations) that would take place after project construction would be similar in nature to existing maintenance activities and are not anticipated to generate emissions in excess of those produced under existing conditions.

The projected net changes in daily operational emissions associated with the proposed project are summarized in Table 4.3-7~~6~~. Detailed emission calculations are presented in Appendix H.

Table 4.3-7~~6~~ Net Changes in Operational Emissions

Source	Daily Operational Emissions[1] (pounds/day)					
	CO	NO_x	ROG	PM_{10}	$PM_{2.5}$	SO_2
Vehicles Associated with Natural Substation Maintenance	4.9	0.55	0.55	0.36	0.03	0.01
Removal of Gas Turbine–Driven Compressors	(334)	(1,070)	(8.6)	(19)	(19)	(13)
Net Change	(329)	(1,069)	(8.0)	(19)	(19)	(13)

Sources: SoCalGas 2009, 2011
Key:
CO = Carbon monoxide
NO_x = Oxides of nitrogen
PM_{10} = Particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = Particulate matter less than or equal to 2.5 microns in diameter
ROG = Reactive organic gas
SO_2 = Sulfur dioxide
Note:
[1] A parenthesis indicates a negative number (i.e., a decrease in emissions).

4.3.4.1 Applicant Proposed Measures

The applicant has committed to the following applicant proposed measures (APMs) as part of the design of the proposed project. See Section 2.5, "Plans and Applicant Proposed Measures," Table 2-8, for a full description of each APM.

- **APM AQ-1: Maintain Engines in Good Working Condition.**
- **APM AQ-2: Minimization of Equipment Use.**
- **APM AQ-3: Minimization of Disturbed Areas.**
- **APM AQ-4: Watering Prior to Grading and Excavation.**
- **APM AQ-5: Vehicle Speed Limits.**
- **APM AQ-6: Fugitive Dust from High Winds.**
- **APM AQ-7: Cleaning of Paved Roads.**

4.3.4.2 Impacts Analysis

Impact AQ-1: Conflict with/obstruct implementation of SCAQMD or VCAPCD air quality plan.
LESS THAN SIGNIFICANT

The proposed project would generate emissions during construction and operations activities.

SCAQMD

The SCAQMD's 2007 AQMP outlines the long-term strategies for regional air quality to comply with NAAQS and CAAQS. The regional emission inventory, as part of the plan, includes emissions from a variety of sources, including stationary point sources, area sources, on-road vehicles, and off-road equipment. Construction emissions from the proposed project would be temporary and would represent a small fraction of the regional emission inventory included in the 2007 AQMP. Thus, construction emissions for the proposed project that would be generated in Los Angeles County would not contribute substantially to the regional emission budget. Furthermore, construction equipment for the proposed project would be operated in compliance with applicable local, state, and federal regulations mandating reductions in emissions as outlined in the plan and related SIP. In addition, the proposed project would result in a net decrease in long-term operational emissions at the storage field site. Project emissions would be consistent with the SCAQMD's 2007 AQMP and would not conflict with or obstruct implementation of the plan. Therefore, ~~this~~ impacts under this criterion that would be associated with project components constructed in Los Angeles County would be less than significant without mitigation under this criterion.

VCAPCD

Like the SCAQMD's AQMP, the VCAPCD's 2008 AQMP outlines the long-term strategies for regional air quality to comply with NAAQS and CAAQS and includes a regional emission inventory accounting for emissions from a variety of sources, including stationary point sources, area sources, on-road vehicles, and off-road equipment. As shown in Table 4.3-6, construction emissions that would take place in Ventura County during the construction of Telecommunications Route #2 would be low and represent only a very small fraction of the regional emission inventory included in the VCAPCD's 2008 AQMP. In addition, these emissions would be temporary in nature. Construction equipment for the proposed project would be operated in compliance with applicable local, state, and federal regulations mandating reductions in emissions as outlined in the plan and related SIP, and project emissions would be consistent with the 2008 VCAPCD. Impacts under this criterion that would be associated with the portion of Telecommunications Route #2 that would be constructed in Ventura County would be less than significant without mitigation under this criterion.

Impact AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
LESS THAN SIGNIFICANT

Emissions from construction activities generated by the proposed project are anticipated to cause localized temporary increases in ambient air pollutant concentrations.

SCAQMD

As indicated above, SCAQMD has developed an LST methodology that may be applied in the analysis of localized impacts associated with the proposed project in the South Coast Air Basin. The LST methodology was used to assess the significance of impacts caused by emissions of NO_x, CO, PM_{10}, and $PM_{2.5}$ during project construction. SCAQMD guidance includes LST levels that would indicate whether daily emissions for proposed construction activities could result in significant localized air quality impacts. If project daily emissions are less than the corresponding LST level, then those emissions would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.

An LST analysis was performed for construction activities expected to result in the highest level of emissions at each project component work site. Because construction work activities would occur at different locations, an LST analysis was performed on the activity most likely to cause the greatest amount of emissions at each individual location. For construction activities, equipment exhaust and fugitive dust emissions included in the LST analysis were limited to those generated onsite (i.e., emissions from offsite travel were not included because they occur away from the proposed project area). The results of the LST analyses are presented in Table 4.3-~~7~~8. Appendix H includes a detailed summary of the calculations used to estimate emissions for all construction activities. The LST analyses indicate that the impacts of emissions of NO_x, CO, PM_{10}, and $PM_{2.5}$ during construction would be less than applicable LST levels. Thus, emissions generated during construction activities are not expected to violate or contribute substantially to an existing or projected air quality violation.

Table 4.3-~~7~~8 Comparison of Emissions in Los Angeles County by Construction Activity to Localized Significance Threshold Levels

Construction Activity	Maximum Daily Onsite Emissions (pounds/day)				LST Level for Construction[1] (pounds/day)			
	CO	NO_X	PM_{10}	$PM_{2.5}$	CO	NO_X	PM_{10}	$PM_{2.5}$
Central Compressor Station[2]	115	106	12.5	5.5	8,933[2]	291	139	80
Natural Substation[2]	40	66	21	6.0	8,933[2]	291	139	80
12-kV Plant Power[2]	58	121	11	6.1	8,933[2]	291	139	80
66-kV Segments A, B, and C[3]	29	69	~~3.2~~3.5[4]	2.6	590[3]	114	4	3
66-kV Segments D and E[3]	29	69	3.2	2.6	590[3]	114	4	3
Proposed Guardhouse, Main Office, and Crew-shift Buildings[5]	26	76	6.6	3.4	879[5]	115	12	4
Gas Turbine–Powered Compressor Removal[2]	26	56	16	4.0	8,933[2]	291	139	80

Sources: SoCalGas 2009, 2011
Key:
CO = Carbon monoxide
kV = Kilovolt
LST = Localized Significance Threshold
NO_x = Oxides of nitrogen
PM_{10} = Particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = Particulate matter less than or equal to 2.5 microns in diameter
ROG = Reactive organic gas
SO_2 = Sulfur dioxide
Notes:
[1] Thresholds for Santa Clarita Valley receptor areas.
[2] LST thresholds based on 2-acre site and distance of 500 meters to receptor.
[3] LST thresholds based on 1-acre site and distance of 25 meters to receptor.
[4] Per additional information submitted by the applicant after circulation of the Draft EIR, these estimates have been corrected to account for travel on unpaved roads (emissions from travel on unpaved roads were not included in Table 4.3-7 of the Draft EIR). Revised air quality emission estimates are presented in revised Appendix H (Appendix B of the Final EIR).
[5] LST thresholds based on 1-acre site and distance of 50 meters to receptor.

Following completion of construction, the proposed project would generate a small increase in vehicle emissions from regular operational maintenance checks that would be performed at the proposed Natural Substation. However, these emissions would not violate any air quality standards and are not anticipated to contribute substantially to an existing or projected air quality violation.

VCAPCD

VCAPCD recommends construction measures be implemented to address fugitive dust generation for all projects involving earthmoving activities regardless of size or duration. In addition, SCE would be required to address fugitive dust according to VCAPCD's Rule 55 for the portion of Telecommunications Route #2 that would be constructed in Ventura County.

Following completion of construction, the proposed project would generate a very small increase in vehicle emissions from regular inspections and maintenance that would be performed for the telecommunications cable along Telecommunications Route #2; however, these emissions would not violate any air quality standards and are not anticipated to contribute substantially to an existing or projected air quality violation.

Therefore, this impact would be less than significant without mitigation under this criterion.

Impact AQ-3: **Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment.**
LESS THAN SIGNIFICANT WITH MITIGATION

Construction activities associated with the proposed project would generate emissions of pollutants for which the proposed project region is designated as "nonattainment." The emissions produced would include ozone precursors, NO_x, and ROG.

A comparison of the estimated peak daily construction emissions from activities that would take place in Los Angeles County to SCAQMD significance thresholds is shown in Table 4.3-5. The results of this comparison indicate that daily construction emissions of NO_x and ROG would exceed the applicable thresholds. A similar comparison of the estimated peak daily construction emissions from activities that would take place in Ventura County, to VCAPCD significance thresholds, is shown in Table 4.3-6, and indicates that daily construction emissions of NO_x and ROCs would not exceed significance thresholds.

Peak daily emissions of NO_x are estimated to exceed the significance thresholds during six of seven scenarios. Only during Scenario 7, when peak daily construction-related emissions of NO_x are anticipated to be approximately 56 pounds per day, would emissions of this pollutant not exceed the significance threshold. APM AQ-1, APM AQ-2, APM AQ-3, APM AQ-4, APM AQ-5, APM AQ-6, and APM AQ-7 would be implemented by the applicant and SCE, as applicable, to reduce emissions.

ROG emissions are projected to exceed the SCAQMD's significance threshold of 75 pounds per day only for Scenario 5, during which ROG emissions are estimated to be 80 pounds per day. The majority of ROG emissions under this scenario would be generated from non-road equipment used during construction of the 66-kV subtransmission line.

The following mitigation measure (Mitigation Measure [MM] AQ-1) is intended to reduce emissions from project construction activities.

MM AQ-1: Construction Emission Reduction Measures. The applicant and SCE will implement the following emission reduction measures for all construction activities:

1. Ensure that all off-road diesel-powered construction equipment with engines greater than 50 horsepower (hp) are compliant with Tier 3 off-road emissions standards where available. In the event equipment with a Tier 3 engine is not available for any off-road engine larger than 50 hp, that engine shall be operated with tailpipe retrofit controls that reduce exhaust emissions of NO_x and PM to no more than Tier 3 emission levels.
2. Equipment with an engine not compliant with the Tier 3 standard will be allowed on a case-by-case basis only when the applicant or SCE has documented that no Tier 3 equipment (or emissions equivalent retrofit equipment) is available for a particular equipment type. Each case

shall be documented with signed written correspondence by the appropriate construction contractor, along with documented correspondence from at least two construction equipment rental firms representing a good faith effort to locate engines that meet Tier 3 requirements. Documentation will be submitted to CPUC staff for review before equipment is used on the project.

3. Make available to CPUC staff and/or construction monitors a copy of each piece of construction equipment's certified tier specification, BACT documentation, and/or CARB or SCAQMD operating permit, as applicable, at the time of mobilization of each applicable unit of equipment.

With the implementation of MM AQ-1, it is anticipated that emissions of some pollutants during construction would be reduced. A summary of the estimates of the construction emissions after the application of this mitigation measure is presented in Table 4.3-9. Detailed emission calculations are presented in Appendix H.

Table 4.3-9 Daily Mitigated Construction Emissions (Los Angeles County) and SCAQMD Significance Thresholds

Scenario	Peak Daily Construction Emissions (pounds/day)					
	CO	NO_x	ROG	PM_{10}	$PM_{2.5}$	SO_2
1	165	257	29	33	17	0.6
2[1]	219	361	45	82	26	0.7
3	260	377	47	76	26	0.7
4	291	377	50	81	27	0.7
5	309	371	58	76	26	0.7
6	123	204	28	19	22	0.4
7	26	47	13	14	3	1.4
Peak Daily[2]	309	377	58	82	27	1.4
SCAQMD Significance Threshold	550	100	75	150	55	150
Exceeds Threshold?	No	Yes	No	No	No	No

Sources: SoCalGas 2009, 2011; SCAQMD 2011
Key:
CO = Carbon monoxide
NO_x = Oxides of nitrogen
PM_{10} = Particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = Particulate matter less than or equal to 2.5 microns in diameter
ROG = Reactive organic gas
SCAQMD = South Coast Air Quality Management District
SO_2 = Sulfur dioxide
Notes:
1 Includes emissions estimated to be associated with the construction of Telecommunications Route #4, and includes the conservative assumption that the construction of this project component would take place during the scenario with the overall highest daily emissions.
2 Represents the peak value of the seven scenarios.

With the implementation of MM AQ-1, it is estimated that construction-related ROG emissions during activities performed under Scenario 5 would be reduced to approximately 58 pounds per day, which is less than the SCAQMD ROG construction emissions significance threshold of 75 pounds per day.

Impacts associated with emissions of ROG over the SCAQMD threshold would therefore be reduced to a less than significant level.

Emissions of NO_x would also be reduced after implementation of MM AQ-1; peak daily estimates of NO_x emissions after implementation of MM AQ-1 are estimated to be 377 pounds per day, which would still exceed the SCAQMD threshold of 100 pounds per day. Implementation of the following mitigation measure (MM AQ-2) would further reduce NO_x emissions from project construction activities.

MM AQ-2: Measures to Reduce NO_x Emissions. Prior to construction, the applicant and SCE will submit proposed additional measures to reduce daily emissions of NO_x to CPUC staff for review and approval. Measures may include the following:

1. The use of 2010 and newer haul trucks (e.g., material delivery trucks and soil import/export) or the use of trucks that meet EPA 2007 model year NO_x emissions requirements if 2010 model year or newer diesel trucks cannot be obtained.
2. A requirement that, during project construction, all construction equipment will be outfitted with BACT devices certified by CARB and that achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.
3. Other measures as determined appropriate by the applicant and SCE in consultation with the SCAQMD.

As applicable, the applicant and SCE will calculate estimated emissions of NO_x that would still exceed the SCAQMD daily threshold after implementation of MM AQ-2 and will submit these calculations to CPUC staff for review prior to construction.

It is anticipated that after the implementation of MM AQ-1 and MM AQ-2, construction-related emissions of NO_x would still exceed SCAQMD daily emission thresholds for NO_x. Therefore, the following mitigation measure (MM AQ-3) is intended to offset NO_x emissions from project construction activities and reduce impacts to less than significant levels.[1]

MM AQ-3~~1~~: Mitigation Agreement for Purchase of Oxides of Nitrogen (NO_x) Credits. Unless the applicant and SCE can demonstrate through the implementation of on-site emission reduction measures (MMs AQ-1 and AQ-2) that project emissions of NO_x would not exceed the SCAQMD daily emission threshold, ~~T~~the entire amount of emissions of NO_x due to construction of the proposed project over this threshold will be mitigated through the offset of every pound of NO_x emissions in excess of the SCAQMD daily significance threshold of 100 pounds per day. The offset of NO_x emissions will be accomplished through the purchase of either Regional Clean Air Incentive Market Trading Credits (RTCs), Mobile Source Emission Reduction Credits (MSERCs), or a combination of RTCs and MSERCs.

The total amount of NO_x RTCs and/or MSERCs to be purchased will be calculated when the construction schedule and operating conditions are finalized. The applicant and SCE will prepare a Mitigation Agreement that outlines the proposed purchase of the required RTCs and/or MSERCs. The Mitigation Agreement will be submitted to ~~the~~ CPUC staff and SCAQMD prior to the start of project construction. The SCAQMD may require that the Mitigation Agreement be presented before

[1] With regard to MM AQ-3, the SCAQMD has indicated that the purchase of either Regional Clean Air Incentive Market Trading Credits (RTCs) or Mobile Source Emission Reduction Credits (MSERCs) would constitute appropriate mitigation for construction-related impacts associated with emissions of NO_x over the threshold established by the SCAQMD (Garcia 2013).

and reviewed by the SCAQMD Governing Board. The Mitigation Agreement and associated credits will meet the following criteria:

a. The applicant and/or SCE must demonstrate that the emission credits were derived from emission reduction project(s) through existing SCAQMD protocols.

b. The credits will be current for the time the project takes place (i.e., the RTCs and/or MSERCs must not expire before or during the time period when the emissions from the project would occur).

c. The applicant and SCE will retire the entire amount of NO_x emission credits needed to mitigate the exceedance of the construction significance threshold for NO_x emissions prior to commencement of project construction.

All emission credits used to mitigate significant air quality impacts from construction of the proposed project will adhere to the SCAQMD's CEQA policies and procedures document titled *Revised CEQA Policy and Procedures in Allowing the Use of Emissions Credits to Mitigate Significant Air Quality Impacts from Construction*, including procedures for addressing a situation in which NO_x emissions exceed the original estimation, recordkeeping and reporting, and other procedures. The applicant will also track actual daily emissions during construction according to a monitoring plan that includes records of equipment and vehicle usage, and submit the results of this tracking to CPUC staff on a monthly basis.

With the implementation of MMs AQ-1, AQ-2, and AQ-3, the short-term impacts associated with project construction would be less than significant under this criterion.

~~ROG emissions are projected to exceed the significance threshold of 75 pounds per day only for Scenario 5, during which ROG emissions are estimated to be 80 pounds per day. The majority of ROG emissions under this scenario would be generated from non-road equipment used during construction of the 66-kV subtransmission line. Implementation of MM AQ-2 would require all off-road diesel-powered construction equipment with engines greater than 50 horsepower used for reconductoring of the 66-kV subtransmission line meet Tier 3 off-road emissions standards. Tier 3 engines can reduce ROG emissions by up to 85 percent compared to Tier 1 engines, and the implementation of MM AQ-2 would reduce construction-related ROG emissions during activities performed under Scenario 5 to less than the SCAQMD ROG construction significance threshold of 75 pounds per day.~~

~~**MM AQ-2: Tier 3 Off-Road Emissions Standards.** All off-road diesel-powered construction equipment greater than 50 horsepower used during reconductoring of the 66-kV subtransmission line will meet Tier 3 off-road emissions standards.~~

Following completion of construction, the proposed project would generate a small increase in vehicle emissions from regular operational maintenance checks that would be performed at the proposed Natural Substation. However, these emission increases would be more than offset by the emission reductions associated with the replacement of the compressors. The proposed project would result in a net decrease in long-term operational emissions at the storage field site. A summary of this net decrease is shown in Table 4.3~~2-~~7~~6~~.

Impact AQ-4: Exposure of sensitive receptors to substantial pollutant concentrations.
LESS THAN SIGNIFICANT

The proposed project would generate air pollutant emissions from construction activities. However, the majority of construction operations related to the 12-kV Plant Power Line, Central Compressor Station, and Natural Substation would occur well inside the boundaries of the existing storage field. The distance to the nearest receptor (residences to the south) from these activities would be approximately 2,900 to 3,300 feet.

Some project construction activities would occur closer to residences and sensitive receptors. It is anticipated that work on the proposed guardhouse would be conducted at a distance of at least 160 feet from residential areas. Construction activities on the 66-kV subtransmission line and Telecommunications Route #1 could come as close as 23 feet to residences; work on Telecommunications Route #2 could come as close as 15 feet to residences; ~~and~~ work on Telecommunications Route #3 could come as close as 9 feet to residential areas and sensitive receptors; and work on Telecommunications Route #4 could come as close as 8 feet to residences. However, given that construction activities at these locations would be transient and would impact specific locations for only limited durations (e.g., no more than one week for replacement of each lattice steel tower along the 66-kV subtransmission line), long-term impacts would not occur.

Following completion of construction, the proposed project would generate a small increase in vehicle emissions from regular operational maintenance checks that would be performed at the proposed Natural Substation. However, these emission increases would be more than offset by the emission reductions associated with the replacement of the compressors (Table 4.3-7~~6~~). Therefore, this impact would be less than significant without mitigation under this criterion.

Impact AQ-5: Creation of objectionable odors affecting a substantial number of people.
LESS THAN SIGNIFICANT

Exhaust from construction equipment and vehicles may temporarily create odors from the combustion of fuel. However, the level of emissions would likely not cause a perceptible odor to a substantial number of people. Odors generated by diesel exhaust would be reduced by the use of either low-sulfur or ultra-low-sulfur fuel, as required under California law. Paving activities would also generate odors from hot asphalt sources; however, emissions at this level would not likely cause a perceptible odor to a substantial number of people due to the distance between paving activities and the nearest sensitive receptor ~~receiver~~. Accordingly, any perceptible odors would be temporary during construction activities. Vehicle emissions during operation of the proposed project would be minor, and subsequently, no objectionable odors are anticipated.

This impact would be less than significant without mitigation under this criterion.

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4.4 Biological Resources

This section describes environmental and regulatory settings and discusses potential impacts associated with the construction and operation of the proposed project with respect to biological resources.

The proposed project comprises various project components that occur within a variety of habitats. For the purpose of evaluating biological resources in the proposed project area, the proposed project will be referred to in this section by the project components as described in Chapter 2, "Project Description," with the exception of the following project components, located at the Aliso Canyon Natural Gas Storage Field (storage field), which are all treated here as one project area or element and are referred to as the "storage field" or "storage field components":

- The existing compressor station and office facilities,
- The site of the proposed Central Compressor Station and office relocation,
- The site of the proposed guardhouse relocation,
- Construction staging areas,
- Soil mixing area,
- Access roads, and
- The 12-kilovolt (kV) Plant Power Line.

Impacts related to the area of Telecommunications Route #1 are described under impacts related to the 66-kV subtransmission line reconductoring area because these two project components overlap. "Structures," as discussed in this section, refer to supporting structures for the 66-kV subtransmission line that would be reconductored; these are shown in Appendix D.

4.4.1 Environmental Setting

This section describes biological resources in the proposed project area, including habitat types, ecologically valuable communities, and special status species. In this document "special status species" refers to any of the following:

- Species listed as Endangered (FE) or Threatened (FT) under the Federal Endangered Species Act (ESA) (Title 50, Code of Federal Regulations [CFR] Section 17.11 or 17.12);
- Species listed as Endangered (SE), Threatened (ST), or Rare (R) under the California Endangered Species Act (Sections 670.2 or 670.5, Title 14, California Code of Regulations);
- Species without a formal listing status that meets the definitions of "Endangered" or "Rare" under California Environmental Quality Act (CEQA) Guidelines Section 15380, including California Department of Fish and ~~Game~~Wildlife (~~CDFG~~CDFW) "Species of Special Concern" (SSC), "Candidate" (FC), or "Proposed" species for listing under the ESA, U.S. Fish and Wildlife Service (USFWS) "Birds of Conservation Concern," and California Native Plant Society (CNPS) rare plant ranks 1B and 2, which are categorized into the following subsections:
    - 1A: Presumed extinct in California;

- 1B.1: Rare, threatened, or endangered in California and elsewhere. Extremely endangered in California;
- 1B.2: Rare, threatened, or endangered in California and elsewhere. Fairly endangered in California;
- 1B.3: Rare, threatened, or endangered in California and elsewhere. Not very threatened in California; and
- 2.2: Rare, threatened, or endangered in California, but more common elsewhere. Fairly threatened in California.

- Species designated as SSC or "Fully Protected," (FP) by the ~~CDFG~~CDFW; and
- Species protected under local ordinances, including the City of Santa Clarita oak tree protection ordinance and Los Angeles County oak tree protection ordinance.

4.4.1.1 Background/Methodology

Literature Review

The literature review included a search for special status plant and wildlife species and sensitive vegetation community occurrences in the proposed project area, as recorded in the California Natural Diversity Database (CNDDB). CNDDB records of occurrences were reviewed for the U.S. Geological Survey (USGS) 7.5-minute Oat Mountain quadrangle (quad), where the proposed project area is located. The surrounding eight USGS 7.5-minute quads: Val Verde, Newhall, Mint Canyon, Simi Valley East (Santa Susana), San Fernando, Calabasas, Canoga Park, and Van Nuys were also reviewed for CNDDB occurrences. In addition to the CNDDB, the following sources were reviewed to inform surveys and this biological resources impacts analysis:

- USFWS' list of endangered, threatened, and proposed species obtained from the USFWS Ventura Field Office (USFWS 2010a);
- CNPS 2011 online *Inventory of Rare and Endangered Plants of California* (CNPS 2011); and
- USFWS' online Critical Habitat Portal (USFWS 2011a).

Surveys Conducted

Results from biological resource surveys conducted by the applicant in the areas of the proposed project components (plus buffers around these areas) in 2009, 2010, ~~and~~ 2011, and 2012 were used to inform the biological resources impact analysis. During surveys, the applicant's biological consultant identified habitat types, sensitive communities, and special status species. Biological resource surveys are summarized in Table 4.4-1; reports of these surveys are presented in Appendix E.

Table 4.4-1 Summary of Biological Resource Surveys Completed in the Proposed Project Area

Survey	Survey Description	Dates Completed	Project Components Surveyed
Habitat Assessment (AECOM 2009)	Reconnaissance level to identify vegetation communities, potential jurisdictional features, and potential for occurrence of special status species.	Apr 20–23, 2009; Apr 27–30, 2009; and Jun 8–9, 2009.	Storage field components; 66-kV subtransmission line route and San Fernando Substation support towers (all areas surveyed with 25-meter [80-foot] buffer).
Special Status Plant Species Survey (Appendices E-1 and E-3)	Spring and fall surveys for special status plants. Confirmation of vegetation communities identified in the habitat assessment.	Apr 14–17, 2009; Apr 20–23, 2009; Jun 8–9, 2009; and Aug 19, 20, 23, 2010.	12-kV Plant Power Line (25-meter survey area around each structure; original southern alignment[1]); 66-kV subtransmission line (25-meter survey area around each structure); and areas of proposed impacts within the storage field plus a 25-meter buffer.
Coastal California Gnatcatcher (Appendix E-2)	Protocol level by permitted surveyor.	Mar 15–Apr 29, 2010	Proposed project areas of suitable habitat surveyed; areas within critical habitat also surveyed. Areas surveyed included portions of the 66-kV subtransmission line and the storage field<u>, including within the ROW crossing the landfill site</u>. Telecommunications Route #2 was not surveyed.
Oak Tree Survey (Appendix E-4)	Oak tree survey and inventory.	Jan 31–Feb 3, 2011	Access roads, including a 25-meter buffer; and 25-meter buffer around structures planned for replacement.
Wetland Characterization (Appendix E-5)	Informal assessment.	Jan 31–Feb 3, 2011	Storage field; proposed Natural Substation; and 66-kV subtransmission line structures and access roads.
Biological Resource Survey Plan – Telecom Line (Appendix E-6) and Telecommunications Line Biological Habitat Assessment Report (Appendix E-7)	Reconnaissance level to identify vegetation communities, potential jurisdictional features and potential presence of special status species.	May 2011	Telecommunications Route #2
Storage Field Plant Power Line Access Road – Results of Biological Survey (Appendix E-8)	Reconnaissance level to identify vegetation communities, potential jurisdictional features and potential presence of special status species.	July 28, 2011	Northern route of the Plant Power Line and potential access routes to the area.
<u>Habitat Evaluation for Breeding Least Bell's Vireo and Southwestern Willow Flycatcher (Appendix C-1)</u>	<u>Reconnaissance level to identify vegetation and potential presence of special status species.</u>	<u>May 23, 2012</u>	<u>Telecommunications Route #2 and a portion of the 66-kV subtransmission alignment</u>

Table 4.4-1 Summary of Biological Resource Surveys Completed in the Proposed Project Area

Survey	Survey Description	Dates Completed	Project Components Surveyed
Biological Habitat Assessment Report for Telecommunication Route #4 (Appendix C-1)	Reconnaissance level to identify vegetation communities, potential jurisdictional features, and potential presence of special status species.	August 13, 2012	Telecommunications Route #4

Key:
kV = kilovolt
ROW = right-of-way
Note:
(1) A southern alignment for the Power Plant Line was initially included as part of the proposed project.

4.4.1.2 Habitat Types

Habitat types occurring in the proposed project area were determined during desktop analyses, habitat assessment surveys, and special status plant species surveys. The main habitat types located throughout the proposed project area include:

- Venturan Coastal Sage Scrub;
- Chamise Chaparral;
- Ceanothus Chaparral;
- Coastal Sage – Chaparral Scrub;
- Poison Oak Chaparral;
- Coast Live Oak Woodland;
- California Walnut Woodland;
- California Ash Woodland;
- Southern Mixed Riparian Forest;
- Southern Willow Scrub;
- Non-native Grassland/Disturbed; and
- Developed/Urban Landscaping/Roads.

Portions of the proposed project area have been disturbed by construction activities, urbanization, livestock grazing, exotic plant invasion, and wildfire. Table 4.4-2 lists habitat types present in the location of each proposed project component. A complete description of each habitat type found in the proposed project area is provided in the Proponent's Environmental Assessment (AECOM 2009). Additionally, Appendix D provides habitat maps within the 66-kV subtransmission line right-of-way (ROW).

Table 4.4-2 Habitat Types Associated with Proposed Project Components

Project Component	Habitat Types
66-kV subtransmission line	• Developed/Urban Landscaping/Roads; • California Walnut Woodland; • Coast Live Oak Woodland; • Chamise Chaparral; • Venturan Coastal Sage Scrub; • Coastal Sage – Chaparral Scrub; • Southern Willow Scrub; • Non-native Grassland/Disturbed; • Ceanothus Chaparral; • California Ash Woodland; • Southern Mixed Riparian; and • Los Angeles County–Designated Significant Ecological Area #20.
Telecommunications Route #3/San Fernando Substation	• Developed/Urban Landscape/Roads
Proposed Natural Substation	• Non-native Grassland; • Developed/Urban Landscaping/Roads; and • Venturan Coastal Sage Scrub.
Telecommunications Route #2	• Developed/Urban Landscaping/Roads; • Coast Live Oak Woodland; • Non-native Grassland; • Coastal Sage Scrub; • Chamise Chaparral; and • Southern Mixed Riparian.
Telecommunications Route #4	• California Walnut Woodland; • Annual Grassland; and • Riversidean Sage Scrub.

Source: Appendix E-7 and C-1
Key:
kV = kilovolt

Special Status Natural Communities

Several vegetation communities identified in the proposed project area are recognized as sensitive by the ~~CDFG~~CDFW. Special status vegetation communities are natural communities that support concentrations of sensitive plant or wildlife species, are of relatively limited distribution, or are of particular value to wildlife but are not afforded legal protection unless they support protected species (~~CDFG~~CDFW 2009). The ~~CDFG~~CDFW recognizes Coast Live Oak Woodland (some associations), California Walnut Woodland, and Ceanothus Chaparral as sensitive (~~CDFG~~CDFW 2009). The ~~CDFG~~CDFW considers oak woodlands to be regionally sensitive because of their limited acreage, high wildlife value, gradual loss to development, and lack of recruitment. Areas of Venturan Coastal Sage Scrub that comprise California sagebrush (*Artemisia californica*) and white sage (*Salvia apiana*) are recognized as sensitive (~~CDFG~~CDFW 2010). The ~~CDFG~~CDFW also generally considers riparian and wetland areas to be sensitive (~~CDFG~~CDFW 2009). Riparian areas in the proposed project area comprise: Southern Mixed Riparian Forest, some areas of Coast Live Oak Woodland, and Southern Willow Scrub. Sensitive habitats that occur in the proposed project area are described below.

Coast Live Oak Woodland

This plant community is present in the proposed project area, typically on north facing slopes and shaded ravines. The dominant species is coast live oak (*Quercus agrifolia*), varying in height from 30 to 75 feet. Valley oak (*Quercus lobata*) and California walnut (*Juglans californica*) may also be present in this community as a smaller component, particularly along the upper slopes of riparian drainages. A developed shrub layer is generally lacking except along habitat margins, where it may intergrade with scrub habitat. In these areas, shrubs may consist of toyon (*Heteromeles arbutifolia*), sugarbush (*Rhus ovata*), and blue elderberry (*Sambucus nigra* ssp. *caerulea*). An herbaceous understory is likewise usually sparse due to the heavy accumulation of leaf litter from the dense oak canopy, but is generally limited to non-native grasses such as ripgut brome (*Bromus diandrus*) and wild oat (*Avena fatua*).

California Walnut Woodland

Small areas of this plant community, dominated by California walnut, were observed intergrading with the Coast Live Oak Woodland within the proposed project area, including along slopes of riparian systems. Burned pockets of this habitat also occur in the lower reaches of Limekiln Canyon Wash in the storage field adjacent to the proposed guardhouse relocation site and on the slope to the south of the Porter Fee Road staging area. Due to a more open tree canopy and less leaf litter, this type of woodland has a more developed understory consisting of shrubs such as sugarbush, white sage, and the non-native species horehound (*Marrubium vulgare*) with an herbaceous layer of primarily non-native annual grasses such as brome (*Bromus* spp.) and oat (*Avena* spp.).

Ceanothus Chaparral

This plant community is present throughout the proposed project area and is dominated by arborescent hairy-leaf ceanothus (*Ceanothus oliganthus*). Other components of this plant community include chamise (*Adenostoma fasciculatum)*, thick-leaved yerba santa (*Eriodictyon crassifolium* var. *crassifolium)*, California sagebrush, white sage, black sage (*Salvia mellifera*), and purple sage (*Salvia leucophylla*).

Venturan Coastal Sage Scrub

This plant community is composed of low, mostly soft-woody, drought-resistant, deciduous shrubs between 1.5 and 6 feet tall and occurs generally in dry areas with shallow soil. Cover can vary in density, but the understory vegetation is usually sparse and may consist solely of non-native, annual grasses. Along the 66-kV subtransmission line, the quality of this type of habitat varies widely, from undisturbed areas vegetated with dense stands of native shrubs to areas disturbed by fire and/or human interaction in which non-native grasses and forbs dominate, sparsely interspersed with sage scrub species. California sagebrush is universal as a co-dominant species in this habitat, with other prominent components varying based on location. These co-dominants include purple sage, black sage, white sage, bush monkey flower (*Mimulus aurantiacus*), bush mallow (*Malacothamnus fasciculatus*), and California buckwheat (*Eriogonum fasciculatum*). Sub-dominants also vary by location and include chaparral yucca (*Yucca whipplei*), deerweed (*Lotus scoparius*), poison oak (*Toxicodendron diversilobum*), and larger shrubs/trees such as toyon, sugarbush, and blue elderberry. While these stands are generally dense with little herbaceous understory, annuals such as blue dicks (*Dichelostemma capitatum*), California poppy (*Eschscholzia californica*), morning glory (*Calystegia* spp.), wild cucumber (*Marah macrocarpus*), gallium (*Gallium* spp.), and Indian paintbrush (*Castilleja* spp.) can be found in openings in the scrub and at the margins of disturbed areas.

Southern Mixed Riparian Forest

Southern Mixed Riparian Forest is a mixture of cottonwood-willow, sycamore-alder, and coast live oak communities. The vegetation structure is such that the upper banks are dominated by coast live oaks and sycamores (*Platanus* spp.), with willows (*Salix* spp.) interspersed with Fremont cottonwood (*Populus fremontii*) and alder (*Alnus* spp.) in the drainages. This community occurs along the 66-kV subtransmission line, in the storage field, and along Telecommunications Route #2 (see Table F-1 in Appendix F).

Southern Willow Scrub

This dense riparian habitat occurs in loose, sandy, or fine gravelly alluvium and is dominated by several species of willow with scattered emergent Fremont cottonwood. Due to the density of the canopy, little understory is generally present, but this habitat can transition to a lower scrub that includes mulefat (*Baccharis salicifolia*), emerging willows, and other riparian species. This community occurs within the 66-kV subtransmission line ~~and storage field~~ portions of the proposed project site.

Streams and Riparian Areas

Numerous drainages are located in proximity to or are intersected by the proposed project components, as identified in the biological habitat assessment (Appendix E-7) and the wetland characterization study completed by the applicant (Appendix E-5). Telecommunications Route #2 was not included in the field survey results (Appendix E-5 and E-7); thus, National Hydrological Dataset and National Wetlands Inventory data were additionally used to map other streams and riparian areas in the proposed project area, particularly along Telecommunications Route #2, as shown in Figure 4.4-1 and Appendices F-1 and F-2. According to the desktop and field information, no perennial waters occur in the immediate project area<u>; however, two detention basins (small perennial water bodies) are present in Limekiln Creek, west of the Central Compressor Station site</u>.

Drainages that are present in the area of the proposed project components are generally first-order headwater systems that are intermittent in nature; i.e., only flow during heavy, episodic rain events. Riparian vegetation composed of species associated with the above communities (i.e., Coast Live Oak Woodland, California Walnut Woodland, Southern Mixed Riparian Forest, and Southern Willow Scrub) is found along many of the drainages. For further discussion of water and wetland features in the proposed project area, see Section 4.9, “Hydrology and Water Quality.”

4.4.1.3 Common Wildlife

A variety of regionally abundant wildlife species are likely to occur throughout the areas of the proposed project components. Mammals that are likely to occur throughout the proposed project areas include mice, hares, rabbits, and ground squirrels. Common birds include songbirds, raptors, woodpeckers, owls, doves, and corvids.

Surveyors observed one occupied red-tailed hawk (*Buteo jamaicensis*) nest in the lattice of structure~~,~~ 18 during the habitat assessment in 2009, and one unoccupied nest in the proposed project area. Regionally abundant birds that may nest in these stick nests would be protected under the Migratory Bird Treaty Act (MBTA).

4.4.1.4 Special Status Species

The following discussion addresses special status plant and wildlife species that may occur in the areas of the proposed project components, according to the literature reviewed. Species that have no likelihood of occurring in the proposed project area (for example, species whose extirpation from the region is presumed or confirmed, or species for which essential habitat or microhabitats are not present) are not considered here or are evaluated below and are removed from further discussion with regards to anticipated project impacts.

Plants

Thirty-one special status plant species were evaluated for their potential to occur in the proposed project area (Table 4.4-3). Determinations of potential to occur were based on field survey results, CNDDB records, CNPS data, and presence of suitable habitat in the proposed project area (Appendix E-1, Appendix E-3, CNDDB 2011, and CNPS 2011). A species was determined unlikely to occur if it had been been identified in the CNDDB records, but either the recorded observations were over 10 years old, key habitat requirements were absent, or the habitat in the proposed project study area is so degraded, small, or isolated that it would be very unlikely for the species to use the area. A species was considered likely to occur if CNDDB records and/or professional expertise specific to the proposed project study area show that the species is known to occur within 5 miles of the proposed project study area and there is ideal habitat within the proposed project study area. Based on these criteria, t~~T~~wo special status plant species are present in the proposed project area, and 14 special status plant species are likely to occur throughout the proposed project area, as described below.

Special Status Plants Present in the Project Component Areas

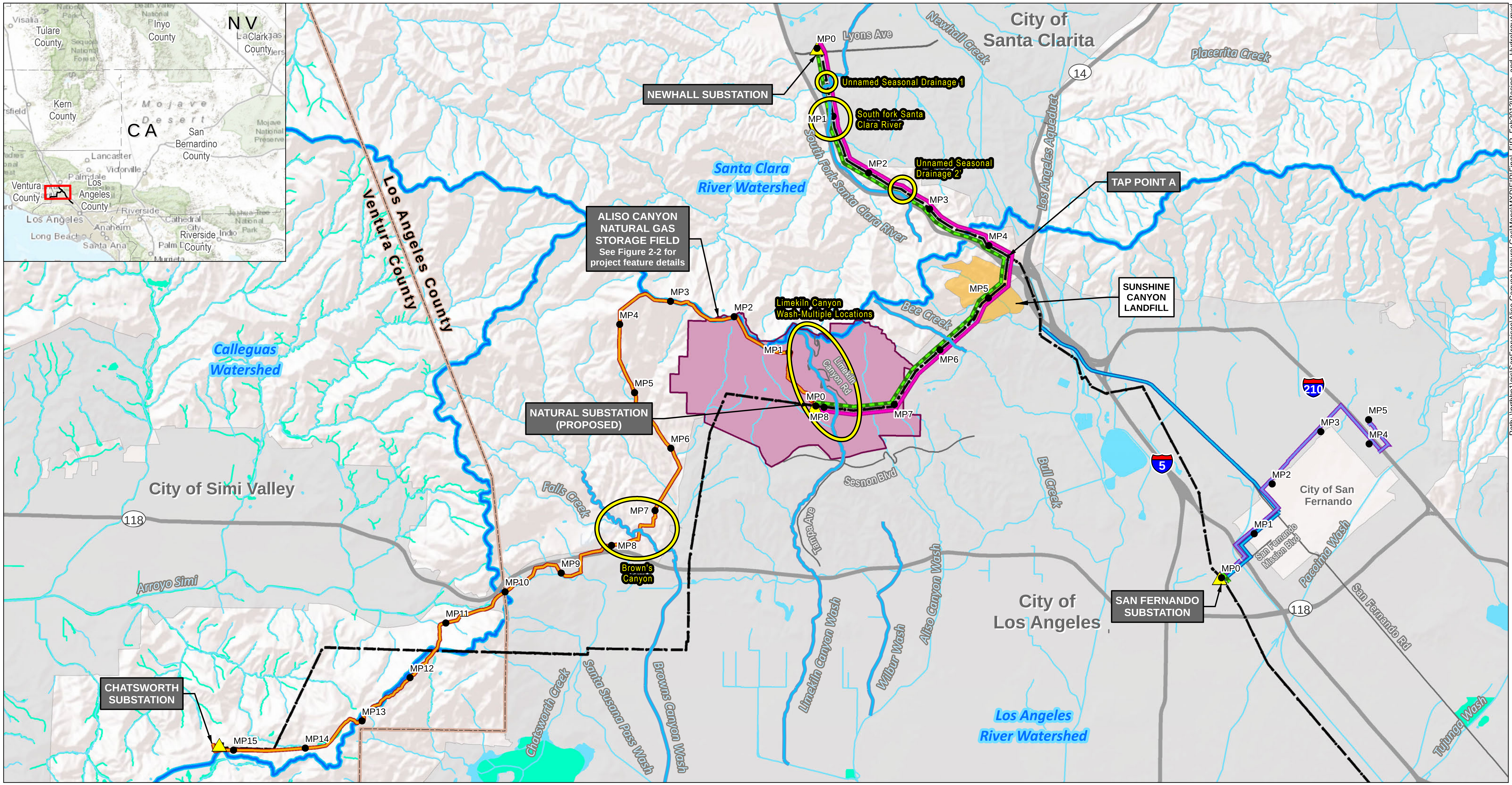
Two special status plant species are present in the proposed project area: Plummer's mariposa lily (*Calochortus plummerae*; 1B.2) and slender mariposa lily (*Calochortus clavatus* var. *gracilis*; 1B.2) (Appendices E-1 and E-3). Several species of oak trees (*Quercus* spp.), which are considered sensitive resources and are protected under city and county ordinances, are also present in the proposed project area.

Plummer's mariposa lily

Plummer's mariposa lily is a native perennial bulb that is endemic to (i.e., existing only in) California and is known to occur in Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. This lily grows in well-drained soils of rocky chaparral and valley grassland habitats, typically from 300 to 5,600 feet in elevation. The CNDDB has recorded several recent occurrences of this species within 10 miles of the proposed project area (CNDDB 2011). Surveyors identified four Plummer's mariposa lilies in a single population within the storage field, east of the current compressor site, on a slope roughly 35 feet from the roadway (Appendix E-1). The presence of Plummer's mariposa lily is also likely but has not been confirmed along Telecommunications Route #2 (see Appendices E-6 and E-7 for survey details).

Slender mariposa lily

Slender mariposa lily is a native perennial bulb that is endemic to California. This lily grows in chaparral, coastal scrub, and valley and foothill grasslands up to 3,000 feet in elevation. The CNDDB records recent occurrences of this species within 10 miles of the proposed project area (CNDDB 2011). Over 1,320 slender mariposa lilies were detected in several populations around the following structures of the 66-kV subtransmission line: 57, 56, 55, 54, 53, 52, and 48 (Appendix E-1). The presence of slender mariposa lily is likely but has not been confirmed along Telecommunications Route #2.



SOURCES: ESRI 2010, NHD 2011, NWI 2011, SoCalGas 2009 to 2012

- Milepost (MP)
- 66-kV Subtransmission Line Reconductoring Route (Proposed)
- Telecommunications Route #1
- Telecommunications Route #2
- Telecommunications Route #3
- Telecommunications Route #4
- Existing 66-kV Subtransmission Line
- Drainage Basin (Hydrologic Unit Code 8)
- Fish & Wildlife Service National Wetlands Inventory Wetland
- Area of Potential Disturbance
- National Hydrological Dataset
- National Hydrological Dataset Waterbody

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

0 1 2 4 Miles

Figure 4.4-1

Wetlands and Other Hydraulic Features in the Proposed Project Area

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Table 4.4-3 Special Status Plants

Species	Status (Fed/State/CNPS)	Habitat	Potential to Occur in Project Area
Agoura Hills dudleya (*Dudleya cymosa* ssp. *agourensis*)	FT/--/1B.2	Rocky, chaparral, or cismontane woodland. Elevation: 650–1,640 feet. Blooms: May–June.	Likely. Suitable habitat present in the project component areas. No CNDDB occurrences within 5 miles of all project component areas. However, presumed extant in USGS 7.5-minute quad Calabasas (CNPS 2011).
Blochman's dudleya (*Dudleya blochmaniae*)	--/--/1B.2	Rocky, often clay or serpentinite. Coastal bluff scrub, chaparral, coastal scrub, valley and foothill grassland. Elevation: to 1,400 feet. Blooms: Apr–Jun.	Likely. Suitable habitat present in the project component areas. Single CNDDB occurrence 1.5 miles southeast of Telecommunications Route #2, date unknown. Presumed extant in Calabasas quad (CNPS 2011).
Brand's phacelia (*Phacelia stellaris*)	FC/--/1B.1	Coastal dunes, coastal scrub. Elevation: to 1,300 feet. Blooms: Mar–June.	Absent. No suitable habitat present in the project component areas. No CNDDB occurrences within 5 miles of all project component areas. Presumed extirpated from quads in Los Angeles County (CNPS 2011).
Braunton's milkvetch (*Astragalus brauntonii*)	FE/--/1B.1	Recent burns or disturbed areas, usually sandstone with carbonate layers. Chaparral, coastal scrub, valley and foothill grassland. Elevation: to 2,000 feet. Blooms: Jan–Aug.	Likely. Suitable habitat present in the project component areas. Closest CNDDB occurrence approximately 0.7 miles southeast of Chatsworth Substation. Presumed extant in Calabasas, Oat Mountain, and Van Nuys quads; presumed extirpated from Canoga Park quad (CNPS 2011).
California Orcutt grass (*Orcuttia californica*)	FE/SE/1B.1	Vernal pools. Elevation: 50–2,100 feet. Blooms: Apr–Aug.	Likely. Suitable habitat present in the project component areas. Closest CNDDB occurrence approximately 1 mile east of 66-kV subtransmission line structure 1, date unknown. Presumed extant in Newhall quad (CNPS 2011).
Chaparral ragwort (*Senecio aphanactis*)	--/--/2.2	Sometimes alkaline. Chaparral, cismontane woodland, coastal scrub. Elevation: 50–2600 feet. Blooms: Jan–Apr.	Likely. Suitable habitat present in the project component areas. Single historic CNDDB occurrence is 2.25 miles northeast of 66-kV subtransmission line structure 1 in 1901. Presumed extant in Newhall quad (CNPS 2011)
Davidson's bush mallow (*Malacothamnus davidsonii*)	--/--/1B.2	Chaparral, cismontane woodland, coastal scrub, riparian woodland. Elevation: 600–2,800 feet. Blooms: Jun–Jan.	Unlikely. Closest CNDDB occurrences are 1.5 miles east of San Fernando Substation in 1932, and 2 miles east of fiber optic connection point in 1973.

Table 4.4-3 Special Status Plants

Species	Status (Fed/State/CNPS)	Habitat	Potential to Occur in Project Area
Gambel's watercress (*Nasturtium gambelii*)	FE/ST/1B.1	Marshes and swamps (freshwater or brackish). Elevation: 16–1,080 feet. Blooms: Apr–Oct.	Absent. No suitable habitat present in the project component areas. No CNDDB element occurrences within 5 miles of all project component areas. Nearly extinct in U.S.; known in California from only four occurrences (CNPS 2011). Not known to occur in the quads through which the proposed project runs (CNPS 2011).
Greata's aster (*Symphyotrichum greatae*)	--/--/1B.3	Mesic, broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest, riparian woodland. Elevation: 980–6,600 feet. Blooms: Jun–Oct.	Unlikely. Suitable habitat may be present in the project component areas. Closest CNDDB occurrence approximately 5 miles northeast of San Fernando substation in 1918. Presumed extirpated from San Fernando quad (CNPS 2011). Presumed extant in portions of Ventura and Los Angeles Counties outside of the proposed project area (CNPS 2011).
Los Angeles sunflower (*Helianthus nuttallii* ssp. *parishii*)	--/--/1A	Marshes and swamps (coastal salt and freshwater). Elevation: 32–5,490 feet. Blooms: Aug–Oct.	Absent. No suitable habitat present in the project component areas. No CNDDB occurrence within 5 miles of entire proposed project area. Last seen in 1937. Extirpated by urbanization (CNPS 2011).
Lyon's pentachaeta (*Pentachaeta lyonii*)	FE/SE/1B.1	Rocky, clay, chaparral (openings), coastal scrub, valley and foothill grassland. Elevation: 100–2,000 feet. Blooms: Mar–Aug.	Unlikely. Suitable habitat may be present in the project component areas. No CNDDB occurrence within 5 miles of all project component areas. Not listed by CNPS within project quads.
Many-stemmed dudleya (*Dudleya multicaulis*)	--/--/1B.2	Often clay. Chaparral, coastal scrub, valley and foothill grassland. Elevation: 50–2,500 feet. Blooms: Apr–Jul.	Likely. Suitable habitat present in the project component areas. Single CNDDB occurrence approximately 2 miles southeast of Telecommunications Route #2 in 1978. Presumed extant in Calabasas quad (CNPS 2011).
Moran's navarretia (*Navarretia fossalis*)	FT/--/1B.1	Chenopod scrub, marshes and swamps (assorted shallow freshwater), playas, vernal pools. Elevation: 100–2,150 feet. Blooms: Apr–Jun.	Unlikely. Potentially suitable habitat may be present in the project component areas. No CNDDB occurrences within 5 miles of all project component areas. Presumed extant in Mint Canyon, not listed in other project quads (CNPS 2011)
Mt. Pinos onion (*Allium howellii* var. *clokeyi*)	--/--/1B.3	Great Basin scrub, pinyon, and juniper woodland. Elevation: 4,265–6,060 feet. Blooms: Apr–Jun.	Absent. No suitable habitat present in the project component areas. No CNDDB occurrence within 5 miles of all project component areas. Not listed in project quads by CNPS (2011).

Table 4.4-3 Special Status Plants

Species	Status (Fed/State/CNPS)	Habitat	Potential to Occur in Project Area
Nevin's barberry (*Berberis nevinii*)	FE/SE/1B.1	Sandy or gravelly. Chaparral, cismontane woodland, coastal scrub, riparian scrub. Elevation: 900–2,700 feet. Blooms: Mar–Jun.	Likely. Suitable habitat present in the project component areas. Closest CNDDB occurrences are approximately 2.5 miles southeast of the San Fernando Substation in 1935, and 1.5 miles east of fiber optic connection point in 2000. Presumed extant in Newhall, Mint Canyon, and San Fernando quads (CNPS 2011).
Ojai navarretia (*Navarretia ojaiensis*)	--/--/1B.1	Chaparral (openings), coastal scrub (openings), valley and foothill grassland. Elevation: 900–2,033 feet. Blooms: May–Jul.	Likely. Suitable habitat present in the project component areas. No CNDDB occurrence within 5 miles of all project component areas. Presumed extant in Val Verde quad (CNPS 2011).
Parry's spineflower (*Chorizanthe parryi* var. *parryi*)	--/--/1B.1	Sandy or rocky, openings. Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation: 900–4,000 feet. Blooms: Apr–Jul.	Unlikely. Suitable habitat may be present in the project component areas, although grassland in the proposed project area is typically non-native. No CNDDB occurrences within 5 miles of all project component areas. Not listed in quads of proposed project area by CNPS, presumed extant in quads outside of proposed project area in Los Angeles County (CNPS 2011).
Palmer's grapplinghook (*Harpagonella palmeri*)	--/--/4.2	Openings with clay soil in chaparral, coastal scrub, and valley and foothill grassland. Elevation: 66–3,133 feet. Blooms: Mar–May	Likely. Suitable habitat exists along the Telecom Route #4 alignment and 25-meter survey buffer area. Annual grassland underlain by clay loam soils is present (Appendix C-1).
Peninsular nolina (*Nolina cismontana*)	--/--/1B.2	Sandstone or gabbro. Chaparral, Coastal scrub. Elevation: 460–4,100 feet. Blooms: May–Jul.	Likely. Suitable habitat may be present in the project component areas. No CNDDB occurrences within 5 miles of all project component areas. Presumed extant in Calabasas quad (CNPS 2011).
Plummer's mariposa lily (*Calochortus plummerae*)	--/--/1B.2	Granitic, rocky. Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland. Elevation: 300–5,600 feet. Blooms: May–Jul.	**Present.** Observed during 2009 surveys. Closest CNDDB occurrences are 1 mile west of structure 10 in 2004, 1 mile east of fiber optic connection point in 2010, and 0.3 miles west of Telecommunications Route #2 in 2005.
Robinson's pepper-grass (*Lepidium virginicum* var.*robinsonii*)	1B.2	Eroding, grantic-based soils and outcrops in chaparral and coastal scrub. Elevation: 3–2,903 feet. Blooms: Jan–Jul.	Likely. Suitable habitat exists along the Telecom Route #4 alignment and 25-meter survey buffer area. Coastal scrub underlain by sandstone soils is present (Appendix C-1).

Table 4.4-3 Special Status Plants

Species	Status (Fed/State/CNPS)	Habitat	Potential to Occur in Project Area
Ross' pitcher sage (*Lepechinia rossii*)	--/--/1B.2	Chaparral. Elevation: 1,000–2,600 feet. Blooms: May–Sep.	Unlikely. Suitable habitat may be present in the project component areas. No CNDDB occurrences within 5 miles of all project component areas. Not listed in quads of the proposed project area by CNPS (2011).
Round-leaved filaree (*California macrophylla*)	--/--/1B.1	Clay. Cismontane woodland, valley and foothill grassland. Elevation: 50–3,900 feet. Blooms: Mar–May.	Unlikely. Suitable habitat may be present in the project component areas. No CNDDB occurrences within 5 miles of all project component areas. Not listed in proposed project quads by CNPS (2011).
San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)	FC/SE/1B.1	Coastal scrub (sandy), valley and foothill grassland. Elevation: 500–3,900 feet. Blooms: Apr–Jul.	Likely. Suitable habitat present in the project component areas. Closest CNDDB occurrence approximately 1.5 miles northwest of San Fernando Substation. Other species of spineflower have been observed in the proposed project area. Rediscovered in 1999; now known from only three occurrences. Presumed extant in Newhall, Calabasas, and Val Verde quads, but extirpated from San Fernando, Oat Mountain, and Van Nuys quads (CNPS 2011).
San Gabriel bedstraw (*Galium grande*)	--/--/1B.2	Broadleaf upland forest, chaparral, cismontane woodland, lower montane coniferous forest. Elevation: 1,400–5,100 feet. Blooms: Jan–Jun.	Unlikely. Suitable habitat may be present in the project component areas. No CNDDB occurrences within 5 miles of all project component areas. Not listed by CNPS in quads within the project component areas, but noted as threatened by powerline construction (CNPS 2011).
Santa Monica Mountains dudleya (*Dudleya cymosa* ssp. *Ovatifolia*)	FT/--/1B.2	Volcanic or sedimentary, rocky. Chaparral, coastal scrub. Elevation: 500–5,500 feet. Blooms: Mar–Jun.	Unlikely. Suitable habitat may be present in the project component areas. No CNDDB occurrence within 5 miles of all project component areas. Known from fewer than 10 occurrences; not listed in proposed project quads (CNPS 2011).
Santa Susana tarplant (*Deinandra minthornii*)	--/R/1B.2	Rocky. Chaparral, coastal scrub, Elevation: 900–2,500 feet. Blooms: Jul–Nov.	Likely. Suitable habitat present in the project component areas. Closest CNDDB occurrences are approximately 0.03 miles south of Telecommunications Route #2 in 1987, 0.2 miles northwest of Telecommunications Route #2 in 1987, 0.07 miles west of Telecommunications Route #2 in 1987, and 1.2 miles northeast of Chatsworth Substation in 1979. Presumed extant in Santa Susana, Calabasas, Oat Mountain, and Canoga Park quads (CNPS 2011).

Table 4.4-3 Special Status Plants

Species	Status (Fed/State/CNPS)	Habitat	Potential to Occur in Project Area
Short-joint beavertail cactus (*Opuntia basilaris* var. *brachyclada*)	--/--/1B.2	Chaparral, Joshua tree woodland, Mojavean Desert scrub, pinyon, and juniper woodland. Elevation: 1,400–5,900 feet. Blooms: Apr–Jun.	Likely. Marginal suitable habitat may be present in the project component areas. Closest CNDDB occurrence approximately 3 miles east of 66-kV subtransmission line structure 3 in 1985. Possibly threatened by power line construction (CNPS 2011). Presumed extant in Mint Canyon and Newhall quads (CNPS 2011).
Slender horned spineflower (*Dodecahema leptoceras*)	FE/SE/1B.1	Sandy. Chaparral, cismontane woodland, coastal scrub (alluvial fan). Elevation: 650–2,500 feet. Blooms: Apr–Jun.	Likely. Suitable habitat present in the project component areas. Closest CNDDB occurrence is approximately 1 mile east of structure 1 in 1893. Presumed extirpated from San Fernando and Mint Canyon quads; presumed extant in Newhall quad (CNPS 2011).
Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)	--/--/1B.2	Chaparral, coastal scrub, Valley and foothill grassland. Elevation: 1,050–3,000 feet. Blooms: Mar–Jun.	Present. Observed during 2009 rare plant surveys. Closest CNDDB occurrences are approximately 1 mile from 66-kV subtransmission line structure 1 in 1930, 0.17 miles from 66-kV subtransmission line structure 42 in 1995, and 0.70 miles from Telecommunications Route #2 in 2005. Presumed extant in Santa Susana, Newhall, Mint Canyon, Val Verde, Oat Mountain, and Calabasas quads (CNPS 2011).
Southern tarplant (*Centromadia parryi* ssp. *australis*)	--/--/1B.2	Marshes and swamps (margins), valley and foothill grassland (vernally mesic), vernal pools. Elevation: to 1,400 feet. Blooms: May–Nov.	Unlikely. Some suitable habitat present in the project component areas. No CNDDB occurrence within 5 miles of all project component areas. Presumed extirpated from Van Nuys quad (CNPS 2011).
Thread-leaved brodiaea (*Brodiaea filifolia*)	FT/SE/1B.1	Often clay. Chaparral (openings), cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools. Elevation: 80–4,000 feet. Blooms: Mar–Jun.	Unlikely. Marginal suitable habitat may be present in the project component areas. No CNDDB occurrence within 5 miles of all project component areas. No CNPS listing within the proposed project area.

Table 4.4-3 Special Status Plants

Species	Status (Fed/State/CNPS)	Habitat	Potential to Occur in Project Area
White rabbit-tobacco (Pseudognaphalium leucocephalum)	--/--/2.2	Sandy, gravelly. Chaparral, cismontane woodland, coastal scrub, riparian woodland. Elevation: to 6,800 feet. Blooms: Jul–Dec.	Unlikely. Suitable habitat may be present in the project component areas. No CNDDB occurrence within 5 miles of all project component areas. Presumed extant in Santa Susana quad, but occurrences from Ventura County not verified (CNPS 2011).

Sources: CNDDB 2011 (9-quad special status species search); CNPS 2011

Status explanations:
Federal
FE = Listed as endangered under the federal Endangered Species Act.
FT = Listed as threatened under the federal Endangered Species Act.
FC = Candidate for listing under the federal Endangered Species Act.

State
SE = Listed as endangered under the California Endangered Species Act.
ST = Listed as threatened under the California Endangered Species Act.

CNPS
1A = Presumed extinct in California
1B.1 = Rare, threatened, or endangered in California and elsewhere. Extremely endangered in California
1B.2 = Rare, threatened, or endangered in California and elsewhere. Fairly endangered in California
1B.3 = Rare, threatened, or endangered in California and elsewhere. Not very threatened in California
2.2 = Rare, Threatened, or Endangered in California, But More Common Elsewhere. Fairly threatened in California
4.2 = Plants of Limited Distribution - A Watch List. Fairly threatened in California

Other Abbreviations:
CNDDB = California Natural Diversity Database
CNPS = California Native Plant Society
Fed = federal
kV = kilovolt
quad = quadrangle
USGS = U.S. Geological Society

Oak trees

The ~~CDFG~~CDFW considers some oak woodlands as sensitive (~~CDFG~~CDFW 2010). Furthermore, both the City of Santa Clarita and Los Angeles County list oak trees as a protected resource. Several species of oak trees are present throughout the proposed project area (Appendix E-4). Details regarding local and regional regulations governing oak trees can be found in Section 4.4.2.3.

Special Status Plants Likely to Occur in the Proposed Project Area

66-kV Subtransmission Line/Telecommunications Route #1

Along the 66-kV subtransmission line, the following special status species are likely to occur: Braunton's milkvetch (*Astragalus brauntonii*; FE/1B.1), California Orcutt grass (*Orcuttia californica*; FE/SE/1B.1), chaparral ragwort (*Senecio aphanactis*; 2.2), Nevin's barberry (*Berberis nevinii*; FE/SE/1B.1), San Fernando Valley spineflower (*Chorizanthe parryi* var. *ernandina*; FC/SE/1B.1) Santa Susana tarplant (*Deinandra minthornii*; R/1B.2), short-joint beavertail cactus (*Opuntia basilaris* var. *brachyclada*; 1B.2), and slender horned spineflower (*Dodecahema leptoceras*; FE/SE/1B.1).

San Fernando Substation

In the vicinity of the San Fernando Substation, Davidson's bush mallow (*Malacothamnus davidsonii*; 1B.2) and Nevin's barberry are likely to occur.

Storage Field and Proposed Natural Substation

Braunton's milkvetch and Santa Susana tarplant are likely to occur throughout the storage field and proposed Natural Substation areas.

Telecommunications Route #4

Along Telecommunications Route #4, slender mariposa lily, Plummer's mariposa lily, San Fernando Valley spineflower, Davidson's bush mallow, Palmer's grapplinghook (*Harpagonella palmeri;* 4.2), and Robinson's pepper-grass (*Lepidium virginicum var.robinsonii*; 1B.2) are likely to occur.

Telecommunications Route #2

Santa Susana tarplant is likely to occur throughout the entire route. The following species are likely to occur along the southernmost portion of the route and in the vicinity of the Chatsworth Substation: Agoura Hills dudleya (*Dudleya cymosa* ssp. *Agourensis*; FT/1B.2), Blochman's dudleya (*Dudleya blochmaniae*; 1B.2), Braunton's milkvetch, many-stemmed dudleya (*Dudleya multicaulis*; 1B.2), peninsular nolina (*Nolina cismontane*; 1B.2), and San Fernando Valley spineflower. At the northernmost portion of the route, Ojai navarretia (*Navarretia ojaiensis*; 1B.1) is likely to occur.

Wildlife

Thirty-four special status wildlife species were evaluated for their potential to occur in the proposed project area (Table 4.4-4). In total, six species of special status wildlife are present in the proposed project area, and 19 species are likely to occur in the proposed project area. Species that are present or likely to occur in the proposed project area are discussed in detail below.

Table 4.4-4 Special Status Wildlife Potential to Occur in Project Component Areas

Species	Status Fed/State	Habitat	Potential to Occur*
Fish			
Arroyo chub (*Gila orcutti*)	--/SSC	Occurs in perennial streams with portions of sand or mud substrate and riffles and pools. Tolerant of wide temperature fluctuation (10–24°C) and hypoxic conditions. Feeds on algae and invertebrates.	Absent. CNDDB occurrence is 3 miles north of 66-kV subtransmission line structure 1 in 1999. Occurs in Santa Clara and Los Angeles River watersheds (Regents of the University of California 2011). Drainages in proximity to the project component areas are seasonal and therefore would not support this species.
Santa Ana sucker (*Catostomus santaanae*)	FT/SSC	Occurs in shallow perennial streams up to 3.5 feet deep and less than 22°C. Generally with cobble, gravel, or sand bottoms. Feeds on algae and detritus.	Absent. Closest CNDDB occurrences are 6.5 miles southeast of fiber optic connection point in 2007 and 6, miles northwest of 66-kV subtransmission line structure 1 in 1975. Occurs in the Santa Clara and Los Angeles River watersheds (Regents of the University of California 2011). Drainages in proximity to the project component areas are seasonal and therefore would not support this species.
Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*)	FE/SE	Occurs in perennial waters of 23–24°C and abundant aquatic vegetation. Low turbidity required for nest building and egg laying. Feeds on insects and snails.	Absent. Closest CNDDB occurrence is 3 miles north of 66-kV subtransmission line structure 1 in 1999 in Santa Clara River. Occurs in the Santa Clara and Los Angeles River watersheds (Regents of the University of California 2011). Drainages in proximity to the project component areas are seasonal and therefore would not support this species.
Amphibians			
Arroyo toad (*Anaxyrus californicus*)	FE/SSC	Breeds in shallow gravelly or sandy pools of intermittent streams. Forages and aestivates in adjacent sandy uplands in grassland or mixed scrub. Specialized habitat needs.	Likely. Closest CNDDB occurrence 3 miles north of 66-kV subtransmission line structure 1 in 1994. Suitable habitat present in the Santa Clara River watershed.
Coast Range newt (*Taricha torosa torosa*)	--/SSC	Terrestrial species inhabits moist areas such as beneath woody debris, in rock crevices and animal burrows in wet forests, oak forests, chaparral, and rolling grasslands. Requires ponds, reservoirs, and slow-moving streams to breed.	Present. Species has been observed in catch basins in Limekiln Canyon Wash in the storage field.
Sierra Madre yellow legged frog (*Rana muscosa*)	FE/SSC	Southern California populations occupy unpolluted ponds, lakes, and streams at montane elevations of 4,500 feet or higher. Tadpoles may take multiple seasons to mature.	Unlikely. No suitable habitat present; all project component areas are not at high enough elevations. Single CNDDB record 3 miles northeast of fiber optic connection point.

Table 4.4-4 Special Status Wildlife Potential to Occur in Project Component Areas

Species	Status Fed/State	Habitat	Potential to Occur*
Western spadefoot (*Spea hammondii*)	--/SSC	Occupies various habitats, including grassland, chaparral and oak-pine woodlands. Requires vernal pools for breeding and egg laying. Occurs from Ventura to San Diego County and known in Los Angeles and Santa Clara watersheds.	Likely. Suitable habitat may be present in some project component areas. Closest CNDDB occurrences are 2 miles northeast of structure 38 in 1996, and 0.5 miles east of structure 54 in 2000.
Reptiles			
Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvili*)	--/SSC	Occurs in relatively open areas of coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland, and pine forest habitat on sandy soil, often in association with harvester ants. Santa Barbara to San Diego Counties.	Present. Closest CNDDB occurrence was adjacent to Telecommunications Route #2 in 2001. Suitable habitat present throughout project component areas. Observed near 66-kV subtransmission line structure 50.
Coastal Whiptail (*Aspidoscelis tigris)*	--/SSC	Occurs in coastal Southern California west of the Peninsular Ranges and south of the Transverse Ranges into Baja California. Occurs in hot, dry, open areas with sparse foliage in chaparral, woodland, and riparian habitats from sea level to 7,000 feet.	Likely. Suitable habitat is present in the undeveloped area north of Balboa Boulevard along Telecommunications Route #4 (Appendix C-1). The closest occurrences are within approximately 3 miles of the 66-kV subtransmission line route (CNDDB 2012).
Silvery legless lizard (*Anniella pulchra pulchra*)	--/SSC	Burrows in sandy or loose loamy soil and leaf litter of high moisture content under sparse vegetation, particularly in coastal dune and oak woodland habitats.	Likely. Closest CNDDB record are adjacent to and 0.5 miles east of Telecommunications Route #2 in 2008 and 2009. Suitable habitat present throughout project component areas.
Two-striped garter snake (*Thamnophis hammondii*)	--/SSC	Occurs in or near permanent fresh water, including ponds or streams with rocky beds bordered by dense riparian vegetation. Feeds on small fish, amphibians, and insects. Monterey County to Baja California.	Present. Observed in Limekiln Canyon Wash. CNDDB occurrence in 2006 0.05 miles west of Telecommunications Route #2; specifically, inhabiting a large pool within a willow riparian woodland. Suitable habitat present throughout project component areas.
Western pond turtle (*Actinemys marmorata*)	--/SSC	Streams, ponds, freshwater marshes, and shallow lakes with aquatic vegetation and basking sites of sandy banks or grassy open fields. Requires upland habitat up to 0.3 miles from water for egg laying.	Likely. Closest CNDDB occurrence is 0.5 miles east of Telecommunications Route #2, and 3 miles east of Chatsworth Substation in 2000. Some suitable habitat present throughout project component areas.
Birds			
California Condor (*Gymnogyps californianus*)	FE/SE	Roosts on large trees, snags, or isolated rock outcrops or cliffs. Nests where there is minimal disturbance, typically cliffs or shallow caves with no nesting material. Requires vast remote areas for foraging, including grasslands and oak savannas. Feeds on carrion of large mammals. Condors may fly 150 miles a day in search of food.	Likely. Known to occur in Los Angeles and Ventura Counties (USFWS 2011b). Suitable foraging habitat present throughout the project component areas, and suitable roosting and nesting habitat present in the vicinity of Telecommunication Route #2.

Table 4.4-4 Special Status Wildlife Potential to Occur in Project Component Areas

Species	Status Fed/State	Habitat	Potential to Occur*
Coastal California gnatcatcher (*Polioptila californica californica*)	FT/SSC	Obligate, permanent resident of low coastal sage scrub habitat on flat or gently sloping terrain generally below 1,640 feet in elevation. Occurs from Ventura to San Diego County.	Likely. Closest CNDDB occurrences are approximately 1 mile north of San Fernando Substation in 2004, 4.5 miles southeast of San Fernando Substation in 2008, 4.5 miles east of 66-kV subtransmission line structure 1 in 2001, and 4.5 miles south of Chatsworth Substation in 2002. Portions of the proposed project area lie within USFWS-designated critical habitat, and suitable habitat is scattered throughout project component areas with the exception of Telecommunications Route #3.
Golden eagle (*Aquila chrysaetos*)	FP/-- (nesting and wintering)	Resident throughout southern California. Forages in open terrain in deserts, mountains, foothill slopes, and valleys throughout southern California. Nests mainly on cliffs, but also in large trees (such as oaks), and rarely on artificial structures or the ground.	Likely. Suitable nesting and foraging habitat present in the non-urbanized portions of project component areas. Closest CNDDB record 4.5 miles southwest of Chatsworth Substation in 1989.
Least Bell's vireo (*Vireo bellii pusillus*)	FE/SSC (nesting)	Requires a dense shrub layer 1.5–9 feet above ground in riparian willow scrub habitat, but will use non-riparian habitat as well. Largely absent above 1,640 feet in elevation. Nests occur primarily in willows.	Likely. Closest CNDDB occurrence 5 miles northwest of 66-kV subtransmission line structure1 in 1988, and 4 miles southeast of San Fernando Substation in 2003. Suitable habitat present throughout project component areas. Project component areas lie within known breeding range for this species.
Loggerhead shrike (*Lanius ludovicianus*)	--/SSC (nesting)	Permanent breeding resident in lowlands of southern California. Nests in dense shrubs. Hunts in grassland, scrubland, or open woodland, preferring open areas bordered by trees and brush.	Likely. Closest CNDDB occurrence 7.5 miles north of 66-kV subtransmission line structure 1 in 2005. Suitable habitat for nesting and foraging present throughout project component areas.
Northern harrier (*Circus cyaneus*)	--/SSC (nesting)	Ground nester in variety of habitats, including wet meadows, lightly grazed pastures, old fields, freshwater and brackish marshes, dry upland prairies, mesic grasslands, drained marshlands, croplands, and riparian woodland.	Present. Observed in proposed project area.
Olive-sided flycatcher (*Contopus cooperi*)	--/SSC (nesting)	Primarily coniferous forest openings and edges, at any elevation from sea level to timberline. Uses snags in early successional forests and burned areas for perching. Insectivorous; feeds on the wing.	Present. Observed in proposed project area, likely migrant.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	FE/SE (nesting)	Nests in riparian vegetation, especially willows and coast live oak. Feeds on insects.	Unl~~L~~ikely. No CNDDB occurrences recorded within 10 miles of the project component areas. ~~Suitable habitat present. Known or believed to occur in Los Angeles and Ventura Counties (USFWS 2010a; DOI 2011)~~No suitable habitat present in the project area.

Table 4.4-4 Special Status Wildlife Potential to Occur in Project Component Areas

Species	Status Fed/State	Habitat	Potential to Occur*
Swainson's hawk (*Buteo swainsoni*)	--/ST (nesting)	Breeding throughout California in mixed agricultural or savannah landscapes with fields and scattered trees. Vagrant in coastal southern California. Occurs in Los Angeles County mountains.	Unlikely. Outside typical breeding range. Likely only migratory in proposed project area. No CNDDB occurrences within 10 miles of project component areas.
Tricolored blackbird (*Agelaius tricolor*)	--/SSC (nesting colony)	Breeds and forages in fresh-water marshes of cattails, tule, and sedges; and willows and blackberries. In southern California, occurs from Santa Barbara to San Diego Counties.	Likely. Suitable foraging habitat may occur in the project component areas. Nesting habitat is unlikely to occur in the project component areas due to the lack of dense emergent aquatic vegetation within drainages. Closest CNDDB occurrence is a nesting colony 4.5 miles east of Chatsworth Substation in 1999.
Vaux's Swift (*Chaetura vauxi*)	--/SSC (nesting)	Breeds in coast redwoods and Douglas fir below 1,000 feet. Summer nesting occurs in hollow tree trunks, typically redwood. Forages in forest openings, along streams, and above the canopy.	Present. Observed migrating. Suitable foraging habitat present in the project component areas. No suitable breeding habitat present.
Western burrowing owl (Athene cunicularia)	--/SSC (burrowing sites and some wintering sites)	Resident throughout southern California. Occurs in open grassland, desert, and scrubland habitats with widely spaced vegetation. Dependent upon burrowing mammals, especially California ground squirrel, for nesting. Forages on insects and small reptiles or mammals. Permanent resident in southern California.	Likely. Suitable habitat present in the project component areas. Closest CNDDB occurrences 5 miles south of Chatsworth Substation in 2000, and 5 miles north of 66-kV subtransmission line structure 1 in 2007.
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FC/SE (nesting)	Inhabits large tracts of riparian woodland with unbroken canopy and dense understory. Nests in trees typically with vertical branching.	Unlikely. CNDDB occurrences are from 1893 and 1979. Some suitable habitat present in the project component areas. Not known to occur in Los Angeles or Ventura Counties.
White-tailed kite (*Elanus leucurus*)	FP/-- (nesting)	Occurs in grasslands, savannah, oak woodlands, and mixed agricultural areas. Nests typically near water in large trees. Permanent resident in southern California	Likely. Single CNDDB occurrence 3.5 miles north of 66-kV subtransmission line structure 1 in 2005. Suitable habitat present in the project component areas.
Yellow-breasted chat (*Ictera virens*)	--/SSC (nesting)	Summer resident in riparian thickets of willow and other brushy tangles such as blackberry and wild grape near water courses. Forages and nests within 10 feet of the ground.	Likely. Single CNDDB occurrence 9.5 miles northwest of 66-kV subtransmission line structure 1 in 1979. Some suitable foraging and nesting habitat present in the project component areas. Known to winter in Los Angeles County.
Yellow warbler (*Dendroica petechia*)	--/SSC (nesting)	Found in scrub/shrub at elevations 328–8,850 feet. Also riparian vegetation, nesting especially in willows.	Likely. Suitable habitat present in the project component areas. Single historic CNDDB occurrence was 9.5 miles northwest of 66-kV subtransmission line structure 1 in 1979.

Table 4.4-4 Special Status Wildlife Potential to Occur in Project Component Areas

Species	Status Fed/State	Habitat	Potential to Occur*
Mammals			
California leaf-nosed bat (*Macrotus californicus*)	--/SSC	Occurs within the warm desert regions (typically Sonoran desert) of California, Nevada, and Arizona and into Mexico. Typically roosts in warm caves or buildings with high humidity.	Unlikely. Closest CNDDB occurrence was adjacent to Telecommunications Route #2 in 1950. Some suitable habitat may be present in the project component areas.
Los Angeles pocket mouse (*Perognathus longimembris brevinasus*)	--/SSC	Prefers open ground with fine sandy soil in open grassland and coastal sage communities in and around the Los Angeles Basin. May not dig extensive burrows, but hide under weed and dead leaves. Typical elevation 550–2,650 feet.	Unlikely. Last CNDDB record 7.5 miles south of San Fernando Substation in 1903. The area between the CNDDB record and the substation is entirely urbanized. Potential habitat is present in other project component areas; however, the project component areas are north of extant populations and isolated from those populations by development.
Pallid bat (*Antrozous pallidus*)	--/SSC	Inhabits a variety of habitats. Associated with oak woodlands. Roosting occurs singly or in groups in a wide range of crevice types.	Likely. Historic CNDDB occurrence 8 miles northwest of 66-kV subtransmission line structure 1 in 1938. Suitable foraging and roosting habitat present in oak woodlands in the project component areas.
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	--/SSC	Inhabits coastal sage scrub and mixed chaparral or woodland edges with herbaceous components in southern California.	Likely. Closest CNDDB occurrence is 8 miles north of 66-kV subtransmission line structure 1 in 2005. Suitable scrub habitat present in the project component areas.
San Diego desert woodrat (*Neotoma lepida intermedia*)	--/SSC	Occurs in coastal scrub and mixed chaparral of southern California from San Diego County to San Luis Obispo County. Particularly abundant in regions with rock outcrops, rocky cliffs, and slopes.	Likely. Closest CNDDB occurrence was 0.1 miles west of 66-kV subtransmission line structure 32 in 1992, and 75 feet east of 66-kV subtransmission line structure 39 in 1992. Suitable habitat present in the project component areas.
Spotted bat (*Euderma maculatum*)	--/SSC	Occupies arid deserts, grasslands, and mixed conifer forests. Roosting occurs singly or in very small groups in rock crevices and mostly at large rock outcroppings. Feeds on moths.	Unlikely. Historic CNDDB occurrence 6 miles north of 66-kV subtransmission line structure 1 in 1890. Limited suitable foraging and roosting habitat may be present in the project component areas.

Table 4.4-4 Special Status Wildlife Potential to Occur in Project Component Areas

Species	Status Fed/State	Habitat	Potential to Occur*
Western mastiff bat (*Eumops perotis californicus*)	--/SSC	Range extends from California to west Texas and into Mexico, occupying a wide range of habitat from desert scrub to mixed montane forest. Roosting occurs on cliffs with crevices or exfoliating rock slabs.	Likely. Closest CNDDB occurrence is 1 mile west of 66-kV subtransmission line structure 30 in 1954, and 2 miles northeast of 66-kV subtransmission line structure 30 in 1992. Suitable foraging and roosting habitat is present throughout the project component areas.

Sources: CNDDB 2011 and CNDDB 2012

Status explanations:
Federal
FE = federal endangered
FT = federal threatened
FC = candidate for listing under the federal Endangered Species Act.

State
SE = state endangered.
ST = state threatened.
FP = fully protected under the California Fish and Game Code.
SSC = species of special concern in California.

Other Abbreviations:
C = centigrade
CNDDB = California Natural Diversity Database
Fed = federal
kV = kilovolt

*All distances listed are approximate

Potential to Occur:
Likely = Per CNDDB and/or professional expertise specific to the proposed project study area, individuals of the species are likely to colonize or use the area, because data show that individuals of the species are known to occur within 5 miles of the proposed project study area and there is ideal habitat within the proposed project study area.
Unlikely = Occurrence of this species has been identified in the CNDDB records, but either the recorded observations are more than 10 years old; key habitat requirements are absent; or the habitat in the proposed project study area is so degraded, small, or isolated that it would be very unlikely for individuals of the species to colonize or use the area.

Special Status Amphibians Present in the Proposed Project Area

Coast Range newt

The Coast Range newt (*Taricha torosa torosa;* SSC) was observed in catch basins in Limekiln Canyon Wash on the storage field property (AECOM 2009). The Coast Range newt inhabits moist areas beneath woody debris, in rock crevices and animal burrows, and the oak woodlands, chaparral, and rolling grasslands in the proposed project area are suitable habitat. This species requires ponded or slow-moving water for breeding.

Special Status Amphibians Likely to Occur in the Proposed Project Area

Arroyo toad

Two occurrences of Arroyo toad (*Anaxyrus californicus*; FE/SSC) have been recorded in the CNDDB within 10 miles of the proposed project (CNNDB 2011). The closest occurrence recorded in the CNDDB was in 1994 approximately 3 miles north of 66-kV subtransmission line structure 54. Arroyo toad requires shallow gravelly or sandy pools of intermittent streams for breeding that are in proximity to upland grasslands or mixed scrub for foraging and aestivation.

Western spadefoot

Several occurrences of western spadefoot (*Spea hammondii;* SSC) have been recorded in the CNDDB within 10 miles of the proposed project (CNDDB 2011). The closest occurrence recorded in the CNDDB was in 2000, approximately 0.5 miles east of 66-kV subtransmission line structure 54 (CNDDB 2011). The western spadefoot occupies various habitats but requires perennial pools for breeding and egg laying.

Special Status Reptiles Present in the Project Area

Coast horned lizard

The coast horned lizard (*Phrynosoma coronatum blainvili*; SSC) was incidentally observed in the project area during coastal California gnatcatcher surveys and reconnaissance-level habitat surveys (Appendix E-1). Several occurrences of this species within 10 miles of the proposed project have been recorded in the CNDDB (CNDDB 2011). The coast horned lizard occurs in relatively open landscapes. The coastal sage scrub, annual grasslands, chaparral, oak woodlands, and riparian woodlands in the proposed project area are appropriate habitat for this species.

Two-striped garter snake

The two-striped garter snake (*Thamnophis hammondii*; SSC) was observed in Limekiln Canyon Wash in the storage field (AECOM 2009). This species occurs in or near fresh water, with rocky beds bordered by dense riparian vegetation. The riparian woodlands are potential habitat in the proposed project area.

Special Status Reptiles Likely to Occur in the Proposed Project Area

Coastal Whiptail

Ten occurrences of the coastal whiptail (*Aspidoscelis tigris*; SSC) have been recorded in the CNDDB within 10 miles of the proposed project; the closest is within three miles of the 66-kV subtransmission line (CNDDB 2012). This species occurs in hot, dry open areas with sparse foliage in chaparral, woodland, and riparian habitats from sea level to 7,000 feet (Appendix C-1).

Silvery legless lizard

Four occurrences of the silvery legless lizard (*Anniella pulchra pulchra*; SSC) have been recorded in the CNDDB within 10 miles of the proposed project; the closest are adjacent to and approximately 0.5 miles east of Telecommunications Route #2 in 2008 and 2009 (CNDDB 2011). The silvery legless lizard burrows in sandy or loose loamy soil and leaf litter of high moisture content under sparse vegetation. The oak woodlands in the proposed project area are appropriate habitat for this species.

Western pond turtle

The closest of the several occurrences of the western pond turtle *(Actinemys marmorata*; SSC) recorded in the CNDDB are approximately 0.5 miles east of Telecommunications Route #2 and approximately 3 miles east of the Chatsworth Substation in 2000. The western pond turtle inhabits streams and other water features with aquatic vegetation. This species requires habitat with basking sites of sandy banks or grassy open fields, and upland habitat up to 0.3 miles from water for egg laying.

Special Status Birds Present in Proposed Project Area

Northern harrier

A northern harrier (*Circus cyaneus*; SSC) was incidentally observed in the proposed project area during surveys in 2010 (Appendix E-2). Northern harriers are ground nesting birds, frequently inhabiting wet meadows, grasslands, and grazed pastures. The proposed project area is outside of the typical breeding and nesting range for northern harriers; therefore, the observed harrier was likely migrating through or wintering in the region.

Olive-sided flycatcher

An olive-sided flycatcher (*Contopus cooperi;* SSC) was incidentally observed in the proposed project area during surveys in 2010 (Appendix E-2). This species is common in the region as a migrant and breeding species. The recently burned areas of vegetation could be used by foraging olive-sided flycatchers.

Vaux's swift

A Vaux's swift (*Chaetura vauxi*; SSC) was incidentally observed in the proposed project area during surveys in 2010 (Appendix E-2). Suitable foraging habitat for this species occurs in the proposed project area (i.e., forest openings and along streams). However, the proposed project area is generally outside of the breeding range for this species. Specifically, much of the proposed project would be located higher than 1,000 feet elevation, and this species typically occurs only up to 1,000 feet. Further, the proposed project area does not include the coast redwood and Douglas-fir that Vaux's swifts require for breeding and nesting. Therefore, the individual observed was likely migrating through the area, and potential impacts to this species could be limited to foraging aspects.

Special Status Birds Likely to Occur in Proposed Project Area

Eleven species of special status birds are likely to occur in the project area: California condor (*Gymnogyps californianus*; FE/SE), coastal California gnatcatcher (*Polioptila californica californica*; FT/SSC), golden eagle (*Aquila chrysaetos*; FP), least Bell's vireo (*Vireo bellii pusillus*; FE/SSC), loggerhead shrike (*Lanius ludovicianus*; SSC), ~~southwestern willow flycatcher (*Empidonax traillii extimus*; FE/SE),~~ tricolored blackbird (*Agelaius tricolor*; SSC), western burrowing owl (*Athene cunicularia*; SSC), white tailed kite (*Elanus leucurus*; FP), yellow breasted chat (*Ictera virens*; SSC), and yellow warbler (*Dendroica petechia*; SSC). Suitable foraging and/or nesting habitat occurs in the proposed project area for all of these species.

California condor

California condors are large birds that require expansive areas of remote habitat such as grasslands and oak savannas. Tall trees, snags (i.e., dead standing trees), or isolated rock outcrops and cliffs are required for roosting such that individuals can take flight with a few wing beats. For successful nesting, condors require minimal disturbance; they nest on cliffs or shallow caves with no nesting material. Condors feed on carrion of large mammals and may fly 150 miles a day in search of food. Habitat suitable for California condors is present in the proposed project area, with the greatest potential for condor foraging and roosting habitat occurring along Telecommunications Route #2. Areas of the proposed project that are urbanized or otherwise previously disturbed by human activity are not likely to support nesting condors.

Coastal California gnatcatcher

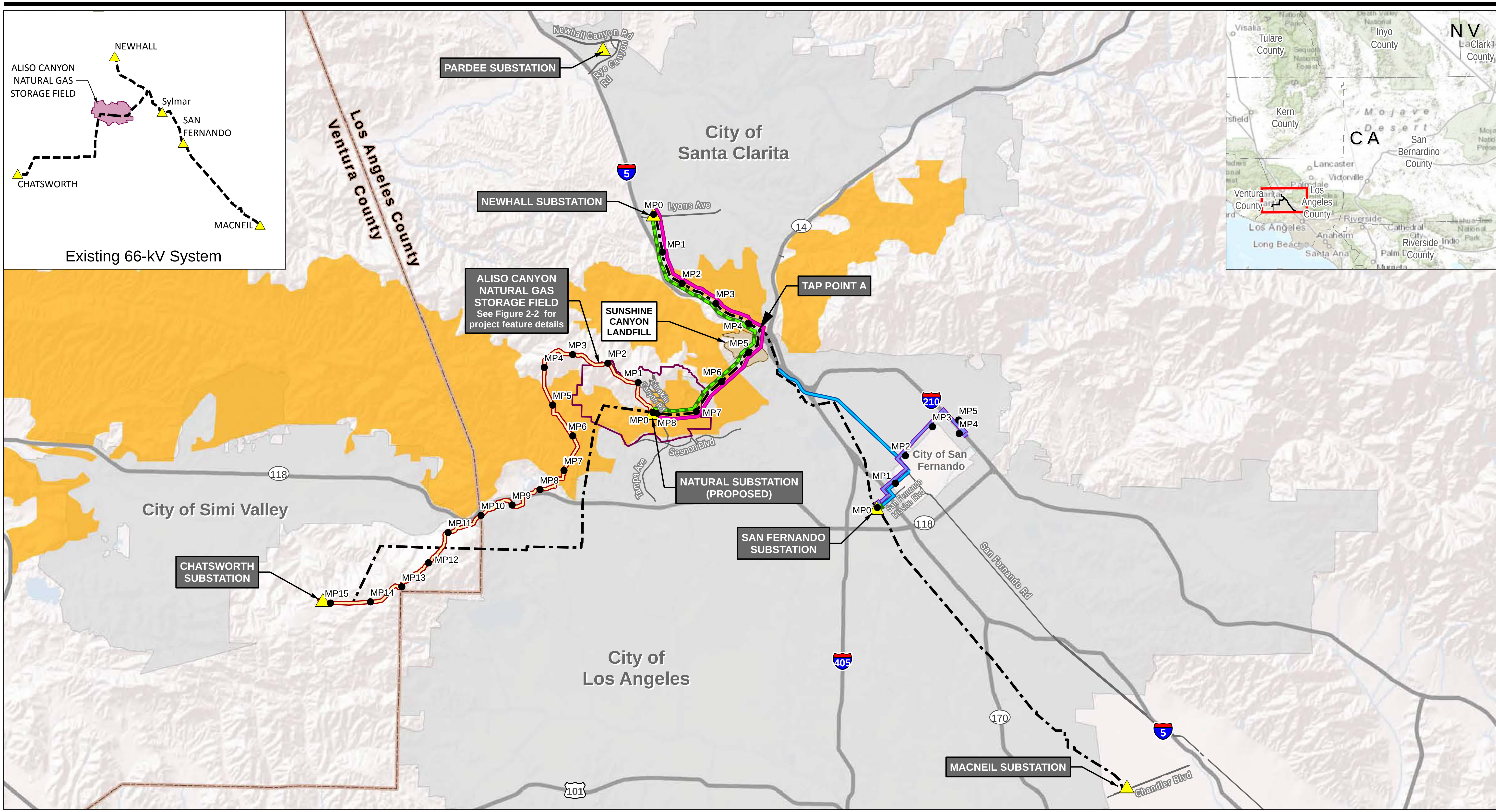
Coastal California gnatcatchers are an obligate of coastal scrub found in Venturan subassociations of coastal sage scrub. Species composition within that habitat varies dramatically by coastal California gnatcatcher territory, but the California sagebrush is usually dominant or co-dominant (Atwood and Bontrager 2001). Optimal coastal California gnatcatcher breeding habitat occurs below 1,640 feet elevation, on moderate slopes. Typical breeding habitat requires at least two contiguous acres of appropriate vegetation.

The proposed project area is located at the upper limit of the typical coastal California gnatcatcher habitat elevation of approximately 1,640 feet (Appendix E-2), within the portion of coastal California gnatcatcher range where the species occurs as a permanent resident (i.e., birds that occur in this area would not migrate). Coastal California gnatcatcher have been incidentally observed south of the proposed project area in Aliso Canyon (USFWS 2002); however, subsequent protocol surveys did not reveal coastal California gnatcatcher presence (USFWS 2002), and no coastal California gnatcatchers were observed during the March 15–April 29, 2010, focused survey (Appendix E-2). If coastal California gnatcatchers are present in the proposed project area, it is likely that they would have been observed at the time of the focused survey because populations tend to be stable during that season (Appendix E-2). ~~Negative survey results for coastal California gnatcatchers in the proposed project area are likely due to the fact that the coastal sage scrub is of marginal quality and fragmented, as well as the steepness of slopes within the proposed project site.~~

The survey covered several locations within the proposed project area that are known to have suitable coastal California gnatcatcher habitat and/or that were located within the USFWS-designated critical habitat for this species (Figure 4.4-2) (Appendix E-2). However, Telecommunications Route #2, which runs through the USFWS-designated critical habitat, was not surveyed.

Golden eagle

Golden eagles are resident throughout southern California. The grasslands and other open landscapes in the mountains, foothills, and valleys of the proposed project area provide suitable foraging habitat. Nesting opportunities for golden eagles in the proposed project area are present in large oak trees and any cliffs that may be in the foothills and mountain areas. The greatest potential for golden eagle habitat exists along Telecommunications Route #2.



SOURCES: SoCalGas 2009 to 2012, USFWS Critical Habitat 2010

- Milepost (MP)
- 66-kV Subtransmission Line Reconductoring Route (Proposed)
- Telecommunications Route #1
- Telecommunications Route #2
- Telecommunications Route #3
- Telecommunications Route #4
- Existing 66-kV Subtransmission Line
- Coastal California Gnatcatcher Critical Habitat

0 1 2 4 Miles

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

Figure 4.4-2

Coastal California Gnatcatcher Critical Habitat

Path: \\prtbhp1\gis\SanFrancisco\Aliso Canyon Natural Gas\Maps\MXD\EIR\Final_EIR_Feb2013\Project_Area_CA_Gnatcatcher.mxd

Least Bell's vireo, ~~southwestern willow flycatcher,~~ yellow-breasted chat, and yellow warbler

Least Bell's vireo, ~~southwestern willow flycatcher,~~ yellow-breasted chat, and yellow warbler are all likely to occur in dense riparian areas with willow scrub habitat, and riparian woodlands are critical for breeding pairs. Research has shown that least Bell's vireo also benefits from using non-riparian habitats (Kus et al. 2010). A dense shrub layer from 2 to 10 feet above the ground is critical for this species (Kus et al. 2010).

Yellow-breasted chat and yellow warbler are also likely to inhabit dense riparian habitat, especially those dominated by willow. Additionally, yellow warbler will occupy disturbed and early successional habitats. The proposed project area is located in the breeding range for yellow warbler, and this species is most likely to occur from 328 to 8,856 feet in elevation.

~~Neither least~~ Least Bell's vireo ~~nor southwestern willow flycatcher were~~ was observed in the proposed project area during coastal California gnatcatcher surveys (Appendix E-2). ~~No occurrences of the southwestern willow flycatcher have been recorded within 10 miles of the proposed project area (CNDDB 2011).~~ Two recent occurrences (in 2003 and 2004) and four historic occurrences (in 1978, 1980, 1985, and 1988) for least Bell's vireo have been recorded within 10 miles of the proposed project (CNDDB 2011). Riparian habitat occurs along various drainages within the proposed project area (Figure 4.4-3). However, not all of this riparian vegetation provides high-quality habitat for associated special status bird species due to previous disturbance and/or the lack of larger areas (i.e., minimum of 6 acres) of dense willows and understory scrub. Several patches with particularly suitable habitat for ~~these~~ this bird species do occur in the proposed project area: (1) the South Fork of the Santa Clara River near 66-kV subtransmission line structure 14, where southern willow scrub habitat consists primarily of willow species with emergent Fremont cottonwood and mulefat; and (2) near the proposed guardhouse location, where there is riparian vegetation that includes willows and cottonwoods (Appendix D). Various other areas may also provide potentially suitable habitat. ~~The USFWS has proposed expanding southwestern willow flycatcher critical habitat; this expansion would include the Santa Clara River and a portion of Piru Creek, both in the vicinity of the proposed project area (DOI 2011).~~

Tricolored blackbird

No tricolored blackbirds were observed in the proposed project area during surveys conducted by the applicant's biological consultant. These birds breed and forage in fresh-water marshes of cattails, tule and sedges, and willows and blackberries. In southern California, tricolored blackbirds occur from Santa Barbara to San Diego Counties.

Western burrowing owl

Western burrowing owls are resident throughout southern California open grassland, desert, and scrubland habitats with widely spaced vegetation. A ground nesting species, western burrowing owls will often use mammal burrows or other previously excavated holes for nesting. For foraging, this species requires open areas with insects and small reptiles or mammals. This type of habitat, and in particular the presence of California ground squirrel burrows, is found throughout the proposed project area.

No western burrowing owls were observed in the proposed project area at the time of surveys. Occurrences of burrowing owl have been recorded approximately 5 miles south of the Chatsworth Substation in 2000 and approximately 5 miles north of 66-kV subtransmission line structure 1 in 2007 (CNDDB 2011). Though no western burrowing owls were observed in the proposed project area, these owls are highly mobile, and it is likely that they could move into the area at any time.

Loggerhead shrike, white tailed kite

Loggerhead shrikes inhabit open grasslands, scrublands, woodlands, and riparian vegetation year-round in the proposed project area, and nest in shrubs. White tailed kites generally occur in low elevation grassland, agricultural, wetland, oak woodland, and riparian areas adjacent to open, flat to steep areas, and nest in trees. Loggerhead shrikes and white tailed kites are likely to occur in the proposed project area. A single occurrence of a white tailed kite was recorded approximately 3.5 miles north of 66-kV subtransmission line structure 1 in 2005 (CNDDB 2011). Three occurrences of loggerhead shrikes were recorded approximately 7.5 miles north of 66-kV subtransmission line structure 1 in 2005 and 2008 (CNDDB 2011).

Special Status Mammals Likely to Occur in the Proposed Project Area

No special status mammals were found to be present in the proposed project area. Four special status mammals are likely to occur in the proposed project area: pallid bat (*Antrozous pallidus*; SSC), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*; SSC), San Diego desert woodrat (*Neotoma lepida intermedia*; SSC), and western mastiff bat (*Eumops perotis californicus*; SSC).

Pallid bat

Pallid bats occur throughout California up to 8,000 feet in elevation. Pallid bats inhabit a variety of habitats and are associated with oak woodlands at lower elevations. Pallid bats have been recorded within 10 miles of the proposed project, historically (CNDDB 2011). Suitable roosting habitats may be present in the proposed project area in tree cavities, rock crevices, and human-made structures.

San Diego black-tailed jackrabbit

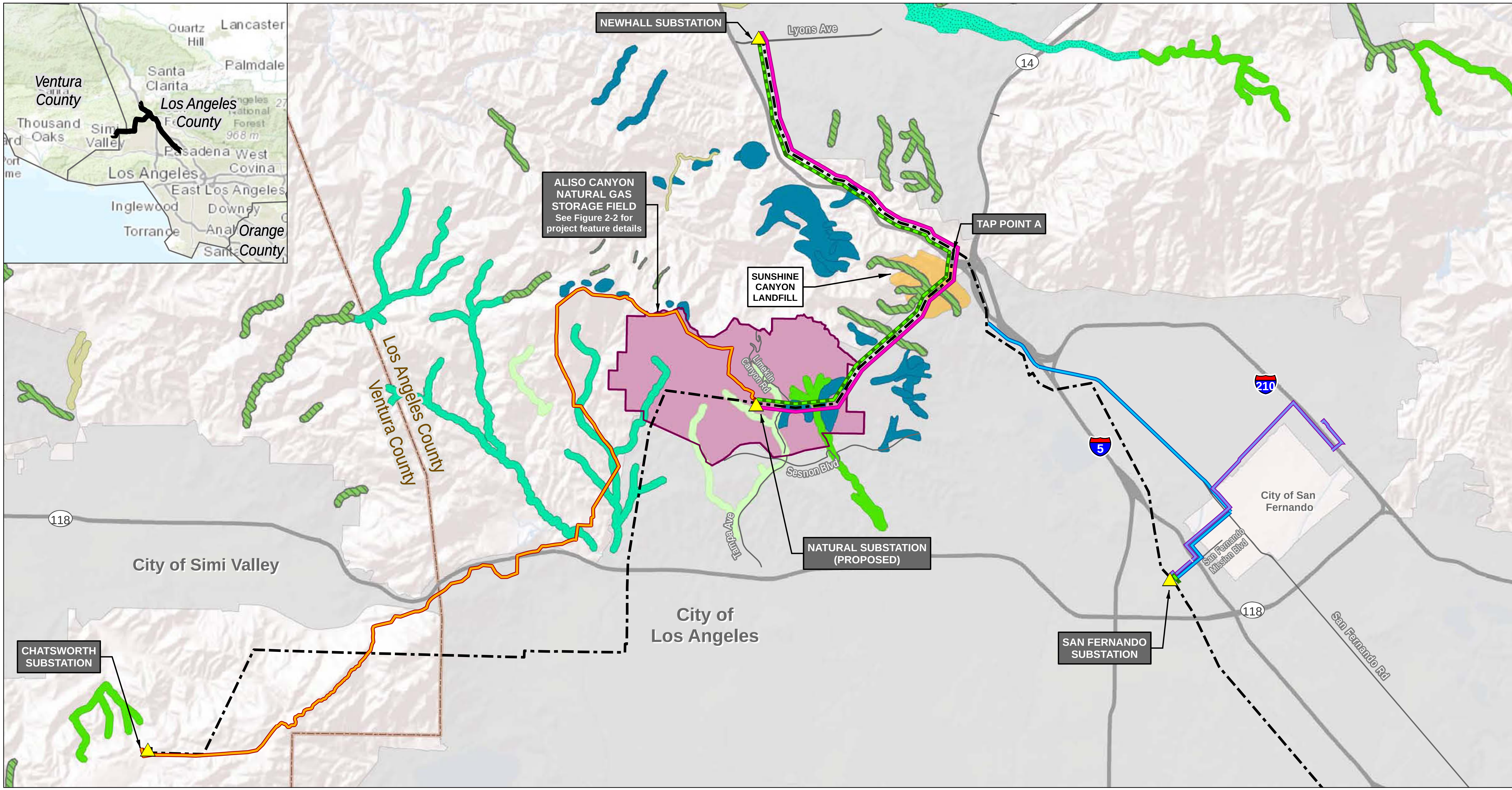
San Diego black-tailed jackrabbits inhabit coastal sage scrub and mixed chaparral or woodland edges with herbaceous components in southern California. The closest occurrence of this species recorded in the CNDDB is approximately 8 miles north of 66-kV subtransmission line structure 1 in 2005. Suitable scrub habitat is present within the proposed project area.

San Diego desert woodrat

The San Diego desert woodrat inhabits coastal scrub and chaparral communities from San Diego County to San Luis Obispo County. The closest occurrence of this species recorded in the CNDDB was approximately 0.1 miles west of 66-kV subtransmission line structure 32 in 1992, and 75 feet east of 66-kV subtransmission line structure 39 in 1992 (CNDDB 2011). It is particularly abundant in regions with rock outcrops, rocky cliffs, and slopes. Suitable habitat is present within the proposed project area.

Western mastiff bat

Western mastiff bats are uncommon residents of coastal scrub, grassland, and chaparral habitats throughout southern California. The closest occurrence of the Western mastiff bat recorded in the CNDDB is approximately 1 mile west of 66-kV subtransmission line structure 30 in 1954, and 2 miles northeast of 66-kV subtransmission line structure 30 in 1992 (CNDDB 2011).



SOURCES: CNDDB 2011, SoCalGas 2009 to 2012

- 66-kV Subtransmission Line Reconductoring Route (Proposed)
- Telecommunications Route #1
- Telecommunications Route #2
- Telecommunications Route #3
- Telecommunications Route #4
- Existing 66-kV Subtransmission Line
- California Walnut Woodland
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood Willow Riparian Forest
- Southern Mixed Riparian Forest
- Southern Riparian Scrub
- Southern Sycamore Alder Riparian Woodland
- Southern Willow Scrub

0 4 Miles

Note: Where subtransmission lines and telecommunications routes are parallel they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

Figure 4.4-3

Riparian Vegetation Communities Within the Proposed Project Area

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4.4.2 Regulatory Setting

4.4.2.2 Federal

Federal Endangered Species Act

The ESA was enacted to protect threatened and endangered species from extinction throughout all or a portion of their known ranges. The ESA makes it unlawful for any governmental agency to harm a listed threatened and endangered species by organizing, funding, or performing actions that may affect the species itself or its known habitat. Doing so would be considered "take" (i.e., harming, harassing, or wanton killing) of a listed species without permit. The USFWS maintains the national list of protected species, as well as acting as regulator and consultant.

Provisions under the ESA allow for authorized "incidental" take of listed species under certain terms and conditions while conducting otherwise lawful activities. There are two processes by which an applicant can procure an Incidental Take Permit (ITP):

- **Section 7:** Applies to a project with a federal nexus, where a federal agency is authorizing, funding, or granting a permit for an activity that may affect listed species; and
- **Section 10:** Applies to a project for which there is no federal nexus.

Migratory Bird Treaty Act

The MBTA of 1918 (16 USC 703–712) provides protection for the majority of bird species occurring in the U.S., as it applies to nearly all migratory species. The MBTA implements treaties with several other nations and was enacted in response to the declines of migratory bird populations from uncontrolled commercial uses. The MBTA makes it unlawful to pursue, hunt, take, capture, kill, possess, or sell birds listed under the MBTA without appropriate permits. Some very common or exotic species are not covered under the MBTA, including the European starling (*Sturnus vulgaris*), the house sparrow (*Passer domesticus*), the rock pigeon (*Columba livia*), and non-migratory species such as grouse, turkey, and ptarmigan. There have been several amendments to the original law (including the Migratory Bird Treaty Reform Act of 1998). The statute does not discriminate between live or dead birds and grants full protection to any bird parts, including feathers, eggs, and nests regardless of conservation status.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act prohibits any form of possession or taking of either bald eagles (*Haliaeetus leucocephalus*) or golden eagles. Take has been broadly interpreted to include altering or disturbing nesting habitat. A 1962 amendment created a specific exemption for possession of an eagle or eagle parts (e.g., feathers) for religious purposes of Indian tribes. Rule changes made in September 2009 (74 Federal Register 175) finalized permit regulations to authorize limited take of these species associated with otherwise lawful activities. These new regulations establish permit provisions for intentional take of eagle nests under particular limited circumstances (50 CFR 13 and 22). The regulations include a USFWS program that will allow issuance of two new types of permits: one addressing take in the form of disturbance or actual physical take of eagles (50 CFR 22.26), and the other providing for removal of nests (50 CFR 22.27). Most permits issued under the new regulations are expected to be those that would authorize disturbance, as opposed to physical take (i.e., take resulting in mortality). Permits for physical take will be issued in very limited cases only, where every precaution has been implemented to avoid physical take and where other restrictions and requirements will apply. In an effort to implement the new regulations, the USFWS has recently published technical guidance, which includes recommendations for applicants to prepare and submit an avian protection plan for USFWS review.

Federal Clean Water Act Section 404

The Clean Water Act (CWA) of 1977 regulates restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. The CWA authorizes the U.S. Army Corps of Engineers (USACE) to regulate the discharge of dredged or fill material into the waters of the U.S. and adjacent wetlands. Wetland delineation is fundamental to USACE and U.S. Environmental Protection Agency regulatory responsibilities under Section 404 of the CWA. Wetland delineation consists of standardized procedures that are used to determine whether a wetland is present on a site and, if so, to establish its boundaries in the field. In combination with current regulations and policies, delineation methods help define the area of federal responsibility under the CWA, within which the agencies attempt to minimize the impacts of proposed projects to the physical, chemical, and biological integrity of the nation's waters. In determining jurisdiction under the CWA, the USACE is governed by federal regulations (33 CFR 320–330) that define wetlands. The USACE Wetlands Delineation Manual is the accepted standard for delineating wetlands pursuant to the Section 404 regulatory program. The USACE released an Interim Regional Supplement to the USACE Wetlands Delineation Manual for the Arid West Region in December 2006, which is the current accepted standard for this region.

The USACE evaluates permit applications for essentially all construction activities that occur in the nation's waters, including wetlands. USACE permits are also required for any work in the nation's navigable waters. The USACE either performs or receives jurisdictional delineations of waters of the U.S. that are within the potential area of impacts for proposed developments, and provides a jurisdictional determination of effects. The jurisdictional review performed by the USACE may require modifications of development plans and specifications in order to preclude impacts on waters of the U.S.

4.4.2.3 State

California Endangered Species Act

The California Endangered Species Act (CESA) is similar to the federal ESA and is administered by the ~~CDFG~~CDFW under California Fish and Game Code Section 2050 *et seq*. The CESA was enacted to protect sensitive resources and their habitats and prohibits the take of CESA-listed species unless specifically provided for under another state law. This act does allow for incidental take associated with otherwise lawful development projects. A project applicant is responsible for consulting with the ~~CDFG~~CDFW early in project planning stages to avoid potential impacts on rare, endangered, and threatened species and to develop appropriate mitigation planning, if applicable, to preclude activities that are likely to jeopardize the continued existence of any CESA-listed threatened or endangered species or destroy or adversely affect habitat essential for any given species.

Alternatively, where a proposed project is likely to impact species that are listed under both federal and state protection, the provisions of Section 2080.1 allow the ~~CDFG~~CDFW to review the federal document in support of the federal ITP (i.e., the Biological Assessment document) for consistency with the CESA. If the federal Biological Assessment addresses the substantial requirements of the CESA, the ~~CDFG~~CDFW may determine that it is consistent with the CESA and state requirements. This mechanism of an integrated approach to CESA/ESA compliance precludes the need for a separate state ITP.

California Fish and Game Code, Sections 1600–1603

This statute regulates activities that would "substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed of a natural watercourse" that supports fish or wildlife resources. A stream is defined as a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes only watercourses that have a surface or subsurface flow that support or has supported riparian vegetation. A Lake and Streambed Alteration Agreement must be obtained from the ~~CDFG~~CDFW for any proposed project that would result in an adverse impact on a river, stream, or lake. If fish or wildlife would be substantially adversely affected, an agreement to implement mitigation measures (MMs) identified by the ~~CDFG~~CDFW would be required.

California Fish and Game Code, Sections 3503 and 3503.5

~~CDFG~~CDFW Code Section 3503 specifies the following general provision for birds: "it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto." Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season that results in the incidental loss of fertile eggs or nestlings, or otherwise leads to nest abandonment, is considered take. Disturbance that causes nest abandonment and/or loss of reproductive effort is also considered take by the ~~CDFG~~CDFW.

California Fish and Game Code, Sections 3511, 4700, 5050, and 5515

These sections prohibit the taking and possession of birds, mammals, fish, and reptiles listed as "fully protected." The ~~CDFG~~CDFW is the administering agency.

California Fish and Game Code, Section 3513

This section provides for the adoption of the MBTA provisions. As with the MBTA, this state code offers no statutory or regulatory mechanism for obtaining an ITP for the loss of non-game migratory birds. The ~~CDFG~~CDFW is the administering agency.

California Native Plant Protection Act of 1977; California Fish and Game Code, Section1900

This law includes provisions that prohibit the taking of listed rare or endangered plants from the wild. The law also includes a salvage requirement for landowners. Furthermore, it gives the ~~CDFG~~CDFW the authority to designate native plants as endangered or rare and provides specific protection measures for identified populations. Under Section 1913(B) of the California Fish and Game Code, actions undertaken by an agency or publicly or privately owned public utility to fulfill its obligation to provide service to the public are exempted from take prohibitions under the Native Plant Protection Act.

California Code of Regulations, Sections 670.2 and 670.5

These sections list wildlife and plant species that are threatened or endangered in California or by the federal government under the ESA. Species considered future protected species by the ~~CDFG~~CDFW are designated California SSC. SSC species currently have no legal status but are considered indicator species useful for monitoring regional habitat changes.

California Environmental Quality Act Guidelines, Section 15380

CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria.

State of California Clean Water Act Section 401

Section 401 of the CWA requires that any applicant for a USACE CWA Section 404 permit also obtain a Water Quality Certification from the state. The proposed project would be located within the jurisdiction of the Los Angeles Regional Water Quality Control Board (RWQCB). The RWQCB would ensure compliance with CWA Section 401.

4.4.2.4 Regional and Local

Significant Ecological Areas in Los Angeles County

The Los Angeles County General Plan policy promotes the conservation of Significant Ecological Areas (SEAs) in as viable and natural a condition as possible, without prohibiting development. SEAs are not preserves but rather areas where the county deems it important to facilitate a balance between new development and resource conservation. Projects potentially impacting an SEA are reviewed by a Technical Advisory Committee appointed by the county. The SEA program is a resource identification tool used to conserve and manage the county's valuable biological resources and habitat connectivity (Los Angeles County 2008).

Wetlands and Streams in Los Angeles County

The Los Angeles County General Plan includes policies requiring the restoration and preservation of degraded streams and wetlands (Policy OS 5.4), and the preservation of watercourses and wetlands in a natural state, unaltered by grading, filling, or diversion (Policy OS 5.8).

Los Angeles County Oak Tree Ordinance

The Los Angeles County Oak Tree Ordinance (Part 16 of Chapter 22.56) is intended to preserve and maintain healthy oak trees in the county. All oak trees whose trunks measure 25 inches or more in circumference (8 inches in diameter) are legally protected from being damaged or removed. This ordinance applies to all trees of the oak genus, including the Valley and Coast Live Oak. The county also intends to amend the Oak Tree Ordinance via implementation action C/OS 4.5 to protect oak trees from grading to a 10-foot radius from the drip line of a protected oak tree.

City of Los Angeles Protected Tree Regulations

The City of Los Angeles Protected Tree Regulations (Municipal Code Chapter 4, Article 6, Section 46) prohibits destruction of the Valley oak (*Quercus lobata*), California live oak (*Quercus agrifolia*), and any tree of the oak genus indigenous to California that measures 8 inches or more in diameter at a height of 4.5 feet above the ground (Ordinance No. 153,478). It excludes scrub oaks (*Quercus dumosa*, also known as *Quercus herberidifolia*) and nursery grown oaks. The Department of Public Works enforces the ordinance. The Department of City Planning may authorize removal or relocation of oaks relative to subdivision permits. The Department of Public Works, as the primary enforcement agency, has the authority to approve relocation or removal under certain circumstances, such as public endangerment.

City of Santa Clarita Oak Tree Policies

The City of Santa Clarita requires the preservation of all healthy oak trees unless compelling reasons justify the removal of such trees. This policy applies to the removal, pruning, cutting, and/or encroachment into the protected zone (drip line) of oak trees. On single family residence properties, trees above 12.5 inches circumference are protected. On all other properties, trees above 6 inches circumference are protected (measured at 4.5 feet above grade).

The City of Santa Clarita also offers additional protections to heritage oak trees, which are trees with a main trunk of 108 inches or more, or two trunks each measuring 72 inches or more (measured at 4.5 feet above grade).

Ventura County Tree Protection Regulations

The County of Ventura Tree Protection Regulations (Section 8107-25) require responsible management of “Protected Trees.” According to Section 8107-25-7, a Discretionary Tree Permit may be approved if “the cumulative number of trees to be felled or removed from the site number four (4) or more oak or sycamore trees and their continued existence in their present form and/or location denies reasonable access to the subject property and/or the approved construction, maintenance, or use in a manner permitted by the zoning on said property.” Single trees with a girth of 9.5 inches or a group of trees with at least one girth of 6.5 inches are protected.

4.4.3 Methodology and Significance Criteria

Potential impacts on biological resources were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the CEQA Guidelines. The proposed project would cause a significant impact on biological resource if it would:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the ~~CDFG~~CDFW or USFWS;

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the ~~CDFG~~CDFW or USFWS;

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means (this impact is addressed Section 4.9, “Hydrology and Water Quality”);

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

Appendix G of the CEQA Guidelines also includes the following checklist item:

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

No Habitat Conservation Plans or Natural Community Conservation Plans are in place in the areas of any of the proposed project components. Portions of the proposed project occur in Santa Susana Mountains SEA #20 (see Figure 4.10-1 in Section 4.10, "Land Use and Planning") in Los Angeles County; potential impacts on the SEA are discussed below under Impact BR-2. Therefore, this item is not applied as a criterion in the analysis of environmental impacts presented in the following section.

4.4.4 Environmental Impacts and Mitigation Measures

4.4.4.1 EIR Public Scoping Comments

Comments from agencies during the Environmental Impact Report (EIR) scoping period addressing biological resources were received from the ~~CDFG~~CDFW and the USFWS. Comments from the ~~CDFG~~CDFW primarily addressed wildlife and plant surveys that would be required to determine project impacts; the importance of including an appropriate range of alternatives in the EIR that would avoid or otherwise minimize impacts to sensitive biological resources, including wetlands/riparian habitats, alluvial scrub, and coastal sage scrub; and the protection of wetlands (watercourses and drainages). Comments from the USFWS addressed project impacts on coastal sage scrub habitat for coastal California gnatcatcher and least Bell's vireo; and project impacts to special status plant species, including San Fernando Valley spineflower and Braunton's milk-vetch. More detail regarding public scoping comments is presented in Appendix B.

4.4.4.2 Wildlife Agency Coordination

After public scoping, the CPUC contacted the ~~CDFG~~CDFW and USFWS directly, in order to confirm biological resources of regulatory concern as well as refine appropriate mitigation for project impacts (Blankenship and Dellith 2011). Representatives of the wildlife agencies confirmed that sensitive species and habitat such as raptors and nesting birds, including the coastal California gnatcatcher; designated critical habitat for coastal California gnatcatcher; riparian vegetation and wildlife; and wetlands should be addressed in the EIR, and mitigation measures appropriate to the nature of the project and project disturbance should be applied. Agency representatives recommended that protocol level surveys for coastal California gnatcatcher be completed, appropriate buffers between active nests and construction activities be established and monitored, impacts related to disturbance to birds from construction noise be addressed, and restoration of disturbed critical habitat for coastal California gnatcatcher appropriate to project impacts be considered in the EIR.

4.4.4.3 Applicant Proposed Measures

The applicant has committed to the following applicant proposed measures (APMs) as part of the design of the proposed project. See Section 2.5, "Plans and Applicant Proposed Measures," Table 2-8, for a full description of each APM.

Biological Resources:

- **APM BR-1a: Preconstruction Surveys.**
- **APM BR-1b: Exclusionary Fencing.**
- **APM BR-1c: Nesting Bird Surveys.**
- **APM BR-1d: Construction Monitoring.**
- **APM BR-2: Designated Work Zones and Sensitive Resource Avoidance.**

- **APM BR-3: Post-Construction Restoration for Reconductoring.**
- **APM BR-4: Preconstruction Gnatcatcher Surveys.**
- **APM BR-5: Exclusionary Fencing.**
- **APM BR-6: Biological Monitoring.**
- **APM BR-7: Wildlife Relocation and Protection.**
- ~~**APM BR-8: Inspection of Open Trenches.**~~
- ~~**APM BR-9: Oak Tree Impact Avoidance.**~~

Air Quality:

- **APM AQ-3: Minimization of Disturbed Areas.**
- **APM AQ-4: Watering Prior to Grading and Excavation.**

Geology, Soils, and Mineral Resources:

- **APM ~~GE-3~~ GE-2: Erosion and Sediment Control.**

Hazards and Hazardous Materials:

- **APM HZ-6: Worker Environmental Awareness Training.**

4.4.4.4 Impacts Analysis

The potential impact on biological resources from construction and operation of the proposed project is presented in this section. Impacts on biological resources resulting from the construction and operation of the proposed project can be characterized as direct or indirect, and temporary or permanent. Direct impacts occur during the course of, and are the direct result of, project construction and operation. Indirect impacts are secondary impacts that may occur later in time or farther from direct impacts. Permanent impacts are irreversible, such as habitat loss due to clearing and development. Temporary impacts are short in duration and/or reversible with the implementation of MMs, such as habitat loss mitigation by habitat restoration.

Impact BR-1: **Substantial adverse direct or indirect effect on special status species.**
LESS THAN SIGNIFICANT WITH MITIGATION

Special Status Species Habitat

Construction and operation of the proposed project would result in impacts on the habitats of several special status plant and wildlife species. Direct impacts include removal or physical modification of habitat, while indirect effects on habitat would result from increased construction and operation noise and increased human presence in proximity to occupied habitat. The nature and frequency of project operations and maintenance activities would be similar to the existing baseline, which includes gas storage facility operations and periodic inspection, testing, or repair of transmission and fiber optic lines. Impacts on habitats including coast live oak woodlands, California walnut woodlands, riparian woodland, and Venturan Coastal Sage Scrub, are discussed under Impact BR-2.

Coastal California Gnatcatcher Habitat (Including Critical Habitat)

Portions of the 66-kV subtransmission line, the storage field, the proposed Natural Substation site, and Telecommunications Route #2 are within USFWS-designated critical habitat (Figure 4-4.2) and other areas of suitable habitat for the coastal California gnatcatcher. Direct permanent impacts on coastal California gnatcatcher habitat would result from construction of the proposed Natural Substation, clearing of vegetation for access roads, and installation of structures related to the 66-kV subtransmission line and telecommunications routes. Direct temporary impacts on coastal California gnatcatcher habitat would result from trimming and clearing of vegetation; fugitive dust deposition, which reduces plant photosynthesis; and excavation of soils, which can suffocate and/or damage plants' roots. Indirect impacts on coastal California gnatcatcher habitat could occur as a result of increased noise and human activity near occupied habitat.

Areas of potential project construction-related impacts on coastal California gnatcatcher critical habitat were calculated by layering project components with conservative buffers of impact over designated critical habitat using the geographic information systems software ArcGIS. The results of the impact calculations were adjusted for areas where individual buffers overlapped.

A summary of potential areas of direct impacts on designated coastal California gnatcatcher habitat by project component is presented in Table 4.4-5. For linear project components (the 66-kV subtransmission line and the telecommunications routes), any and all supporting structures may be removed, and the location of new supporting structures to be installed would not be determined prior to final project engineering; therefore, 50-foot buffers on either side of the subtransmission line or telecommunications route were applied to determine the areas in which impacts could take place. Although project work may take place anywhere within the proposed project component areas shown in Table 4.4-5, the actual area of impact would be smaller than that shown in the table. (No coastal California gnatcatcher habitat is present in the area of Telecommunications Route #3 or Telecommunications Route #4.)

Table 4.4-5 Areas of Potential Impact on Coastal California Gnatcatcher Critical Habitat by Project Component

Project Component	Estimated Potential Temporary Impact Area (acres)[1,2]	Estimated Permanent Impact Area (acres)
Storage Field	0.0	0.0
Proposed Natural Substation	1.0	1.0
66-kV Subtransmission Line/Telecommunications Route #1	36.7	3.2
Telecommunications Route #2	37.6	3.7
Total	75.3	7.9

Key:
kV = kilovolt
Notes:
[1] Includes buffer of 50 feet on either side of the line.
[2] Construction-related impacts only.

Indirect impacts, which could occur as a result of increased noise and human presence, could occur in areas of habitat during construction and maintenance activities, which would take place over short-term periods. Indirect impacts could extend into areas adjacent to project activities (e.g., up to several hundred feet from project activities in some cases).

Construction of the proposed project components within the storage field would occur in highly disturbed areas consisting primarily of roads and built structures. Therefore, although designated coastal California gnatcatcher critical habitat is present within the storage field area, no impact on this habitat within the storage field is anticipated. Construction of the proposed Natural Substation would require grading and vegetation removal in an area that primarily includes non-native grassland and developed roads; however, some Venturan Coastal Sage Scrub is also present in this area. Direct temporary and permanent impacts on approximately 1 acre of coastal California gnatcatcher habitat would result in the area of the proposed Natural Substation. Operational activities at the proposed Natural Substation that would result in increased noise and human presence could result in indirect impacts on surrounding critical habitat; however, these impacts would be temporary in nature and short in duration. Therefore, the impact would be less than significant.

Removal of existing 66-kV subtransmission line support structures and installation of new structures within coastal California gnatcatcher habitat could result in temporary, direct impacts within up to 36.7 acres, and permanent, direct impacts on up to 3.2 acres of critical habitat for this species. Permanent impacts would occur in the location of the structures to be removed and installed, while temporary impacts could occur in the work areas surrounding structures. Permanent impacts would be smaller in extent than temporary impacts.

Work on Telecommunications Route #2, which would include removal and installation of support structures, grading, and alteration or creation of access roads could result in temporary, direct impacts within up to 37.6 acres of coastal California gnatcatcher critical habitat, and permanent, direct impacts on up to 3.7 acres of coastal California gnatcatcher critical habitat. Permanent impacts would occur in the locations of the structures, while temporary impacts would occur in the work areas surrounding the structures.

Temporary impacts could occur during routine maintenance procedures in the areas surrounding subtransmission line and telecommunication route structures. Maintenance activities that could result in increased human presence and noise could result in indirect impacts on surrounding critical habitat. These impacts would be temporary in nature, short in duration, and similar to current maintenance activities that take place along the existing route.

The proposed project would result in temporary, direct impacts within up to 75.3 acres of coastal California gnatcatcher critical habitat, and permanent, direct impacts on up to 7.9 acres of coastal California gnatcatcher critical habitat, all of which is located in areas of project components that would be undertaken by Southern California Edison (SCE). As discussed previously, the estimate of area that would be subject to temporary direct impacts is a very conservative approximation of the area in which project activities could occur, and is larger than the area that would ultimately be affected by these temporary impacts. In total, approximately 197,303 acres across San Diego, Orange, Riverside, San Bernardino, Los Angeles, and Ventura Counties are designated critical habitat for coastal California gnatcatcher (DOI 2007).

The applicant has committed to the following APMs that would minimize impacts on critical habitat and thus indirect impacts on coastal California gnatcatcher: APM BR-2, APM BR-3, APM BR-4, APM BR-5, APM BR-6, APM AQ-3, APM AQ-4, ~~APM GE-3~~, <u>APM GE-2,</u> and APM HZ-6. Implementation of APM BR-4 would ensure that, in the event that coastal California gnatcatcher are observed in pre-construction surveys, a buffer of 500 feet from any active nest will be flagged and maintained by a biological monitor. This distance is sufficient such that construction-related noise impacts on coastal California gnatcatcher would be reduced to a less than significant level. However, because the total areas of impact on critical habitat within the routes for the 66-kV subtransmission line and Telecommunications Route #2 are unknown, impacts on coastal California gnatcatcher critical habitat are potentially significant.

To ensure that impacts on USFWS-designated critical habitat and other appropriate coastal California gnatcatcher habitat are reduced to less than significant under this criterion the applicant and SCE (as the applicant's designated representative for certain project components) would commit to the following MMs:

MM BR-1: Trimming of Vegetation. In order to minimize the removal of vegetation in areas of habitat for the coastal California gnatcatcher, for the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas, SCE will ensure that trimming of all native vegetation, riparian vegetation, and vegetation that provides potential habitat for coastal California gnatcatcher will be ~~performed by a certified arborist or a person with a minimum of 6 years' regional expertise in trimming trees/shrubs in this area and who has worked under a certified arborist~~monitored by a qualified biologist. Trimming of native trees and native arborescent shrubs will be monitored by a qualified arborist.

MM BR-2: Minimize Removal of Venturan Coastal Sage Scrub. For the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas, SCE will minimize the removal of Venturan Coastal Sage Scrub associations, particularly within designated critical habitat for the coastal California gnatcatcher. Prior to construction and for each of these project areas, SCE will:

1. Ensure that a survey of vegetation and estimate of the total area of intact Venturan Coastal Sage Scrub is completed by a qualified botanist familiar with this vegetation association.
2. Avoid removal of more than 10 percent of intact Venturan Coastal Sage Scrub within a single project area. "Project Areas" are defined as:
    a. Storage field project components (including the proposed Natural Substation): areas of ground disturbance during construction;
    b. Access and other roads that would be constructed/modified: 300 linear feet, with a 100-foot buffer on either side of the road; and
    c. 66-kV line and Telecommunications Route #2: for each pole, a 100-foot radius around the base, plus 100 feet along each extent of the linear ROW beyond the 100-foot radius area.
3. Ensure that areas of intact, contiguous Venturan Coastal Sage Scrub shall not be reduced below a 2-acre threshold.

In the event that ~~the applicant~~ SCE wishes to remove more than 10 percent of intact Venturan Coastal Sage Scrub within a single project area, or where intact, contiguous areas of Venturan Coastal Sage Scrub may be reduced below a 2-acre threshold, SCE ~~the applicant~~ will compensate for this loss through the restoration and/or creation of Venturan Coastal Sage Scrub habitat per ~~the applicant's~~ SCE's Habitat Restoration Plan for Venturan Coastal Sage Scrub, at a minimum ratio of 2:1 (for example, 2 acres of Venturan Coastal Sage Scrub created or restored for every 1 acre impacted).

MM BR-3: Habitat Restoration Plan for Venturan Coastal Sage Scrub. Prior to construction of the proposed project, and with the coordination and review of USFWS and ~~CDFG~~CDFW, the applicant and SCE will prepare a habitat restoration plan for Venturan Coastal Sage Scrub associations for the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas. The restoration plan will be prepared by a qualified botanist familiar with this vegetation association. Per the requirements of MM BR-2, Venturan Coastal Sage Scrub habitat occurring in these work areas will be identified and quantified; surveys (including vegetation maps) and quantification of Venturan Coastal Sage Scrub habitat will be included in the restoration plan. Restoration will occur at a minimum ratio of 0.5:1 (0.5 acres of Venturan Coastal

Sage Scrub created or restored for every 1 acre impacted during project construction), and may be completed by:

1. Establishing Venturan Coastal Sage Scrub habitat within the project areas (onsite);
2. Establishing Venturan Coastal Sage Scrub habitat outside the project areas (offsite); or
3. Purchase of credits and/or mitigation lands at a ratio above 0.5:1 from an entity reviewed and approved by the USFWS and/or ~~CDFG~~CDFW.

Details of the restoration plan will be finalized pending consultation between the applicant, SCE, USFWS, and ~~CDFG~~CDFW. For Options 1 and 2 (establishing Venturan Coastal Sage Scrub onsite or offsite), the plan will include the following elements: planting/seeding palettes; monitoring and contingency program; monitoring schedule, including duration and performance criteria (a minimum of 80 percent successful plant establishment after a minimum of three years); and any specific measures that will be required to ensure success of the restoration effort.

MM BR-4: Restriction of Vehicular Traffic. The applicant and SCE will ensure that, in all project construction areas, vehicular traffic (including movement of all equipment) is restricted to established access roads indicated by flagging and signage. All access roads that are not otherwise assigned official speed limits will be restricted to a speed limit of a maximum of 20 miles per hour.

Special Status Species

Construction of the proposed project components would result in impacts on individuals of several special status species. Because the nature and frequency of project operations and maintenance activities would be similar to the existing baseline, which includes gas storage facility operations and periodic inspection, testing, or repair of transmission and fiber optic lines, operation of the proposed project components is not anticipated to result in impacts on special status species.

Special Status Amphibians and Reptiles

Construction of the proposed project components could result in impacts on individuals of two special status amphibian species: Coast Range newt, which surveys have shown is present in Limekiln Canyon (within the storage field); and western spadefoot, which is likely to occur in some proposed project component areas. Construction of the proposed project components could result in impacts on individuals of four special status reptile species: coast horned lizard (present within the area of the 66-kV subtransmission line route, and likely to occur throughout the proposed project component areas), silvery legless lizard (likely to occur throughout the proposed project component areas), two-striped garter snake (present within the storage field in Limekiln Canyon Wash, and likely to occur throughout the proposed project component areas), coastal whiptail (likely to occur along Telecommunications Route #4), and western pond turtle (likely to occur throughout the proposed project component areas). Direct impacts on these reptiles could result from ground disturbance and vehicular traffic adjacent to Limekiln Canyon and in the vicinity of other riparian areas in the proposed project component areas. Construction activities and ground disturbance in upland areas that would remove woody debris (particularly in oak woodlands) or disturb ground burrows could also directly impact these reptiles. Direct impacts would include mortality, energetic interference, and lowered reproductive success. With the implementation of APM BR-2, APM BR-5, APM BR-6, APM AQ-3, ~~APM GE-3,~~ APM GE-2, and APM HZ-6, impacts on these species would be reduced; however, impacts on special status amphibian and reptile species could still occur in wetland areas. The applicant and SCE would commit to the following MM for all proposed project components to ensure that impacts on these species are reduced to less than significant under this criterion.

MM BR-5: Impacts on Hydrologic Features. Prior to project construction, for all proposed project components in the vicinity of hydrologic features, the applicant and SCE will:

1. Complete formal delineations per USACE protocols to confirm and determine the extent of jurisdictional wetlands present in the proposed project areas;
2. Consult with the USACE and ~~CDFG~~CDFW to determine whether CWA Section 404 permits and California Department of Fish and Game Code Section 1600 Streambed Alteration Agreements are necessary for the proposed project, apply for these permits as needed, and determine the area of fill that would require compensation;
3. Commit to compensatory mitigation for any wetland fill per any required permits and in consultation with USACE and ~~CDFG~~CDFW (wetland fill requiring mitigation will be compensated for at a minimum ratio of 0.5:1, or 0.5 acres of wetland creation or restoration for every 1 acre of wetland fill caused by the proposed project); and
4. Ensure that biological monitors establish and maintain a minimum exclusionary buffer of 50 feet from the delineated extent of all jurisdictional wetland features during project construction.

Construction of any proposed project component that requires altering, removing, or filling the bed or bank of seasonal drainages, or other jurisdictional or potentially jurisdictional water features, and/or cannot maintain the 50-foot exclusionary buffer, will be performed only when water is not present in the feature.

Special Status Birds

Several special status bird species are present or likely to be present throughout the proposed project component areas and may use trees, shrubs, human-made structures, or the ground for nesting (dependent upon the species). Special status bird species likely to nest in the proposed project area include: coastal California gnatcatcher, golden eagle, least Bell's vireo, loggerhead shrike, northern harrier, olive-sided flycatcher, ~~southwestern willow flycatcher,~~ western burrowing owl, white-tailed kite, yellow-breasted chat, and yellow warbler. Numerous other birds may nest in the proposed project area and are protected under the MBTA and other laws. All construction activities and traffic related to the proposed project would have the potential to cause adverse impacts on MBTA-protected birds and nesting birds. Vaux's swifts are migrants through the proposed project component areas and would not likely nest in the proposed project area. Therefore, no impacts on nesting Vaux's swifts are anticipated under this criterion.

Direct impacts on nesting birds could result from habitat loss and from construction noise, vibration, and human disturbance. During the nesting season, these direct impacts could include mortality due to vehicular collision, nest loss due to habitat removal, and nest failure and abandonment due to habitat loss or other construction disturbance. With the implementation of APM BR-1a, APM BR-1b, APM BR-1c, APM BR-1d, APM BR-2, APM BR-4, APM BR-6, ~~APM BR-7, APM BR-8,~~ APM AQ-3, and APM HZ-7, disturbance to nesting birds would be avoided and minimized, and direct impacts on nesting birds would be less than significant without mitigation under this criterion.

Direct impacts on birds could also result from collision with subtransmission line structures and electrocution on transmission lines. Transmission line electrocution results from the interaction of avian behavior with structure design. Birds, particularly raptors, are opportunistically attracted to transmission lines because they provide perch sites for hunting, resting, feeding, or territorial defense, or serve as nesting structures. Many standard designs of electrical industry hardware place conductors and groundwires sufficiently close that raptors can touch them simultaneously with their wings or other body parts, causing electrocution. Raptors and other birds may also collide with transmission lines or poles, which can be difficult for birds to detect when flying at night, during inclement weather conditions, or for other reasons. Birds common in the proposed project component areas are already habituated to the existing gas facility and transmission structures within the proposed project areas. Additionally, transmission structures would predominantly be replaced within the same locations, and work related to removal and replacement of transmission structures would be temporary in nature.

Strategies to avoid conflicts between birds and new transmission lines are described by the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC). The APLIC (2006) characterizes potential impacts as follows:

> *Birds are generally electrocuted by transmission lines due to environmental factors such as topography, vegetation, available prey and other, behavioral or biological factors that influence avian use of power poles. Inadequate separation between energized conductors or energized conductors and grounded hardware can provide two points of contact. Most electrocutions occur on medium-voltage distribution lines (4-34.5 kV), in which the spacing between conductors may be small enough to be bridged by birds. Poles with energized hardware, such as transformers, can be especially hazardous, even to small birds, as they contain numerous, closely-spaced energized parts.*
>
> *"Avian-safe" structures are those that provide adequate clearances to accommodate a large bird between energized and/or grounded parts. Consequently, 60 inches of horizontal separation, which can accommodate the wrist-to-wrist distance of an eagle (which is approximately 54 inches), is used as the standard for raptor protection. Likewise, vertical separation of at least 48 inches can accommodate the height of an eagle from its feet to the top of its head (which is approximately 31 inches). Because dry feathers act as insulation, contact must be made between fleshy parts, such as the wrists, feet, or other skin, for electrocution to occur. In spite of the best efforts to minimize avian electrocutions, some degree of mortality may always occur due to influences that cannot be controlled, e.g. weather.*

Because new conductors would be installed on subtransmission lines, direct impacts on birds from construction and operation of the proposed project are potentially significant. The applicant would commit to MM BR-6 to reduce impacts on raptors to less than significant under this criterion.

MM BR-6: Avian Safe Building Standards. The applicant and SCE will design all transmission structures installed as part of the proposed project to be consistent with the *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (APLIC 2006).

Direct and indirect impacts on nesting and special status birds could result from habitat modifications including vegetation trimming, vegetation clearing, and other ground-disturbing project-related activities. A discussion of impacts on sensitive habitats that support special status birds is detailed under Impact BR-2. With the implementation of APM BR-2, APM BR-3, APM BR-4, APM BR-5, APM BR-6, APM BR-7~~8~~, APM AQ-3, and ~~APM GE-3,~~ APM GE-2, impacts related to modification of habitat would be reduced. To ensure that impacts to special status species habitats are further reduced to less than significant under this criterion, the applicant would also commit to MM BR-1, MM BR-2, MM BR-3, MM BR-4, MM-BR-5, MM BR-6, MM BR-7, and MM BR-8~~7~~:

MM BR-7: Avian Protection Plans. At least three months p~~P~~rior to construction, the applicant and SCE will develop and implement avian protection plans according to Avian Protection Plan (APP) Guidelines (APLIC & USFWS 2005). The avian protection plans will include provisions to reduce impacts on avian species during construction and operation of the proposed project, and will provide for the adaptive management of project-related issues. The Avian Protection Plans will be reviewed and approved by the ~~CDFG~~ CDFW and USFWS prior to construction.

MM BR-8: Nesting Bird Management Plans. In order to address potential conflicts between construction activities and the activities of nesting birds in the project component areas, the applicant and SCE will develop and implement Nesting Bird Management Plans in consultation with USFWS, CDFW, and CPUC staff and will submit them to CPUC staff at least three months prior to construction. The Nesting Bird Management Plans will include measures and an adaptive management program to avoid and minimize impacts to special-status and MBTA-protected bird species during nesting periods during project construction. The Nesting Bird Management Plans will include:

- Guidelines for determining appropriate and effective buffer distances that will account for specific project settings, bird species, stage of nesting cycle, and construction work type;
- Language specifying that the determination of appropriate and effective buffers between construction activities and identified nests will be site- and species-/guild-specific and data-driven, and not based on generalized assumptions regarding all nesting birds;
- Language specifying that determinations regarding appropriate and effective buffers between construction activities and identified nests can be made in the project construction area by the CPUC staff-approved biological monitor, if that monitor is appropriately qualified per standards that will be included in the Nesting Bird Plans. These standards will include requirements for years of experience conducting biological surveys, years of experience with specific bird species identified within the project area, and educational degree and experience.

Coastal California Gnatcatcher

Coastal California gnatcatcher was not observed in the areas of the proposed project components during protocol level surveys. However, surveys for coastal California gnatcatcher have not been performed along extensive portions of Telecommunications Route #2. Therefore, presence of coastal California gnatcatcher in those areas cannot be determined from the information currently available. Direct, project-related impacts on coastal California gnatcatcher could result from vehicular collision and nest failure/abandonment due to noise and human presence. Indirect impacts on coastal California gnatcatcher could result from habitat modifications such as trimming and clearing of vegetation; fugitive dust deposition, which reduces plant photosynthesis; and excavation of soils, which can damage plant roots. With the implementation of APM BR-4 and APM BR-5, direct impacts on coastal California gnatcatcher would be avoided because the applicant would conduct protocol-level clearance surveys in suitable habitat for this species prior to construction activities, maintain a 500-foot buffer from active nests, and perform work outside the breeding season in areas of intact, suitable gnatcatcher habitat. With the implementation of APM BR-2, APM BR-5, and APM BR-6~~, and APM BR-8~~, areas of sensitive habitat would be avoided during construction, and indirect impacts on coastal California gnatcatcher would be reduced. The applicant would also commit to MM BR-1, MM BR-2, MM BR-3, and MM-BR-4, which would address project-related impacts on habitat for the coastal California gnatcatcher. With the implementation of these APMs and MMs, impacts on coastal California gnatcatcher would be reduced to less than significant.

California Condor

No nesting California condors have been identified in the areas of the proposed project components, although these birds may fly over the proposed project areas at high elevations (1,800 to 2,500 feet) (Figure 4.10-1) (CNDDB 2011; Dellith 2011). Direct impacts on condors could result from construction noise and human presence. During the nesting season, these direct impacts could include mortality of adults and/or chicks, hunting and energetic interference, nest failure and/or abandonment, or otherwise lowered reproductive success. The potential for these impacts to occur is low because no active California condor nests have been identified in the proposed project component areas, and suitable nesting substrate is limited in these areas. Project operations and maintenance could result in direct impacts on condors that fly over the proposed project component areas associated with subtransmission lines and structures. Direct impacts could include injury and/or mortality due to collision with or electrocution from transmission lines and associated structures. The risk of collisions and electrocution is low because the proposed project components would primarily be constructed in the footprints and ROW of existing infrastructure to which individuals are likely habituated, and any condors would be likely to be well above the proposed project component areas during normal flyovers. According to the USFWS, reintroduced birds have been trained to avoid transmission lines:

> *Beginning in 1992, the Service began reintroducing captive-bred condors to the wild to reestablish a wild population of these endangered birds. In the early years of the reintroduction effort some problems occurred, including five condor mortalities due to collisions with power lines. Experts involved with the Recovery Program worked to address these problems and made several changes in the rearing methods used. Among the most successful changes was the initiation of a power pole aversion training program for all releasable condors. This training involves the use of a mock power pole placed inside the flight pen where the young condors are kept until transferred to a release site. The power pole emits a small electrical charge whenever a condor attempts to land on it. The young birds quickly learn to avoid perching on these and will, instead, opt to use appropriate natural perches available inside the flight pen. This program has greatly reduced condor mortalities from power line collisions* (USFWS 2010b).

Current data on condor mortalities from collision and electrocution in the project component areas are incomplete (Dellith 2011), and it is currently unknown to what extent such incidents would impact any breeding population of California condors. However, mortality resulting from collision or electrocution of condors is considered potentially significant. With the implementation of APM BR-1a, APM BR-1b, APM BR-1c, and APM BR-1d, any nesting condors in close proximity to the areas of the proposed project components would be identified. The applicant would also commit to MM BR-6 and MM BR-7, which would ensure that the proposed project components would be constructed according to avian safe building standards as well as the preparation of avian protection plans. With the implementation of these MMs, potential direct impacts on condors would be reduced to less than significant under this criterion.

Construction of the proposed project is not anticipated to result in significant indirect impacts on foraging California condors. Construction would occur primarily in already disturbed areas outside prime foraging areas (Dellith 2011) and therefore would not result in a significant loss of foraging habitat. During construction, some areas suitable for California condor foraging (particularly along Telecommunications Route #2) would be temporarily disrupted by construction noise and human activity. The implementation of APM BR-2, APM BR-3, APM BR-5, APM BR-6, ~~APM BR-8,~~ APM AQ-3, ~~APM GE-3,~~ APM GE-2, and APM HZ-6 would address these impacts through avoidance of sensitive habitat and restoration of areas disturbed by project construction. With the implementation of these APMs, indirect impacts on foraging California condors would be less than significant without mitigation under this criterion.

Least Bell's Vireo ~~and Southwestern Willow Flycatcher~~

~~Neither least~~ Least Bell's vireo ~~nor southwestern willow flycatcher were~~ was not observed in the proposed project component areas during reconnaissance surveys. However, protocol-level surveys were not conducted for ~~these two~~ this species, and portions of the proposed project component areas comprise suitable riparian habitat ~~for individuals of both species~~ (see Figure 4.4-3 and Appendix D). Direct impacts on individuals ~~of both species~~ could result from vehicular collision and nest failure/abandonment due to noise and human presence during construction. Indirect impacts ~~on these birds~~ could result from habitat modifications through vegetation trimming, clearing of vegetation, and other ground-disturbing activities. Because least Bell's vireo has high nest tree fidelity, birds of this species would be likely to experience impacts if they are present in trees that would be trimmed during project construction. Impacts related to habitat modifications would be addressed under APM BR-2, APM BR-3, APM BR-5, APM BR-6, ~~APM BR-8~~, APM AQ-3, ~~APM GE-3,~~ APM GE-2, and APM HZ-6. In order to reduce impacts on least Bell's vireo ~~and southwestern willow flycatcher~~ to less than significant, the applicant would also commit to MM BR-~~8~~9:

MM BR-~~8~~9: Pre-Construction Surveys for Least Bell's Vireo~~ and Southwestern Willow Flycatcher~~. Prior to construction, the applicant and SCE will complete protocol-level surveys for least Bell's vireo ~~and southwestern willow flycatcher~~ in areas of suitable or potentially suitable habitat in the proposed project component areas. Surveys will be completed by a permitted biologist(s) according to the survey protocol for least Bell's vireo (USFWS 2001) ~~and southwestern willow flycatcher (Sogge et al. 2010)~~. Whenever least Bell's vireo ~~or southwestern willow flycatcher~~ territory or nest sites are confirmed, the applicant and/or SCE will notify the USFWS and ~~CDFG~~CDFW immediately upon return from the field. In the event that any least Bell's vireos ~~or southwestern willow flycatchers~~ or their nests are observed, biologists will establish and maintain a minimum 500-foot exclusionary buffer by installing temporary flagging or fencing between the nest site and construction activities. Federal endangered species recovery permits are not required for least Bell's vireo surveys~~, but are required in all USFWS regions where the southwestern willow flycatcher breeds (application forms can be downloaded at http://www.fws.gov/forms/3-200-55.pdf)~~. State survey permits also may be required from the ~~CDFG~~CDFW ~~for both species~~.

Golden Eagle

No nesting golden eagles have been identified in the proposed project component areas (CNDDB 2011); however, golden eagles are likely to occur and could nest within or near these areas. Direct impacts on nesting golden eagles could result from habitat loss, and temporary direct impacts could result from construction noise and human presence. During the nesting season, these direct impacts could include mortality of adults and/or chicks, avoidance of certain habitats, altered behaviors, nest failure and/or abandonment, or otherwise lowered reproductive success. Nesting eagles may experience physiological changes, such as increased stress hormones, with an absence of overt behavioral changes due to human presence. Thermal and metabolic stress on adults, eggs, and chicks would compromise reproductive success. Potential for this impact to occur is low because no known active eagle nests have been located in the proposed project component areas. With the implementation of APM BR-1a, APM BR-1b, APM BR-1c, and APM BR-1d, any golden eagle nesting within 300 feet of a proposed project component area would be identified. With the implementation of APM BR-2, APM BR-3, APM BR-5, APM BR-6, ~~APM BR-8~~, APM AQ-3, and APM HZ-6, the potential for direct and indirect impacts on nesting golden eagles would be reduced. In the event that an active golden eagle nest is found near a proposed project component area and has the potential to be affected by project construction activities, then construction of the proposed project could result in potentially significant direct and indirect impacts. To reduce potential impacts to a less than significant level, the applicant would commit to the following MM:

MM BR-~~9~~10: Nesting Golden Eagle. Nesting surveys for golden eagles will be completed per the most recent USFWS survey guidelines by the applicant and SCE prior to project construction and will include areas within 660 feet of proposed project components located within suitable golden eagle nesting habitat. If surveys identify nesting golden eagles within 660 feet of the proposed project component areas, the applicant and SCE will ensure that all construction activities within 660 feet of the nest occur outside of the nesting season (January through June, subject to adjustment based on field observations). The nest will be monitored from outside the 660-foot buffer by a qualified raptor ecologist with demonstrated experience monitoring eagles and knowledge of normal eagle nesting behavior. In the event that the raptor ecologist observes abnormal behavior or notes any sign of potential disturbance to the nesting birds, the ecologist will ensure that work will be stopped within 1,320 feet of the nest. Work can continue within the buffered area(s) after the raptor ecologist determines that the chicks have fledged and the nest is not active for the season. In the event that golden eagle nests are identified on structures to be removed or modified, the structures will be left in place pending consultation with the USFWS and ~~CDFG~~CDFW.

Construction of the proposed project is not anticipated to result in significant indirect impacts on foraging golden eagles. Potential foraging areas would be temporarily disrupted during construction. With the implementation of APM BR-2, APM BR-3, ~~APM BR-8,~~ and APM AQ-3, impacts on potential golden eagle foraging habitat would be minimized. Therefore, the indirect impacts on foraging eagles would be less than significant without mitigation under this criterion.

Project operations and maintenance could result in direct impacts on golden eagles that inhabit or migrate through the proposed project area. Direct impacts could include injury and/or mortality due to collision with or electrocution from transmission lines and associated structures. The risk of collisions and electrocution is low because the proposed project components would primarily be constructed in the footprints and ROW of existing infrastructure to which individuals are likely habituated. Due to a lack of current data on eagle mortalities from collision and electrocution in the proposed project component areas, it is currently unknown to what extent such incidents would impact any breeding population of golden eagles in the proposed project component areas. Therefore, impacts from operations and maintenance are potentially significant. The applicant would commit to MM BR-6 and MM BR-7 to reduce potential impacts from project operation on eagles to less than significant with mitigation under this criterion.

Special Status Mammals

Bats

Direct impacts on pallid bats could result from construction noise, human activity, and removal or trimming of roost trees when the bats are present. Direct impacts would include interruption of normal behavior, energetic interference, and lowered reproductive success. With the implementation of APM BR-2, APM BR-3, APM BR-5, APM BR-6, ~~APM BR-8~~, APM AQ-3, ~~APM GE-3,~~ APM GE-2, and APM HZ-6, direct impacts on bats would be avoided and minimized. Therefore, direct impacts on pallid bats would be less than significant without mitigation under this criterion. Indirect impacts from construction on pallid bats would result from modification of oak woodlands via tree removal and trimming. These impacts would be reduced through the implementation of APM BR-8. Further, the applicant would commit to MM BR-1 to ensure that impacts on pallid bat that may occur as the result of modification of habitat would be reduced to less than significant with mitigation under this criterion.

Direct and indirect impacts on western mastiff bats would result from construction noise and human activity near potential roosting locations. With the implementation of APM BR-2, APM BR-3, APM BR-5, APM BR-6, ~~APM BR-8~~, APM AQ-3, ~~APM GE-3,~~ APM GE-2, and APM HZ-6, direct impacts on western mastiff bats would be avoided and minimized. Therefore, impacts would be less than significant without mitigation under this criterion.

Operation and maintenance of the proposed project could result in impacts on both western mastiff bats and pallid bats. Foraging and feeding behaviors for both species could be affected by night lighting at the storage field. However, the bats are habituated to the existing facilities and associated lighting. Further, lighting would be directed downwards toward the ground, as discussed in Section 2.2, "Components of the Proposed Project." Therefore, impacts on western mastiff bats and pallid bats from operation and maintenance would be less than significant without mitigation under this criterion.

Other Mammals

Direct impacts on San Diego black-tailed jackrabbit and San Diego desert woodrat could occur as a result of grading, vegetation removal, excavation, construction noise, and human presence. Direct impacts could include mortality from collision with vehicles, energetic interference, and lowered reproductive success. Removal and modification of coastal scrub and chaparral communities throughout the proposed project component areas could result in indirect impacts on individuals of both species. Under APM BR-2, APM BR-3, APM BR-5, APM BR-6, APM AQ-3, and APM HZ-6, direct and indirect impacts on both species would be avoided and minimized. <u>To reduce potential impacts to a less than significant level, the applicant would commit to the following MM:</u>

> <u>**MM BIO-11: Cover Steep-walled Trenches or Excavations during Construction**. To prevent entrapment of wildlife, the applicant and SCE will ensure that all steep-walled trenches, auger holes, or other excavations will be covered at the end of each day or completely fenced off at night. For open trenches only, these may instead have earthen wildlife escape ramps within the trench maintained at intervals of no greater than 100 feet. These earthen ramps shall have a maximum slope not to exceed 2:1. The applicant's and SCE's biological monitor/s will inspect all trenches, auger holes, or other excavations a minimum of twice per day during non-summer months and a minimum of three times per day during the summer (hotter) months, and also immediately prior to back-filling. All non-special-status wildlife species found will be safely removed and relocated out of harm's way, through the use of suitable tools such as a pool net when applicable. For safety reasons, biological monitors will under no circumstance enter open excavations.</u>

Special Status Plants

Plummer's mariposa lily and slender mariposa lily populations are present along the 66-kV subtransmission line and in the storage field area. Operation of the proposed project is not anticipated to impact either species. Construction activities that disturb the ground in areas where the plants are located could result in mortality of individuals of these species. Direct impacts on slender mariposa lilies may occur during ground disturbance and construction at structures 57, 56, 55, 54, 53, 52, and 48 of the 66-kV subtransmission line. Fugitive dust generated from ground-disturbing activities could settle on Plummer's mariposa lily and slender mariposa lily leaves, as well as the leaves of other special status plants that may occur in the proposed project area. Fugitive dust deposition on a plant's leaves reduces the plant's ability to metabolize and can potentially cause mortality. With the implementation of APM AQ-3 and APM AQ-4, generation of fugitive dust would be reduced; thus, the potential for the generation of dust sufficient to result in mortality would be low. Additionally, the implementation of APM BR-1<u>a, APM BR-1b, APM BR-1c, APM BR-1d</u>, APM BR-2, APM BR-3, APM BR-5, APM BR-6, ~~APM BR-8~~, APM AQ-3, and APM HZ-6 would also reduce impacts on native and special status plants. To ensure that impacts on native and special status plants would be reduced to less than significant, the applicant would commit to MM BR-4 and MM BR-~~10~~<u>12</u>. MM BR-~~10~~<u>12</u> provides for compensatory mitigation of any special status plant species that would be removed or destroyed at a no net loss principle (defined below):

> **MM BR-~~10~~<u>12</u>: Restoration of Plummer's Mariposa Lily and Slender Mariposa Lily.** The applicant and SCE will complete pre-construction surveys during the appropriate blooming period to

identify Plummer's mariposa lily and slender mariposa lily populations in the proposed project component areas at the storage field and in the area of the 66-kV subtransmission line. Plummer's mariposa lily and slender mariposa lily plants will be identified by a qualified biologist and flagged or surrounded with fencing in such a way that disturbance of the populations will be avoided. In the event that populations or individuals of either species cannot be avoided, ~~restoration will occur. T~~the applicant and SCE will develop and implement ~~a~~ restoration plans for both plants which will be reviewed and approved by ~~CDFG~~CDFW prior to project construction. Restoration will occur after construction and to an extent such that "no net loss" (i.e., replacement of destroyed plants at a 1:1 ratio) is ensured for all plants of either species in the proposed project component areas. Restoration may be completed by:

1. Establishing Plummer's mariposa lily and slender mariposa lily plants within the proposed project areas (onsite);
2. Establishing Plummer's mariposa lily and slender mariposa lily plants outside the project areas (offsite); or
3. Purchase of credits and/or mitigation lands at a ratio above 1:1 from an entity reviewed and approved by ~~the USFWS and/or CDFG~~CDFW.

Details of the restoration plan will be pending consultation between the applicant and CDFW and/or SCE and CDFW~~, USFWS~~, and ~~CDFG~~. For Options 1. and 2. (establishing Plummer's mariposa lily and slender mariposa lily plants onsite or off-site), the plan will include the following elements: planting/seeding palettes; monitoring and contingency program; monitoring schedule, including duration and performance criteria (a minimum of 80 percent successful plant establishment after a minimum of three years); and any specific measures that will be required to ensure success of the restoration effort.

Non-Native and Invasive Plant Species

The introduction of non-native and invasive plants into habitats suitable for special status species can result in habitat modifications that negatively impact special status species. Areas of non-native vegetation occur throughout the proposed project area. Grading and vegetation removal throughout the proposed project area would create opportunities for the deposition of non-native and invasive seeds where they do not currently exist. With the implementation of APM BR-2 and APM AQ-3, the amount of disturbance that would create opportunities for non-native and invasive vegetation spread would be reduced. However, further measures are required to reduce this impact to a less than significant level. To ensure that impacts on native vegetation and habitats for special status species are reduced to less than significant, the applicant and SCE would commit to MM BR-~~11~~13.

MM BR-~~11~~13: Non-Native and Invasive Plant Species. The applicant and SCE will avoid and reduce the spread of non-native and invasive plant species in the proposed project component areas through the following actions:

1. All equipment brought in from offsite that could transport soils, seeds, or other plant propagules (i.e., seeds, spores, tubers, or stems that can reproduce the plant) will be washed at a containment area to prevent introduction of unwanted plant material to the proposed project component areas;
2. All construction vehicles or equipment operating within the proposed project component areas in areas known to have noxious or invasive weeds will similarly be cleaned of any soils or plant materials before transport or re-deployment elsewhere within the proposed project component areas to prevent transferring weeds;

3. All soils, gravel, imported fill, or other construction materials brought from offsite that could inadvertently contain unwanted plant propagules will come from confirmed weed-free sources;
4. All seeds to be used in revegetation and reclamation activities will come from onsite, or from certified weed-free sources; and
5. All temporary disturbance areas not subject to existing infestations of invasive plants, including access roads, transmission line corridors, and towers will~~would~~ be monitored on a quarterly basis for one year after project construction is completed for invasive species establishment, and weed control measures will be initiated immediately upon evidence of invasive species introduction.

Impact BR-2: **Substantial adverse effect on riparian habitat or other sensitive natural community.**
LESS THAN SIGNIFICANT WITH MITIGATION

Riparian Habitat

Results of the studies completed by the applicant (Appendices E-5 and E-7) identified five locations where drainages would be directly impacted by proposed project components (see Table 4.4-6, below, and Appendices F-1 and F-2).

Table 4.4-6 Streams and Riparian Areas Impacted by Project Components

Feature	Location	Vegetation and Land Use
Unnamed Seasonal Drainage 1	66-kV subtransmission line: within approximately 50 feet of structure 8.	Coast Live Oak Woodland, Chamise Chaparral, and Venturan Coastal Sage Scrub.
South Fork Santa Clara River	66-kV subtransmission line: within approximately 50 feet of structure 14.	Southern Willow Scrub, coast live oak, and developed/urban landscaping/roads.
Unnamed Seasonal Drainage 2	Access road between structures 27 and 28 crosses drainage.	Venturan Coastal Sage Scrub, mulefat, upland shrubs, and some areas with oak canopy.
Limekiln Canyon Wash	Multiple locations at the storage field: 1. Within approximately 150 feet of the proposed office site and within approximately 100 feet of the proposed Central Compressor Station site, 2. Within approximately 80 feet of the proposed guardhouse and road expansion, and 3. Potentially other project areas near drainage.	1. Southern Mixed Riparian Forest. Areas comprising California sagebrush and white sage. 2. California walnut woodland burned area. Portion of drainage nearest the proposed guardhouse has cement substrate.
Brown's Canyon	Telecommunications Route #2: north of highway 118, between Mileposts 7 and 8, the line spans the canyon.	Coast Live Oak Woodlands with California walnut and willow species. Coastal sage scrub occurs in the vicinity of the canyon.

Source: Appendices E-5 and E-7

The road-widening activities in the area of the new guardhouse would take place next to Limekiln Canyon Wash and associated areas of riparian habitat. While construction activities in this area would take place outside the bed, bank, and channel of the drainage, some riparian vegetation may be trimmed in this area during construction. The applicant submitted an application for a Lake and Streambed Alteration Agreement to the South Coast Region of the ~~CDFG~~CDFW in January, 2012, pursuant to California Fish and Game Code 1600 to obtain authorization for activities associated with riparian vegetation trimming. In February, 2012, the applicant received an Incomplete Notification from the ~~CDFG~~CDFW requesting additional information, including a copy of the project EIR.

Operation of the proposed project would not result in impacts on riparian habitat. However, direct impacts on riparian vegetation during construction could result from vegetation trimming, removal, and excavation or grubbing that can damage plant roots. Impacts on riparian vegetation could also result from fugitive dust deposition. Fugitive dust generation would result from grading, excavation, and other construction activities in the proposed project component areas. Fugitive dust deposition on riparian vegetation reduces plants' ability to metabolize and can potentially cause mortality. Extensive trimming and removal of riparian vegetation could result in reduced shade over waters in the creeks, drainages, and canyons in the proposed project component areas. Additionally, inappropriate tree trimming techniques could result in tree susceptibility to disease and mortality. Reducing areas of shade could cause the temperature of surface waters to fluctuate, and lead to a reduction in the amount of available dissolved oxygen for organisms. These changes could reduce the success of species such as Coast Range newt and western spadefoot. Further, extensive trimming of riparian vegetation could result in the exposure of understory riparian vegetation to increased light, which could alter vegetation structure and composition, and result in the promotion of non-native invasive species, which could out-compete sensitive native plants and alter habitats used by wildlife adapted to native plant assemblages. Portions of Telecommunications Route #2, the storage field, and the 66-kV subtransmission line route occur in proximity to riparian habitat (Figure 4.4-3).

The 2009 habitat assessment, reported in the biological resources section of the Proponent's Environmental Assessment (AECOM 2009), identified riparian habitats within 80 feet of existing 66-kV subtransmission line structures (Appendices D, F-1, and F-2). Approximately 0.04 acres of Southern Willow Scrub occur along a drainage in proximity to structure 10. Both the habitat and the drainage are separated from structure 10 by an existing road; therefore, the likelihood of direct impacts on this vegetation (such as from trimming or removal) are low. Within 100 feet of structure 14, approximately 0.11 acres of Southern Willow Scrub associated with a drainage were also identified. Direct impacts on this vegetation could result from minor trimming of branches to create a work area. Indirect impacts on riparian vegetation in proximity to structures 10 and 14 could result from fugitive dust deposition. Both direct and indirect impacts in both areas would be avoided and minimized under APM BR-2, APM BR-3, APM BR-5, APM AQ-3, ~~APM GE-3,~~ APM GE-2, and APM HZ-6.

Acreages of potential disturbance of riparian habitat for the storage field and Telecommunications Route #2 were calculated by layering project components, including 50-foot buffers to account for indirect impacts, over CNDDB occurrences of riparian vegetation (CNDDB 2011) using ArcGIS. The results of the calculations were adjusted for areas where individual buffers overlapped. Along Telecommunications Route #2, approximately 11 acres of Southern Mixed Riparian Forest were determined to be present within the potential area of disturbance. Within the storage field, approximately 1.8 acres of Southern Mixed Riparian Forest were determined to be present within the potential area of disturbance. No riparian habitat was identified in the area of the proposed Natural Substation. These approximations are conservative estimates of direct and indirect impacts, which would be avoided and minimized under APM BR-2, APM BR-3, APM BR-5, APM AQ-3, ~~APM GE-3,~~ APM GE-2, and APM HZ-6. However, the areas of ground disturbance that would result along the 66-kV subtransmission line and Telecommunications Route #2 have not been determined. Therefore, impacts on riparian vegetation along the 66-kV subtransmission line and Telecommunications Route #2 are potentially significant. The applicant would commit to MM BR-1, MM BR-5, and MM BR-~~12~~14 to reduce potential impacts on riparian habitat to less than significant with mitigation under this criterion.

MM BR-~~12~~14: Minimize Impact on Riparian Habitat. The applicant and SCE will complete the following:

1. A qualified ecologist will survey and determine the spatial extent of riparian zones within the area of project disturbance in the areas of the storage field, the 66-kV subtransmission line, and Telecommunications Route #2;
2. Where riparian vegetation would be impacted by project construction activities, the applicant and SCE will consult with ~~CDFG~~CDFW to determine if a Lake and Streambed Alteration Agreement pursuant to California Fish and Game Code Section 1600 would be necessary; and
3. In those areas where riparian vegetation is required to be removed, the applicant and SCE will work with a qualified arborist to determine the minimum amount of vegetation required to be removed in order to accommodate project construction, and the correct trimming procedures to employ.

Sensitive Natural Communities

Portions of the proposed project occur in USFWS-designated critical habitat for the coastal California gnatcatcher; potential impacts on critical habitat are discussed under Impact BR-1. Operation of the proposed project would not result in impacts on sensitive natural communities.

Coast Live Oak Woodlands and California Walnut Woodlands

Operation of the proposed project is not anticipated to result in impacts on Coast Live Oak or California Walnut Woodland communities. However, direct impacts on these woodlands from construction activities could result from trimming or vegetation removal and excavation or grubbing that can damage plant roots. Indirect impacts on woodlands could result from fugitive dust deposition. Fugitive dust generation would result from grading, excavations, and other construction activities in the proposed project component areas. Fugitive dust deposition on plant leaves can reduce a plant's ability to metabolize and can potentially cause mortality. Further indirect impacts could result from ground disturbance and human activity in areas of these woodlands; these activities could foster conditions favorable to the introduction and spread of non-native and invasive plant species, compromising the integrity of the woodland community.

The 2009 habitat assessment, reported in the biological resources section of the Proponent's Environmental Assessment (AECOM 2009), identified California Walnut Woodland and Coast Live Oak Woodland within 100 feet of existing 66-kV subtransmission line structures and in proximity to the storage field. Near structure 39, approximately 0.2 acres of woodlands were identified. Direct impacts on these woodlands are not anticipated because they are separated from the structure by an existing road. Approximately 0.3 acres of woodlands were identified near structure 40, and direct impacts on these woodlands would likely result from minor trimming to clear a work area. Approximately 0.03 acres of California Walnut Woodland were identified near structure 50. Approximately 0.04 acres of California Walnut Woodland and 0.12 acres of Coast Live Oak Woodland were identified near structure 51. Direct impacts from trimming could occur in areas surrounding structures 50 and 51. Additionally, impacts on California Walnut Woodlands that are present along the access road between 66-kV subtransmission line structures 27 and 28 could occur during project construction. Approximately 0.24 acres of woodland could be directly and indirectly impacted by modifications to the access road. Near the storage field project components, approximately 4.8 acres of Coast Live Oak Woodland and 1.1 acres of California Walnut Woodlands were identified. Although much of the storage field project component areas are disturbed by existing development and the woodlands are sparsely vegetated, direct and indirect impacts as described above could result from construction of the storage field project components.

As discussed above, the extent of disturbance that would take place along Telecommunications Route #2 has been estimated conservatively; the total area of disturbance in this proposed project component area would be refined after final engineering and design of this project element. Areas of potential project impacts on California Walnut and Coast Live Oak Woodland habitat in the area of Telecommunications Route #2 were calculated by layering the route and a 50-foot buffer over map layers of sensitive vegetation using ArcGIS. Approximately 0.03 acres of California Walnut Woodland were identified, and no Coast Live Oak Woodland was identified within the area of this proposed project component.

Impacts on woodlands throughout the proposed project component areas would be avoided and minimized by APM BR-2, APM BR-3, ~~APM BR-8~~, and APM AQ-3. The implementation of these APMs, as well as MM BR-1 and MM BR-4 would ensure that impacts on sensitive woodlands are reduced to less than significant under this criterion.

Individual Oak Trees

The oak tree survey completed in some proposed project component areas identified 29 oak trees upon which impacts beyond minor trimming would occur as a result of the proposed project (Appendix E-4). Two of the 29 trees would be removed or relocated entirely. For 27 of these trees, greater than 25 percent of the canopies would be trimmed, and/or these trees would experience substantial root zone disturbance. ~~Where impacts cannot be avoided or minimized, the implementation of APM BR-8 would ensure that the applicant and SCE would acquire Oak Tree Permits prior to the start of construction, pursuant to the Los Angeles County ordinance.~~ The area of Telecommunications Route #2 has not been fully characterized for oak trees that could be affected by project construction, and project impacts on individual oak trees in the area of this component could be significant. To reduce potential impacts on individual oak trees to less than significant, <u>the applicant and </u>SCE would implement the following MM:

> ~~**MM BR-14: Oak Trees in the Vicinity of Telecommunications Route #2.** Prior to construction, SCE will survey the area of Telecommunications Route #2 for individual oak trees that meet the criteria for protection under the Los Angeles County ordinance. All oak trees whose trunks measure 25 inches or more in circumference (8 inches in diameter) will not be removed, nor will ground compaction occur within a 10-foot radius from the drip line of any oak tree that meets this criterion. Impacts on all oak trees within the area of disturbance for Telecommunications Route #2 beyond minor trimming will be avoided and minimized (i.e., no more than 25 percent of any individual oak tree canopy will be trimmed during one growing season). In the event that impacts on oak trees meeting the above criterion cannot be avoided or minimized, the applicant will provide oak tree seedling replacement at a 2:1 ratio, pending consultation with Los Angeles County.~~

> <u>**MM BR-15: Restoration of Native Oak Trees:** Consistent with City of Santa Clarita, Los Angeles County, and Ventura County policies and guidance addressing trees of the oak genus, the applicant and SCE will take measures to avoid and minimize impacts to oak trees resulting from project construction activities, and will plant replacement trees in compensation for any trees damaged or removed. The applicant and SCE will prepare oak tree survey and replacement plans prior to construction, and, after the completion of final engineering design of the project elements, the applicant and SCE will complete pre-construction surveys, and submit survey results to CPUC staff, to identify all individual trees of the oak genus indigenous to California located in the proposed project component areas. Oak trees will be identified by a qualified arborist, who will record a brief description of each tree (height, width, approximate age, condition, and species). All construction activities that take place within the driplines of oak trees (i.e., the outermost extent of the canopy) that have the potential to damage or result in the removal of oak trees (e.g., more than 25 percent trimming of any individual oak tree canopy during one growing season, excavation or paving near</u>

oak trees, oak tree removal) will be monitored by a qualified arborist. Trimming, damage to, or loss of oak trees within the project construction areas shall not occur until the trees are evaluated by a qualified arborist, who shall identify appropriate measures to minimize any tree loss which may include the placement of fencing around the dripline, padding construction vehicles, or the placement of protective covering (matting) under the existing dripline during construction activities. If construction activities would lead to damage or the removal of any oak tree with a trunk of 8 inches or more in diameter at 4.5 feet ("breast height"), the tree will be replaced at a 5:1 ratio. Replacement tree planting will be monitored by a qualified arborist, who will ensure the implementation of the following:

1. Replacement trees will be initially planted in 15 gallon containers, and then permanently planted in areas deemed suitable by the arborist;
2. Replacement trees will be monitored for 5 years after initial planting for survivability (pursuant to a monitoring schedule established by the arborist); after the 5-year period, the arborist will evaluate whether the trees are capable of surviving without further maintenance;
3. Other measures determined necessary by the arborist to ensure the success of all (100 percent) tree replacement plantings.

Tree removal shall not be permitted until replacement trees have been planted or transplanting sites are approved by CPUC staff.

Venturan Coastal Sage Scrub

The ~~CDFG~~CDFW considers Venturan Coastal Sage Scrub, composed primarily of California sagebrush and white sage, a sensitive native community. Operation of the proposed project is not anticipated to result in impacts on Venturan Coastal Sage Scrub. Direct and indirect impacts on the community resulting from construction of the proposed project would include those stated previously.

The 2009 habitat assessment (AECOM 2009) identified Venturan Coastal Sage Scrub in the vicinity of proposed project components. In the area of the 66-kV subtransmission line, approximately 7.8 acres of Venturan Coastal Sage Scrub could be disturbed. Within the storage field area, approximately 2.3 acres of this community type could be disturbed. Construction of the proposed Natural Substation would permanently remove 0.12 acres of this sensitive habitat. Direct removal of vegetation in this community would result in permanent impacts on this habitat. The extent of potential impacts on Venturan Coastal Sage Scrub along Telecommunications Route #2 has not been completely characterized; therefore, impacts on this community during construction activities in the area of Telecommunications Route #2 are potentially significant. With the implementation of MM BR-2, impacts on sensitive Venturan Coastal Sage Scrub throughout the proposed project component areas would be reduced to less than significant under this criterion.

Significant Ecological Area

A segment of the 66-kV subtransmission line to be modified, west of the Sunshine Canyon Landfill, passes through the Santa Susana Mountains SEA #20, as designated by Los Angeles County and overseen by the Significant Ecological Areas Technical Advisory Committee (SEATAC). The SEATAC reviews applications for development within an SEA, with the objectives of ensuring the accuracy and adequacy of biological resource surveys and, and determines whether the development would be compatible with the SEA (Imsand 2011). A "compatible" project is one whose operation does not affect the capacity of the SEA to persist and perpetuate its biological resources.

Project activities that would take place within the SEA include reconductoring activities, and the removal and replacement of up to seven lattice steel tower (LST) transmission line structures with tubular steel poles (the total number of structures to be removed and replaced would be determined based on final engineering design). Modifications to the 66-kV subtransmission line would occur within an existing ROW, within some previously disturbed vegetation communities. The total area of potential temporary disturbance during construction is estimated, conservatively, to be less than 1.5 acres. Because the area of permanent disturbance represented by the existing LSTs, which are supported by two to four supporting beams and/or concrete pads, is greater than the area of disturbance represented by the monopolar tubular steel poles that would be installed to replace the LSTs, the area of permanent disturbance within the SEA that would result from the proposed project is estimated to represent a net decrease.

To address impacts related to project construction, implementation of APMs BR-1a through BR-7 ~~BR-8~~ and APM AQ-3 would avoid and reduce potential impacts on native vegetation, sensitive habitats, and special status plants and wildlife within the proposed project component areas. Implementation of MMs BR-1 through BR-~~10~~12 and BR-~~12~~14 would further address impacts on sensitive plant, wildlife, and wetlands resources, as well as sensitive vegetation communities.

The replacement of the existing 66-kV subtransmission structures would result in a long-term ecological benefit to the SEA, through the reduction of total disturbed area associated with transmission line support structures. Therefore, impacts on the designated SEA within the alignment of the proposed SCE 66-kV subtransmission line modifications would not adversely affect the capacity of the SEA to persist and perpetuate its ecological resources, and any impact would be less than significant under this criterion.

Impact BR-3: Substantial adverse effect on federally protected wetlands.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction of the proposed project could result in impacts on five potentially federally protected waters: two unnamed seasonal drainages, the south fork of the Santa Clara River, Limekiln Canyon Wash, and a seasonal drainage in Brown's Canyon. All of these waters are intermittent or ephemeral systems. Locations of each feature and descriptions of associated vegetation are provided in Table 4.4-6. No wetlands have been verified within the proposed project component areas; however, a formal wetland delineation has not been conducted for the proposed project component areas. Operation and maintenance of the proposed project would not result in impacts on protected wetlands/drainages as defined by Section 404 of the CWA.

Structure 8 on the 66-kV subtransmission line is situated on a hill above an unnamed seasonal drainage. Work on 66-kV subtransmission line structure 14 would occur in a highly disturbed area, adjacent to a parking lot; the south fork of the Santa Clara River adjacent to this structure is channelized through a box culvert. Construction of the new guardhouse in the storage field area would occur within approximately 200 feet of Limekiln Canyon Wash. Construction of other project components in the storage field would occur in upland areas above and upstream of Limekiln Canyon Wash. In each of these locations, construction would be restricted to the designated work zone per the requirements of APM BR-2; thus, direct removal, filling, or other work in waters would be avoided. Further, potential impacts on these waters through erosion and sedimentation would be minimized under APM AQ-3 and APM GE-3. Therefore, in these areas, no impacts would be anticipated under this criterion.

Reengineering of the access road that crosses an unnamed seasonal drainage between 66-kV subtransmission line structures 27 and 28 could require the fill of the drainage and/or insertion of a culvert (see Section 2.2, "Components of the Proposed Project," Figure 2-12). The drainage has breached the road's edge, creating a channel approximately 8 inches wide and 6 inches deep (Appendix E-5). The exact extent of construction on the roadway has not been determined, but could result in, conservatively estimated, 0.06 acres of temporary impacts and 0.008 acres of permanent impacts on potentially jurisdictional waters. Other impacts through erosion and sedimentation would be minimized under APM AQ-3 and ~~APM GE-~~3 APM GE-2. Therefore, in this area, impacts on potentially jurisdictional waters could be significant. The applicant and SCE would commit to MM BR-5 to ensure that impacts on jurisdictional waters would be reduced to less than significant under this criterion.

Impacts on hydrology and water quality are discussed further in Section 4.9 of this document.

Impact BR-4: Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedance of the use of native wildlife nursery sites.
LESS THAN SIGNIFICANT

Wildlife movement corridors are linear landscape elements that serve as linkages between historically connected habitats and natural areas, thereby facilitating wildlife movement between these areas. The proposed project would be located within the Santa Monica Mountains Conservancy zone. This zone encompasses a series of connected parks and open spaces throughout the region that facilitate wildlife movement and decrease patches of isolated habitat. A wildlife corridor in this region was proposed in the *Rim of the Valley Trail Corridor Master Plan* (Santa Monica Conservancy 1990). Birds and large mammals may use parks and open spaces throughout the zone for migration.

The proposed project would not result in impacts on any parks in the region. Additionally, wildlife in the area of the proposed project components have likely habituated to existing gas storage, transmission, and telecommunications infrastructure. Wildlife may alter their movement patterns temporarily during construction activities due to noise and human presence, but these alterations would not be significant or permanent in nature. Further, under APM BR-2, disturbance of open spaces would be limited to designated work areas. Therefore, impacts on the function of wildlife movement corridors resulting from construction or operation of the proposed project would be less than significant without mitigation under this criterion.

Impact BR-5: Conflict with local policy and ordinance protecting oak trees.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction of the proposed storage field project components and the 66-kV subtransmission line would result in impacts on Coast Live Oak Woodlands and oak trees. Impacts could include removal of two oak trees, loss of canopy from trimming, and root damage from grading, excavation, and vehicular traffic. To avoid impacts, MM BR-15 would require that oak trees with a trunk of 8 inches in diameter at 4.5 feet be replaced in kind at a 5:1 ratio and that a qualified arborist evaluate all oak trees affected by the proposed project. ~~These impacts would be avoided or minimized pursuant to the Los Angeles County Oak Tree Ordinance and the City of Santa Clarita Oak Tree Policy under APM BR-8. Also under APM BR-8, where impacts cannot be avoided or minimized, an Oak Tree Permit would be acquired prior to construction pursuant to the Los Angeles County ordinance.~~ Further, potential fugitive dust deposition resulting from grading, excavation, and vehicular traffic throughout the proposed project component areas would be avoided and minimized under APM AQ-3 and APM AQ-4. Therefore, impacts on oak trees as a result of decreased respiration from fugitive dust deposition would be minimized. No significant impacts on oak trees resulting from operation of the facilities would be anticipated because only occasional tree trimming would be necessary. Therefore, impacts would be less than significant ~~without mitigation~~ under this criterion.

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4.5 Cultural Resources

This section describes the environmental and regulatory settings and discusses the potential impacts associated with the construction and operation of the proposed project components with respect~~s~~ to cultural and paleontological resources.

4.5.1 Environmental Setting

4.5.1.1 Prehistoric, Ethnohistoric, and Historic Background

This section presents an overview of the prehistoric, ethnohistoric, and historic background of the proposed project area. The following text, unless otherwise noted, has been presented in the Proponent's Environmental Assessment (PEA) (SoCalGas 2011)

Prehistory

Early Period

Archaeologists in southern California have divided prehistory into three broad periods: the Early, Middle, and Late periods. Early period (ca. 7000–3200 before present [B.P.]) sites appear to be adapted to wetland environments with readily abundant resources. The early groups associated with these sites emphasized hunting, with a flaked stone industry that included large flake and core scrapers, choppers, hammer stones, drills, and gravers. Percussion- and pressure-flaked tools were common, as well. Ground stone is typically absent from these early deposits but present in later ones, which may reflect adaptation to changing environments through time. Milling stones that characterized this period are best suited for grinding hard seeds produced by grasses, sages, and other small, annual plants, which represent a highly dependable and abundant food source (SoCalGas 2011).

Middle Period

During the Middle period (3000–900 B.P.), inhabitants of the region had a land- and marine-based economy, focusing on large sea mammals, fish, and mollusks, as well as some terrestrial resources. One of the markers of the Middle period in the archaeological record is the increase in frequency of mortars and pestles, replacing the milling stones that dominated the Early period record. This shift most likely relates to the shift in reliance from primarily seeds to fruits and nuts. Settlement patterns during this period represent greater residential stability, as shown by the increased use of storage pits. The advent of well-defined cemeteries and larger settlements during the Middle period lends further evidence to increased sedentism (SoCalGas 2011).

Late Period

Research on the Late period (900–200 B.P.) has suggested that there was a continuation of the trends from the Middle period: settlement size grew, new regions and environments were occupied, and functionally specialized sites continued to appear. Further, there was an increase in terrestrial hunting and maritime adaptations that coincided with a decrease in the importance of vegetal resources. These trends are indicated by a reduction in the importance of milling stones, with a corresponding increase in the use of flaked lithic tools, such as projectile points, scrapers, and drills (SoCalGas 2011).

There appears to have been some differentiation between coastal and inland sites during the Late period. Generally, settlements appear to have been more specialized and differentiated as they related to specific environments, leading to more restricted locations. Whereas sites along the mainland coast might have decreased in number from the previous period, those that remained increased in size (SoCalGas 2011).

Ethnography and Ethnohistory

The proposed project components are situated within the traditional territory of both the Chumash and Gabrielino cultures. The Chumash were predominantly a coastal people, but they made use of inland resources. The Gabrielino occupied an area with a complex topography, ranging from the high peaks of the San Gabriel Mountains to the Pacific Coast and islands offshore. Both groups were hunters and gatherers who sought large and small game, as well as numerous plant resources for food. The ethnohistoric settlement pattern consisted of permanent villages located in proximity to reliable sources of water, and within range of a variety of floral and faunal food resources, which were exploited from temporary camp locations surrounding the main village (SoCalGas 2011).

The first contact between Native Americans in California and Europeans took place more than 450 years ago when, in 1542, Cabrillo sailed into the Santa Barbara Channel to map the coastline. Following Cabrillo's arrival, there were few encounters between Native Americans and Europeans for over two centuries. It was not until Spanish Franciscans were given charge of the frontier that missions were established and the Native American culture was assimilated into Spanish colonial culture. During the Mission period, Native Americans were forced to relocate, effectively abandoning their villages and resource territories; some groups retreated to the interior rather than succumb to the demands of resettlement (SoCalGas 2011).

The Mexican period, which followed the Mission period, is marked by Mexico's independence from Spain in 1821. It lasted until 1848 when the Mexican–American War ended with the signing of the Treaty of Guadalupe Hidalgo and the lands of Alta California were passed into American hands. During this period, the old Spanish mission system was dismantled by the mid-1830s, with their land holdings divided among the most-prominent citizens in the territory and ceded as land grants, or "ranchos." The Native Americans within the missions were left on their own; a few retreated to the interior, but many remained to work on the newly designated ranchos. The subsequent American Period saw an influx of settlers into the region and the demise of the old ranch way of life. Agriculture was taking hold and industry and rail lines were rapidly developing in the area (SoCalGas 2011).

History

Spanish Colonial Period (1769–1822)

The San Fernando Valley was passed through by both Father Junipero Serra in 1771 and 1772, while founding missions at San Gabriel and San Luis Obispo, and also by Pedro Fages in 1772, who was tracking deserters from the Spanish Colonial Army. In 1776, Francisco Garces, as part of the De Anza expedition, passed through present day Lake Hughes and parts of the San Fernando Valley (Dillon 1998).

The first non-Native American settler in the San Fernando Valley was Francisco Reyes, who raised grain and livestock in a portion of the present day City of San Fernando. In 1795, a Franciscan exploratory party from the mission at San Buenaventura set out to find a mid-point mission site and settled on the San Fernando site; the Mission San Fernando Rey de Espana, named for Ferdinand III of Spain, was then constructed and officially dedicated in September 1797 as the 17th mission in California. The first church at the mission was completed in 1799; the present-day structure was built in 1806. At one point, the mission controlled approximately 350 square miles of land that were fed by a reliable water source, the Santa Clara River basin. The Franciscans used this access to water to grow vegetables and grain and graze cattle. The Mission San Fernando Rey de Espana was severely damaged and rebuilt in earthquakes in both 1812 and 1971 and restored after years of neglect in the 1930s. Today the mission is preserved as California State Historic Landmark No. 157 (Dillon 1998).

The Mexican Period (1822–1848)

Mexican independence from Spain caused most of the Franciscan missions in California to be stripped of their vast land holdings or to be placed in a period of limbo where nothing was done with them. In the case of the Mission San Fernando Rey de Espana, Mexican Lieutenant Antonio Del Valle occupied and secularized it in May 1835. As *Mayordomo*, which translates roughly to English as “steward,” Del Valle eventually saw to the dismantling of the mission at San Fernando before being succeeded by Don Pedro Lopez in 1837. The same year, Lopez was overthrown by Juan B. Alvarado, who declared himself Governor of California (Dillon 1998).

In March of 1842, the first discovery of gold in California was made by Francisco Lopez in Placerita Canyon, approximately 6 miles east of present day Newhall, while he was digging wild onions and guarding livestock under a large oak tree. Today this location is known as “Oak of the Golden Dream” and is commemorated as California State Registered Landmark No. 168. Gold extraction in the area, however, proved difficult due to the lack of water available to separate the gold from the geologic formations (Dillon 1998).

The land in the San Fernando Valley changed hands between Alvarado, Manuel Micheltorena, and Pio Pico between 1845 and 1846. In January of 1847, John Charles Fremont came into the San Fernando Valley, leading the first party of North American troops. Mexican troops met them in a truce agreement which led to the signing of the treaty Campo de Cahuenga and the transfer of California from Mexico to the United States (Dillon 1998).

The Anglo–American Period (1848–present)

Between the end of the Mexican War in 1848 and the revival of interests in mineral deposits, not much interest was paid to southern California. In 1861, the Soledad Mining Company was formed to mine for gold, silver, copper, and iron. These mining activities were carried out in various boom and bust cycles, depending mainly on the lack of water in the area. The San Fernando Valley also faced water shortages, which caused land values to remain low from the lack of viability of crops and livestock. Stage lines began to emerge and cross the San Fernando Valley, the most famous being the Butterfield–Overland Mail Company. To aide these stage lines and other forms of transportation, Surveyor-General Edwin F. Beale created a hand-cut notch known as “Beale’s Cut” in San Fernando (or Fremont) Pass in 1862 where he collected tolls until 1884 (Dillon 1998). Beal’s Cut became part of the main highway between Los Angeles, Fort Tejon, and San Francisco.

During the Civil War, much of the land in the San Fernando Valley remained as ranches, much as it had during the Mexican period. In 1865, the Cerro Gordo strike, 200 miles from San Fernando, produced the most silver of any area of California. This led to the development of Los Angeles as a commercial and entrepreneurial center, and the use of the San Fernando Valley as its staging area for ore shipments. The Cerro Gordo mining boom lasted until the mid-1870s. In 1873, Eulogio F. de Celis and his brothers Jose, Manuel, and Pastor, granted a 100-foot wide strip of land through the northeastern San Fernando Valley to the Southern Pacific Railroad. This led to Leland Stanford of the Southern Pacific Railroad Company and ex-State Senator Charles Maclay creating the City of San Fernando after the rail line connected the area to Los Angeles in 1874. In August of 1876, the San Fernando Tunnel was completed and the next month the rail line connecting Los Angeles to San Francisco was opened (Dillon 1998).

The earth movement to build the tunnel led to the discovery of oil in the Sierra Pelona ~~m~~Mountains and prospecting, drilling, and production would then ensue until the 1890s. The first commercial oil well and refinery in Pico Canyon near Newhall were completed in 1876 and are still in production today (California State Registered Landmark Numbers 516 and 172, respectively), and Newhall became well known in the petroleum industry (Dillon 1998).

After partnering with Leland Stanford to bring the Southern Pacific Railroad to the San Fernando Valley, Charles Maclay set out to solve the problem of water shortages, and ultimately developed a submerged dam to capture the considerable underground flow of water that was not being otherwise used. The success of his Maclay Rancho Water Company was repeated over and over throughout the desert southwest. Later Maclay would start the Maclay College of Theology (1885), which would later move to Los Angeles and change its name to the University of Southern California (Dillon 1998).

However successful Maclay's dam was, as the demand for water continued to increase and the water table continued to draw down, drought continued to plague the San Fernando Valley and Southern California. This led to William Mulholland, Chief Engineer of the City of Los Angeles Department of Water and Power to create plans to draw water from the Owens River, which is 250 miles from Los Angeles, via the Los Angeles Aqueduct. The aqueduct was completed in 1913 and essentially ended the operations of the Maclay Rancho Water Company and others like it in the San Fernando Valley (Dillon 1998).

With the advent of motion pictures in the 1910s and up to the present, many films, from Westerns to the Twilight Zone, have been shot in areas within the San Fernando Valley. In the time period following World War II and leading up to the present, the San Fernando Valley has undergone development as a bedroom community of Los Angeles, particularly after the construction of the freeway system (Dillon 1998).

Literature and Records Searches

Storage Field, 66-kV Subtransmission Line Segments A, B, and C, and Telecommunications Route #1

An archaeological records search was conducted at the South Central Coastal Information Center (SCCIC), California State University, Fullerton. The results of the records search revealed that 48 cultural resources studies have been conducted within a half-mile radius of the Aliso Canyon Natural Gas Storage Field (storage field) boundary and proposed 66-kilovolt (kV) Subtransmission Line Segments A, B, and C and Telecommunications Route #1, with 11 studies including portions of the proposed project component areas. A survey for the Sunshine Canyon Landfill Extension Project recorded the only archaeological site within the proposed project component areas. This site, CA-LAN-2484, consists of one large metate fragment and 16 smaller pieces of the same metate scattered across the site. Excavations at the site revealed that all of the artifacts were found in the top 10 centimeters. No evidence of this site or the excavation units was observed during surveys (SoCalGas 2011).

The Sunshine Canyon Landfill Extension project also recorded three additional archaeological sites and five isolates within a half-mile radius of the 66-kV subtransmission line. These are a small processing site with mano scatter and fire-affected rock (CA-LAN-2369), a site with a mano and historical period pot sherds (CA-LAN-2370), a lithic and ground stone scatter (CA-LAN-2529), three isolated mano fragments (19-100186, 19-100187 and 19-100190), one whole mano (19-100188), and one chalcedony flake (19-100189). Other sites recorded within the record search area, but outside the current proposed project boundaries, include a small hunting station (19-000802), a small temporary camp (19-000816/H), Beale's Cut (a human-made notch in the top of the San Fernando Pass [19-002069/H]), and the Cuesta Viejo Trail (19-002148/H) (SoCalGas 2011).

Telecommunications Route #2 (Chatsworth Substation to the Proposed Natural Substation)

A record search at the SCCIC indicated that 88 cultural resources studies have been conducted within 0.5 miles of the proposed telecommunications route to date (SoCalGas 2011). Seventy-three cultural resources have been identified within 0.5 miles of the proposed telecommunications route. Of these resources, 11 intersect or are within 40 meters of the centerline of the route. One of the sites is registered as a Ventura County Historical Landmark. Other resources included a prehistoric stone quarry with *lithic scatter*[1] (19-002827, (CA-LAN-963, CA-LAN-870), historic roads (19-003511, CA-VEN-896H), historic structures (56-001798, 56-001799, CA-LAN-1741H, CA-LAN-1742H), a temporary camp (CA-LAN-713), and a burial site (CA-LAN-001043).

66-kV Subtransmission Line Segments D and E and Telecommunications Route #3

In July 2009, a records search for previously recorded historic properties within 0.5 miles of San Fernando Substation and 66-kV Subtransmission Line Segments D and E was conducted and found that sixteen cultural resources reports are on file at the SCCIC. The records search revealed four previously recorded sites and one California Historic Landmark within one-half mile of the San Fernando Substation (see Appendix E, Table I-1 and Table I-2). One of these historic resources~~properties~~, archaeological site CA-LAN-169 H, is the Mission San Fernando. The Mission encompasses the proposed work site and is located north of San Fernando Mission Boulevard between the Golden State (I-5), San Diego (I-215), and Ronald Reagan (I-118) Freeways. According to prior work in the area, the Mission once included all of the land between the three freeways, as well as many more built features, including garden walls and outbuildings arrayed along the current San Fernando Mission Boulevard. Portions of those built features may be preserved in the area surrounding site CA-LAN-169 H. One other site included here, CA-LAN-2760 H (see Appendix I, Table I-2), was located just north of the one-half-mile search boundary and is associated with the early 20th century activities of the San Fernando Mission Land Company (SoCalGas 2011).

Fifty-four cultural resources studies have been conducted within 0.5 miles of Telecommunications Route #3 to date (SoCalGas 2011). The studies are a combination of linear surveys, block surveys, excavations, and monitoring reports. The areas of only two studies would intersect the proposed routes. Fifteen cultural resources have been recorded within 0.5 miles the proposed routes. Of these 15 resources, only one, LAN-169H, intersects the route.

Telecommunications Route #4

In October 2012, a records search at the SCCIC for previously recorded cultural resources within 0.5 miles of Telecommunications Route #4 (referred to here at the “study area”) was conducted. A total of 25 previously recorded cultural resources were identified within the study area during the record search; one of these resources is located within the ROW for the route. The resource, a multi-component site including historic and prehistoric artifact scatters, is located in the vicinity of the intersection of Truman Street and San Fernando Road.

Field Surveys

Cultural resources field surveys have not been conducted at the storage field or along Telecommunications Routes #2 and ~~#~~3.

66-kV Subtransmission Line Segments A, B, C, D, and E and Telecommunications Route #1

~~The Area of Potential Effect (APE)~~ The survey area for 66-kV Subtransmission Line Segments A, B, C, D, and E and Telecommunications Route #1 ~~of the APE~~ included a 30-meter radius around each existing tower or structure. Archaeological surveys ~~of the APE~~ were conducted on April 23 and 26, 2009. Existing

[1] *Lithic scatter* refers to a surface scatter of cultural artifacts and debris that consists entirely of stone items, stone tools, and chipped stone debris.

maintenance roads adjacent to all towers, and approximate locations for equipment staging during construction and operation were surveyed. Pull and tension sites have yet to be identified, and additional surveys may be required if they fall outside of current survey limits (SoCalGas 2011).

Each tower area and access road was subjected to intensive pedestrian-level surveys with transect widths no more than 10 meters apart to ensure that all surface-exposed artifacts and sites within the survey area~~APE~~ would be identified. Ground visibility varied from excellent in areas recently affected by fire, to poor in most cases where vegetation or ground cover was dense. The area around most of the towers has been previously disturbed. No archaeological materials were observed or collected in the survey area~~APE~~ (SoCalGas 2011).

Telecommunications Route #4

An archaeological survey was conducted in the area of the Telecommunications Route #4 ROW on August 13, 2012. No new cultural resources were identified as a result of this reconnaissance-level survey (SoCalGas 2012b).

Native American Consultation

~~A letter requesting a search of the Sacred Lands Files at the Native American Heritage Commission (NAHC) was sent on June 22, 2011. No response has yet been received.~~ The NAHC responded to the Notice of Preparation of the Draft EIR on October 26, 2010. The response included results of the Sacred Lands File Search, which did not identify any resources within the project area; however, Native American resources have been identified in close proximity to the project component areas. Along with the results of the search, the NAHC ~~will~~ provided a list of Native American tribes and contacts who have expressed an interest in the proposed project component areas. Letters ~~will be~~ were sent to the contacts provided to give an opportunity for the Native American community to express concerns about the proposed project.

4.5.1.2 Paleontology

Paleontological resources are generally defined as fossil remains, fossil locations, and formations that have produced fossil material in other nearby areas. Paleontological resources are considered a fragile and nonrenewable scientific record of the history of life on earth and thus represent an important and critical component of America’s natural heritage.

A records search of the Vertebrate Paleontology Section of the Natural History Museum of Los Angeles County (LACM) and the Museum of Paleontology at the University of California, Berkeley, indicated that no known vertebrate fossils are present within the proposed project area (McLeod 2011; University of California Museum of Paleontology 2011). A search of the database of Late Pleistocene vertebrate localities for California indicated that no known paleontological resources are recorded within a mile of the proposed project (Jefferson 1991).

As discussed in Section 4.6, “Geology, Soils, and Mineral Resources,” the ~~APEs are~~ project is situated along the southern side of the Santa Susana Mountains of the Western Transverse Range and within the Santa Clara River and San Fernando Valleys of northern Los Angeles and southeastern Ventura Counties. The mountainous portions of the area include parts of Oat Mountain and the Simi Hills. Subsurface conditions in the proposed project component areas include undocumented artificial fill, colluvium, alluvium, landslide and slope wash deposits, and bedrock of several formations (Section 4.5.1.3). Formations underlying all of the proposed project areas have high sensitivity for the presence of paleontological resources. Specific paleontological sensitivity of geologic formations traversed by components of the proposed project is discussed below.

Storage Field, 66-kV Subtransmission Line Segments A, B, and C, and Telecommunications Route #1

Quaternary Alluvium (Qa, Qg, Qal, Qls, Qoa, QTs)

Quaternary alluvium (late Pleistocene and Holocene age) has been mapped at the surface at the storage field and along 66-kV Subtransmission Line Segments A, B, and C and Telecommunications Route #1 as well as within the northern San Fernando Valley, Aliso Canyon, Gavin Canyon, and Newhall areas (Oakeshott 1958; Jennings and Strand 1969; Dibblee 1992, 1996). Although the uppermost layers (less than 5 feet in depth) typically do not contain significant fossils, younger Quaternary alluvium is typically underlain by older Quaternary deposits that have yielded significant vertebrate fossils. Although an LACM records search revealed no vertebrate records onsite, these types of sediments often contain fossil deposits (Miller 1971; Jefferson 1989, 1991). At nearby Van Norman Reservoir, LACM 3397 yielded a fossil bison. LACM 7152 yielded a fossil mammoth and a bison in terrace deposits, and LACM 1733 yielded a fossil horse. Quaternary Alluvium sediments within the proposed project area have high potential to contain significant nonrenewable paleontological resources at depths greater than 5 feet and have high paleontological sensitivity.

Saugus Formation (QTs, Ts, Tsr)

A volcanic ash sample collected within the upper portion of the Saugus Formation was determined to date back to 0.8 to 0.9 million years B.P. (Treiman 1982). Fossils of large terrestrial land mammals such as mammoth, mastodon, tapir, horse, peccary, camel, and llama, as well a smaller vertebrates such as turtle, lizards, rabbits, gopher, mice, are known from the Saugus Formation (Oakeshott 1958; Impact Services, Inc. 2008; McLeod 2011). LACM 6601, located between Limekiln and Aliso Canyons, yielded fossil specimens of deer as well as a rare specimen of a fossil extinct tapir, *Tapirus merriami* (Jefferson 1989). Sediments within the Saugus Formation have high potential to contain significant nonrenewable paleontological resources and have high paleontological sensitivity.

Pico Formation (Tp, Tps)

The Pico Formation primarily contains Pliocene-aged marine deposits (Dibblee 1992) that have yielded the remains of marine fossils in some locations (Kew 1924; Grant and Gale 1931; Oakeshott 1958; Impact Services, Inc. 2008). The closest vertebrate localities (LACM 6145-6146) within the Pico Formation are west of the northern part of the proposed project component area along the Old Road, northwest of where it intersects with Calgrove Avenue, which yielded a fauna of marine sharks, rays, and bony fishes. To the west of the southern portion of the proposed project component area near Browns Canyon, LACM locality 5456 produced fossil specimens of the mako shark and the giant extinct great white shark. Sediments within the Pico Formation have high potential to contain significant nonrenewable paleontological resources and have high paleontological sensitivity.

Towsley Formation (Ttos, Ttoc)

Marine sediments of the Towsley Formation have yielded the remains of a number of marine species (Barnes 1976; English 1914; Grant and Gale 1931; Minch 1997; Minch and Stickel 1999). Within the proposed project component area, paleontological monitoring at the Sunshine Canyon Landfill has identified 81 distinct fossil localities in the Towsley Formation (Minch 1997; Minch and Stickel 1999). These sites produced the remains of mollusks, crabs, sand dollars, sea urchins, bony fish, sharks, and marine mammals. Several types of fossil land plant leaves were also recovered. Nearby, in Pico Canyon, LACM 6365 produced a skull of a pinniped (sea lion), *Otariidae*. South of the intersection of Interstate 5 and State Route 14 produced a fossil baleen whale. Sediments within the Towsley Formation have the potential to contain significant nonrenewable paleontological resources and, therefore, have high paleontological sensitivity.

Sisquoc Shale/Modelo Formation (Tsq)

Late Miocene-aged Sisquoc Shale has yielded the fossil remains of fish in other locations (Jordan and Gilbert 1919; Jordon 1920, 1921; David 1943). The proposed project component crosses Sisquoc Shale along the subtransmission line from the Newhall Substation to the proposed Natural Substation. LACM 1930, located west of the southern part of the project area in Chivo Canyon north of Santa Susana, yielded a fossil specimen of the rare and unusual four-legged marine mammal *Desmostylus*, an extinct hippopotamus-like creature thought to have lived in shallow water in coastal regions. LACM 1929, located further west in eastern Simi Valley, produced fossil specimens of walrus, Odobeninae, and primitive baleen whale, Cetotheriidae. Sisquoc Shale has the potential to contain significant nonrenewable paleontological resources and, therefore, has high paleontological sensitivity.

Monterey Shale/Modelo Formation (Tm, Tml)

The marine Monterey Formation has been divided into two members. The upper part of the Monterey Formation (Tm) consists of dark gray brown thin-bedded siliceous shale. The lower portion of this rock unit (Tml) consists of dark brown, thinned-bedded, fissile semi-siliceous shale to soft shaly claystone (Dibblee 1992). Although an LACM records search revealed that there are no records of fossil discoveries on site (Mcleod 2011), this formation has yielded numerous fossils at other locations (David 1943; Jordan 1907, 1921; Jordan and Gilbert 1919; Woodring et al. 1946). Monterey Shale has the potential to contain significant nonrenewable paleontological resources and, therefore, has high paleontological sensitivity.

Topanga Formation (Ttus, Tb)

The Topanga Formation is present throughout the Los Angeles Basin, of which both the city and county of Los Angeles and Orange County are a part. The formation contains abundant marine fossils ranging from sharks teeth to sea shells and microfossils. It was deposited during the Early–Middle Miocene in a shallow, warm sea. Parts of the Topanga formation are composed of distorted oyster shells and some single-celled amoeboid protists. Invertebrate fossils have been found in the Topanga Formation in the Griffith Park area southeast of the storage field; however, they are poorly preserved casts and shells (Nuerburg 1953). Larger mammal fossils have also been found in the Topanga formation, including *Desmostylus* (University of California Museum of Paleontology 2011). Sediments within this formation have the potential to contain significant nonrenewable paleontological resources and, therefore, have high paleontological sensitivity.

Telecommunications Route #2

Areas along Telecommunications Route #2 are underlain by Quaternary Alluvium (late Pleistocene and Holocene age) and the Saugus Formation (see above). Quaternary Alluvium sediments within the proposed project component area have high potential to contain significant nonrenewable paleontological resources at depths greater than 5 feet and have high paleontological sensitivity. Areas along the route are also underlain by the Chatsworth Formation.

Chatsworth Formation (Kcs)

The Chatsworth Formation often contains marine invertebrate fossils (marine shells) and has a high potential to produce unique and significant fossilized remains (Los Angeles County Metropolitan Transportation Authority 2008). The formation (upper mid-Campanian to lower Maastrichtian) crops out in the Simi Hills of Los Angeles and Ventura Counties. Fossil localities are most numerous in canyons near the bottom of the exposed section in the southeastern Simi Hills, and in an area near the top of the section in the western Simi Hills. Preservation is typically moderate to poor, and many specimens are broken. About 20 gastropod families, 45 genera, and 50 species are represented in collections (Stecheson

2001). Sediments within this formation have the potential to contain significant nonrenewable paleontological resources and, therefore, have high paleontological sensitivity.

66-kV Subtransmission Line Segments D and E, ~~and~~ Telecommunications Route #3, and Telecommunications Route #4

Areas along 66-kV Subtransmission Line Segments D and E, and Telecommunications Route #3 and #4 are underlain by Quaternary Alluvium (see above). Quaternary Alluvium (late Pleistocene and Holocene age) has been mapped at the surface at San Fernando Substation and along 66-kV Segments D and E and Telecommunications Route #3 (Oakeshott 1958; Jennings and Strand 1969; Dibblee 1992, 1996). Quaternary Alluvium sediments within the proposed project component area have high potential to contain significant nonrenewable paleontological resources at depths greater than 5 feet and have high paleontological sensitivity.

The northern portion of Telecommunications Route #4 contains exposures of the Plio-Pleistocene Saugus Formation and the marine Pliocene Pico Formation (SoCalGas 2012b). The Miocene Towsley Formation may also underlay a portion of this route. These formations have a demonstrated high paleontological sensitivity. Fossil localities from the same formations in this region have yielded specimens such as great white shark and Equus.

4.5.2 Regulatory Setting

4.5.2.1 Federal

The proposed project would not occur on federal land and no federal laws are anticipated to apply to the proposed project.

4.5.2.2 State

California Public Resources Code, Chapter 1.7, Sections 5097.5, 5097.9, and 30244

This section of the Public Resources Code (PRC) regulates the removal of paleontological resources from state lands, defines unauthorized removal of fossil resources as a misdemeanor, and requires mitigation of disturbed sites.

Warren–Alquist Act, PRC, Sections 25527 and 25550.5(i)

The Warren–Alquist Act requires the Energy Commission to "give the greatest consideration to the need for protecting areas of critical environmental concern, including, but not limited to, unique and irreplaceable scientific, scenic, and educational wildlife habitats; unique historical, archaeological, and cultural sites…" With respect to paleontological resources, the Energy Commission relies on guidelines from the Society for Vertebrate Paleontology, a national organization of professional scientists.

California Environmental Quality Act

Most counties and cities in California have regulations that address paleontological resources. At the state level, the California Environmental Quality Act (CEQA), PRC requires public agencies and private interests to identify environmental consequences of their proposed projects on any object or site of significance to the scientific annals of California. *Guidelines for the Implementation of CEQA* (PRC Sections 15000 et seq.) define the procedures, types of activities, persons, and public agencies required to comply with CEQA. Appendix G in Section 15023 provides an Environmental Checklist of questions that a lead agency should address if they are relevant to a projects' environmental impacts. For paleontology, one of the questions to be answered in the Environmental Checklist (Section 15023, Appendix G, Section

V, Part c) includes the following: “would the project directly or indirectly destroy a unique paleontological resource or site?”

Public Resources Code Sections

5020–5024. These sections are statutes that pertain to the protection of historical resources.

5097.98 (b) and (e). These sections requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until conferring with the most likely descendants (as identified by the NAHC) to consider treatment options.

5097.91–5097.991. These sections pertain to the establishment and authorities of the NAHC. These sections also prohibit the acquisition or possession of Native American artifacts or human remains taken from a Native American grave or cairn, except in accordance with an agreement reached with the NAHC, and provide for Native American remains and associated grave artifacts to be repatriated.

5097.993–5097.994. These sections establish the Native American Historic Resource Protection Act, which makes it a misdemeanor crime for the unlawful and malicious excavation, removal, or destruction of Native American archaeological or historical sites on public or private lands.

6254 (r). This section established the California Public Records Act, which protects Native American graves, cemeteries, and sacred places maintained by the NAHC by protecting records of such resources from public disclosure.

21083.2. This section of CEQA provides for protection of archaeological resources by directing the lead agency on any project undertaken, assisted, or permitted by the state to include in its environmental impact report for the project a determination of the project’s effect on unique archaeological resources. It enables a lead agency to require an applicant to make reasonable efforts to preserve or mitigate impacts to any affected unique archaeological resource, and sets requirements for the applicant to provide payment to cover the costs of mitigation.

21084.1. This section of CEQA establishes that an adverse effect on a historical resource qualifies as a significant effect on the environment.

25373, 37361. These sections allow city and county legislative bodies to acquire property for the preservation or development of a historic landmark. They allow local legislative bodies to enact ordnances to provide special conditions or regulations for the protection or enhancement of places or objects of special historical or aesthetic interest or value.

65092. This section provides for notice of projects in consideration for construction to be sent to California Native American tribes who are on the contact list maintained by the NAHC.

Health and Safety Code Sections

7050–7054. These Health and Safety Code (HSC) sections are statutes that pertain to disturbance and removal of human remains, felony offenses related to human remains, and depositing human remains outside of a cemetery.

8010–8011. These HSC sections establish the California Native American Grave Protection and Repatriation Act that is consistent with and facilitates implementation of the federal Native American Graves Protection and Repatriation Act

Senate Concurrent Resolutions

Number 43. This resolution requires all state agencies to cooperate with programs of archaeological survey and excavation and to preserve known archaeological resources whenever this is reasonable.

Number 87. This resolution provides for the identification and protection of traditional Native American resource-gathering sites on state land.

Administrative Code, Title 14, Section 4307

This code states that no person shall remove, injure, deface, or destroy any object of paleontological, archaeological, or historical interest or value.

California Code of Regulations Section 1427

This code recognizes that California's archaeological resources are endangered by urban development and population growth and by natural forces. It declares that these resources need to be preserved in order to illuminate and increase public knowledge of the historic and prehistoric past of California.

Penal Code Section 622: Destruction of Sites

This code establishes as a misdemeanor the willful injury, disfiguration, defacement, or destruction of any object or thing of archaeological or historical interest or value, whether situated on private or public lands.

4.5.2.3 Local

Los Angeles County Department of Regional Planning

In the Los Angeles County Department of Regional Planning Preliminary Draft Santa Clarita Valley Area Plan (2008), their guidelines for a model project in cultural resources state the following:

1. A literature search for valid archaeological and paleontological surveys shall be conducted (for each initial study of a public or private project);
2. If an impact or potential impact is anticipated, a study of the project site shall be made by a qualified archaeologist or paleontologist who shall determine the scientific value of finds, if any, and a recommendation as to their preservation or disposition;
3. The County Historical Landmarks Commission must be notified of all cultural, historical, or paleontological finds;
4. All significant impacts to cultural resource sites must be mitigated to the greatest extent feasible, and a reasonable period of time must be allowed to salvage the site;
5. The integrity of significant historical features of the structure and/or site should be maintained to the largest extent possible;
6. The integrity of sightlines to the structure or site should be maintained;
7. Development adjacent to a cultural resource site should consider design guidelines and appropriate building design, setbacks, landscaping, and other factors that will protect the integrity of the cultural resource area; and
8. Materials collected during surface survey or salvage operations should be donated to an appropriate nonprofit institution. In the event the property owner wishes to retain possession of the artifacts found, it is desirable that an archaeologist or paleontologist be allowed to study and photograph the artifacts.

Los Angeles County General Plan: Conservation and Open Space Element

The County of Los Angeles General Plan Conservation and Open Space Element (1980) contains goals and policies regarding paleontological resources. The Conservation and Open Space Element establishes the goals of preserving and protecting sites of historical, archaeological, and scientific values, and defines the following policies relative to paleontological resources:

- Protect cultural heritage resources, including historical, archaeological, paleontological, and geological sites;
- Encourage public use of cultural heritage sites consistent with the protection of these resources;
- Promote public awareness of cultural resources; and
- Encourage private owners to protect cultural resources.

City of Los Angeles

The City of Los Angeles follows CEQA guidelines in assessing impacts on paleontological resources of a proposed project (City of Los Angeles 2011).

City of Los Angeles General Plan Conservation Element

The City of Los Angeles General Plan Conservation Element (2001), in Section 3, specifies the protection of paleontological resources; this section indicates that it is the policy of the City of Los Angeles that the city's paleontological resources be protected for historical, cultural research, and/or educational purposes. Section 3 mandates the identification and protection of significant paleontological sites and/or resources known to exist or that are identified during "land development, demolition, or property modification activities."

City of Santa Clarita General Plan

The City of Santa Clarita General Plan, adopted in June 2011, includes Policy LU 2.2.2, which requires that "sites and areas [be identified] with historical or cultural value to the community [and] that uses in or adjacent to these areas will not impact their historical integrity." In addition, Policy LU 6.4.6 requires that impacts on historic and cultural sites be reviewed and appropriate mitigation developed.

Los Angeles County Community Plans

The County of Los Angeles General Plan was adopted in 1980 and has guided the growth and development in all unincorporated areas of the county for 30 years (Los Angeles County Department of Regional Planning 1980). There are several community plans in the county that have goals and polices that pertain to cultural resources.

Northridge Community Plan

The Northridge Community Plan contains the following objective related to cultural resources:

- ***Objective 16-1:*** *To ensure that the community's historically significant resources are protected, preserved, and/or enhanced.*

Sylmar Community Plan

The Sylmar Community Plan contains the following objective, which is applicable to portions of the 66-kV subtransmission line:

- ***Objective 17-1:*** *To ensure that the Community's historically significant resources are protected, preserved, and/or enhanced.*

Santa Clarita Valley Area Plan

The 1990 Santa Clarita Valley Area Plan includes the following policies applicable to the proposed project (Los Angeles County Department of Regional Planning 1990):

- ***Policy 1.6:*** *Protect known archaeological and historical resources to the extent appropriate.*
- ***Policy 1.7:*** *Require archaeological surface reconnaissance and impact assessment by a qualified archaeologist for any significant development proposed on, or adjacent to, known archaeological sites.*

City of Los Angeles General Plan

The City of Los Angeles General Plan Framework was re-adopted by the City Council in 2001. The Framework provides a strategy for long-term growth and guides the updates of the community plans and citywide elements (City of Los Angeles 2001). The city's 35 community plans collectively make up the Land Use Element of the General Plan. The following policies from the Framework are applicable to the 66-kV subtransmission line route that lies within the City of Los Angeles boundary:

Porter Ranch

The following objective is applicable to the portion of the proposed project located in Porter Ranch:

- ***Objective 12:*** *To provide for the identification and preservation of cultural and historical monuments located within the Community.*

In addition, the Plan requires that "archaeological sites should be preserved intact or protected whenever possible, and explored by competent professionals before any development occurs."

Granada Hills–Knollwood

The Granada Hills–Knollwood Community Plan contains no policies or objectives that are relevant to cultural or paleontological resources.

Mission Hills–Panorama City–North Hills

The Mission Hills–Panorama City–North Hills Community Plan contains the following policy, which is applicable to the San Fernando Substation and portions of the 66-kV subtransmission line located within the northern portion of the City of Los Angeles in Mission Hills:

- ***Objective 16-1:*** *To ensure that the community's historically significant resources are protected, preserved, and/or enhanced.*

Chatsworth

The Chatsworth Community Plan contains the following objective, which is applicable to the portion of the 66-kV subtransmission line that crosses through Chatsworth:

- ***Objective 12:*** *To provide for the identification and preservation of cultural and historical monuments located within the Community.*

In addition, the Plan requires that "archaeological sites should be preserved intact or protected whenever possible, and explored by competent professionals before any development occurs."

Ventura County General Plan

The June 2011 Ventura County General Plan contains the following goals and policies related to cultural and paleontological resources that are relevant to the portion of the proposed project that traverses Ventura County:

1.8.1 Goals:

1. *Identify, inventory, preserve and protect the paleontological and cultural resources of Ventura County (including archaeological, historical and Native American resources) for their scientific, educational and cultural value.*
2. *Enhance cooperation with cities, special districts, other appropriate organizations, and private landowners in acknowledging and preserving the County's paleontological and cultural resources.*

1.8.2 Policies:

1. *Discretionary developments shall be assessed for potential paleontological and cultural resource impacts, except when exempt from such requirements by CEQA. Such assessments shall be incorporated into a Countywide paleontological and cultural resource data base.*
2. *Discretionary development shall be designed or re-designed to avoid potential impacts to significant paleontological or cultural resources whenever possible. Unavoidable impacts, whenever possible, shall be reduced to a less than significant level and/or shall be mitigated by extracting maximum recoverable data. Determinations of impacts, significance and mitigation shall be made by qualified archaeological (in consultation with recognized local Native American groups), historical or paleontological consultants, depending on the type of resource in question.*
3. *Mitigation of significant impacts on cultural or paleontological resources shall follow the Guidelines of the State Office of Historic Preservation, the State Native American Heritage Commission, and shall be performed in consultation with professionals in their respective areas of expertise*
4. *Confidentiality regarding locations of archaeological sites throughout the County shall be maintained in order to preserve and protect these resources from vandalism and the unauthorized removal of artifacts.*
5. *During environmental review of discretionary development the reviewing agency shall be responsible for identifying sites having potential archaeological, architectural or historical significance and this information shall be provided to the County Cultural Heritage Board for evaluation.*
6. *The Building and Safety Division shall utilize the State Historic Building Code for preserving historic sites in the County.*

4.5.3 Methodology and Significance Criteria

4.5.3.1 Methodology

~~A r~~Records searches ~~was~~were conducted for cultural resources, and ~~a~~ literature reviews and records searches ~~was~~were conducted for paleontological resources for each component of the proposed project. The information obtained was evaluated within the context of applicable federal, state, and local regulations. For cultural resources, survey data ~~for the APEs~~ along 66-kV Subtransmission Line Segments A, B, C, D, and E and Telecommunications Routes #1 (Figure 2-6) from the PEA and historic maps, cultural resources reports, and Department of Parks and Recreation record forms provided by the applicant's record searches were reviewed (SoCalGas 2011). Data from a 2011 records search and desktop analysis for Telecommunications Routes #2 and #3, and a 2012 records search, desktop analysis, and reconnaissance-level survey for Telecommunications Route #4, ~~was~~were also reviewed (SoCalGas 2011, 2012a).

During the project planning phase, SCE identified historic towers along the alignment of the proposed 66 kV-subtransmission line modification. The structures, known as "Kern River One" towers, were manufactured in 1908 using windmill parts of historic significance. An assessment of the line and these structures resource showed that they lacked the characteristics, including integrity, required for a significant historical resource (SCE 2011). SCE prepared California Department of Parks and Recreation forms to document this analysis; this resource will not be discussed in the impact section below.

For paleontological resources, published literature and unpublished manuscripts on the geology and paleontology of northern San Fernando Valley, the eastern Santa Susana Mountains, Gavin Valley, and the Newhall area of Los Angeles County were reviewed. ~~An o~~Online records searches ~~was~~were also conducted at the Museum of Paleontology, University of California, Berkeley (University of California Museum of Paleontology 2011, 2013), and records searches were also completed at the Los Angeles County Natural History Museum (SoCalGas 2012b). In addition, published geologic maps and reports provided the basis from which the regional and project-specific geology was derived. Geologic maps consulted include quadrangles at various scales from 1:24,000 to 1:250,000 (Eldridge and Arnold 1907; Kew 1924; Oakeshott 1958; Jennings and Strand 1969; Dibblee 1992, 1996).

The significance criteria for assessing the impacts on cultural and paleontological resources were defined based on the checklist items presented in Appendix G of the CEQA Guidelines. The proposed project would cause a significant impact on cultural or paleontological resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

4.5.4 Environmental Impacts and Mitigation Measures

4.5.4.1 Applicant Proposed Measures

The applicant has committed to the following applicant proposed measures (APMs) as part of the design of the proposed project. See Section 2.5, "Plans and Applicant Proposed Measures," Table 2-8, for a full description of each APM.

- **APM CR-1: Conductor Pull and Tension Sites.**
- **APM CR-2: Unidentified Cultural Resources.**
- **APM CR-3: Human Remains.**
- **APM CR-4: Cultural Surveys After Final Project Siting.**
- **APM HZ-6: Worker Environmental Awareness Training.**

4.5.4.2 Impacts Analysis

Work proposed to occur at the Aliso Canyon Plant Station site, which would include the proposed Central Compressor Station, main office, and crew-shift buildings, would be conducted on developed areas disturbed by previous construction activities. Therefore, no impacts on cultural or paleontological resources are anticipated from construction and operation of the proposed Central Compressor Station, office, and crew-shift buildings; thus, these components of the proposed project are not discussed further in this section.

Impact CR-1: Substantial adverse change in the significance of an historical resource.
LESS THAN SIGNIFICANT

Construction activities could impact known and unknown historical resources. Data collected from the records search and surveys revealed that historical resources have been documented within the ~~record searchproposed project component~~ project area~~s~~ (see discussion below). None of the previously identified resources would be impacted by the proposed project. However, ~~Further,~~ cultural resources surveys have not been conducted for some areas of the proposed project, and it is possible that previously unrecorded historical resources are present. Therefore, construction activities could impact unknown historical resources.

Storage Field, 66-kV Subtransmission Line Segments A, B, and C, ~~and~~ Telecommunications Route #1, and Telecommunications Route #4

One cultural resource has been documented within the ~~APE~~right-of-way (ROW) of the subtransmission line improvements. Site LAN-2484 is a small resource procurement site that included one metate in 16 pieces, and some shell and charcoal. The site was excavated in 1997. Excavations were limited to 10 centimeters in depth. The limited nature of the artifact scatter and the fact that the site has already been excavated indicates that the site is not eligible for the California Register of Historic Resources; therefore, there would be no impact on known cultural resources due to subtransmission line improvements. Quaternary alluvium sediments along the subtransmission line route, however, have high potential to contain buried cultural resources at depths above 5 feet.

Telecommunications Route #4

Telecommunications Route #4 passes through areas known to have a high sensitivity for historical and archaeological resources, and 25 previously recorded resources have been identified nearby. Further, undiscovered historical and archeological deposits may be present within the ROW for this project component. Areas of particular sensitivity for this route include the northern portion of the alignment, from the intersection of Gentili Ranch Road and San Fernando Road to Balboa Boulevard, especially where undergrounding work is proposed to occur (SoCalGas 2012b).

At the storage field, the proposed Natural Substation would include below-grade facilities, such as a ground grid, equipment foundations, and the footing for a chain-link fence. Excavations required to install these facilities may extend deeper than the fill layer and disturb native soil. Should this occur, there may be impacts on previously unknown cultural resources.

APM CR-1 would ensure that Southern California Edison (SCE) locates conductor pull and tension sites, where feasible, on existing level areas and existing roads to minimize the need for grading. APM CR-2 would reduce impacts, should previously unidentified cultural resources be encountered during construction. APM CR-4 would ensure that once final siting is completed for SCE's proposed project components, additional pedestrian surveys for cultural resources would be conducted, and APM HZ-6 would ensure that all workers are trained to identify historical resources and what procedures to follow when historical resources are encountered during construction.

To ensure that cultural resource surveys and monitoring for areas that would be disturbed during construction are completed, Mitigation Measure (MM) CR-1, MM CR-2, MM CR-3, MM CR-4, and MM CR-5 would be implemented. Should cultural resources be discovered during pre-construction cultural surveys or at any time during construction of the proposed project, APM CR-2 would ensure that the resources would be evaluated for California Register of Historical Resources (CRHR) eligibility. With the implementation of these MMs, impacts under this criterion would be less than significant.

MM CR-1: ~~Cultural Resources Plan~~Archeological Monitoring and Treatment Plans. The applicant and SCE will retain the services of qualified cultural resources consultants who meet or exceed the U.S. Secretary of the Interior qualification standards for archaeologists published in 36 Code of Federal Regulations 61 and have experience working in the jurisdictions traversed by the project, sufficient that they can identify the full range of cultural resources that may be found in the region. The consultants will also have knowledge of the cultural history of the project area and will be approved by ~~California Public Utilities Commission (~~CPUC~~)~~ staff. Prior to ~~issuance of~~ construction ~~permits~~, the applicant and SCE will submit Archeological Monitoring and Treatment~~Cultural Resources~~ Plans for the respective project components, prepared by the approved contractor~~consultant(s)~~ for review and approval by ~~the~~ CPUC staff. The intent of the ~~Cultural Resources~~ Plans will be to address cultural resources eligible for the CRHR that cannot be preserved by avoidance and to identify areas where monitoring of earth-disturbing activities is required. ~~The~~ Each monitoring plan shall include, at a minimum:

- A list of personnel to which the plan applies;
- Requirements, as necessary, and plans for continued Native American involvement and outreach, including participation of Native American monitors during ground-disturbing activities as determined appropriate;
- Brief identification and description of the general range of the resources that may be encountered;
- Identification of the elements of a site that would lead to it meeting the definition of a cultural resource requiring protection and mitigation;
- Identification and description of resource mitigation that would be undertaken if required, such as flagging resources adjacent to work areas for avoidance;

- Description of monitoring procedures that will take place for each project component area as required;
- Description of how often monitoring will occur (e.g., full-time, part time, spot checking);
- Description of the circumstances that would result in the halting of work;
- Description of the procedures for halting work and notification procedures for construction crews;
- Testing and evaluation procedures for resources encountered;
- Description of procedures for curating any collected materials;
- Reporting procedures; and
- Contact information for those to be notified or reported to.

MM CR-2: Additional Cultural Resources Surveys. Prior to ~~issuance of~~ construction ~~permits~~, the applicant and SCE will retain~~ensure that~~ qualified archaeological contractor~~consultant~~(s), as specified in the Archeological Monitoring and Treatment~~Cultural Resources~~ Plans, to~~will~~ conduct intensive-level cultural resources surveys (transects no greater than 15 meters) for all areas to be disturbed that have not already been surveyed for cultural resources and, prior to the project, had previously been undisturbed. Reports that specify the research design, methods, and survey results will be submitted to ~~the~~ CPUC staff for review. Cultural resources surveys for areas along Telecommunications Route #3 that are located more than 600 feet east of San Fernando Substation and along Telecommunications Route #4 south of Balboa Boulevard and north of Sharp Avenue will not be required, because these areas are located within developed residential neighborhoods that are ~~and are~~ previously disturbed~~ areas~~.

MM CR-3: Construction Monitoring. Prior to issuance of grading permit(s), the applicant and SCE will retain qualified archaeologists as specified in the ~~Cultural Resources~~ Archeological Monitoring and Treatment Plans to monitor cultural resources mitigation and ground-disturbing activities in culturally sensitive areas. Culturally sensitive areas would include those areas along the 66-kV subtransmission line reconductoring routes and Telecommunications Routes #3 and #4 and within the storage field that have not previously been disturbed. Cultural resources monitoring for areas along Telecommunications Route #3 that are located more than 600 feet east of San Fernando Substation and areas along Telecommunications Route #4 south of Balboa Boulevard and north of Sharp Avenue will not be required because these areas are located within developed residential neighborhoods ~~and~~ that are previously disturbed~~ areas~~. The qualified archaeologists will attend preconstruction meetings to provide comments and/or suggestions concerning monitoring plans and discuss excavation plans with excavation contractors.

MM CR-4: Stop Work for Unanticipated Cultural Resources Discoveries. In the event that previously unidentified cultural resources are uncovered during implementation of the project, the applicant and SCE will ensure that ground-disturbing work ~~would be~~ is halted or diverted away from the discovery to another location. The CPUC staff-approved archeologist~~cal monitor~~ will inspect and review the discovery and determine whether further investigation is required. If the discovery is significant but can be avoided and no further impacts would occur, the resource ~~would~~ will be documented appropriately and no further effort ~~would~~ will be required. If the resource is significant but cannot be avoided and may be subject to further impact, the CPUC staff-approved archeologist~~cal monitor would~~ will evaluate the significance of the resource based on eligibility for the California Register of Historical Resources (CRHR) or local registers and implement appropriate measures in accordance with the Archeological Monitoring and Treatment~~Cultural Resources~~ Plans.

MM CR-5: Cultural Resources Reporting. Prior to final inspection after construction of project components has been completed, the applicant's and SCE's qualified archaeologists as specified in the Archeological Monitoring and Treatment~~Cultural Resources~~ Plans will submit reports to ~~the~~ CPUC staff summarizing all monitoring and mitigation activities and confirming that all mitigation measures have been implemented. If a cultural resource that meets the definition of a significant resource is encountered and data recovery is necessary, then a data recovery program will be implemented for the resource that is approved by both the qualified archeologist/s and ~~the~~ CPUC staff.

Telecommunications Route #2

Telecommunications Route #2 (Chatsworth Substation to the proposed Natural Substation) has not yet been surveyed for cultural resources; therefore, MM CR-2 would be required prior to ground disturbance. A records search was conducted at the SCCIC to identify previously recorded cultural and archaeological resources, which identified the following cultural resources that may be impacted by activities associated with construction of Telecommunications Route #2.

LAN-1741H is a series of foundation pads constructed of red brick and concrete. The site includes iron reinforcements in the foundation pads, water pipes, and an electrical outlet box. The site appears to have been a building that burned down. The destruction of the site from the fire has removed the integrity of the site to a degree that it would no longer be eligible for the CRHR. Therefore, it would not be impacted by construction of the proposed project.

LAN-1742H is a stone retaining wall constructed of native cobbles, concrete walkway, a fragment of a fence line, and introduced plants. There are no signs of other structures on the site; however, a large quantity of recent building debris and trash has been dumped at the site. A 1957 (revised in 1969) U.S. Geological Survey topographic map shows that there was a structure at this location. The removal or destruction of the building indicated on the map shows that the site has been extensively modified and no longer retains integrity. The site would not be eligible for the CRHR and would not be impacted by construction of the proposed project.

19-003511 is also known as El Camino Nuevo. The site was recorded in 2004. The road was constructed in 1895 as a better alternative for the stage route known as Santa Susana Pass, or “Devil’s Slide.” The new road was the main route between San Fernando Valley and Simi Valley from 1895 to 1917. This site may retain enough integrity to be listed on the CRHR.

VEN-896H was recorded in 1981 as a relict segment of Old Freight Road. The road was documented as having a non-mortared native sandstone rock retaining wall on the downhill site, and natural rock culverts. The 2,200-foot portion of the road that was recorded was reported to be in excellent condition with the exception of one area impacted by a landslide comprising approximately 5 percent of the area of the site. The site recordation form did not include any discussion of integrity or historical significance for this site.

56-001798 was recorded in 2007 as a round metal vapor recovery facility. The facility is approximately 8 feet tall, with a diameter of 12 feet. A sheet of metal was missing from the west side of the facility. Corners of the pipes coming out of the facility contain the writing “Vapor Recovery System Co Compton Cal.” This company, also known as VAREC, began operations in the 1940s. The site recordation form did not include any discussion of integrity or historical significance for this site.

56-001799 was recorded in 2007 as a culvert under and along the shoulder of the North American Cut Off Road. The culvert is a hole in the ground with three stone walls built up approximately 3 feet. The site recordation form did not include any discussion of integrity or historical significance for this site.

APM CR-2 would reduce impacts at sites 19-003511, VEN-896H, 56-001798, and 56-001799, should previously unidentified cultural resources be encountered during construction. APM CR-1 would ensure that SCE locates conductor pull and tension sites, where feasible, on existing level areas and existing roads to minimize the need for grading. APM CR-4 would reduce impacts by ensuring that significant resources that may be found during cultural resources surveys would be assessed, and APM HZ-6 would ensure that all workers are trained about identifying historical resources and what procedures to follow if historical resources are encountered during construction. MM CR-1, MM CR-2, MM CR-3, MM CR-4, and MM CR-5 would further reduce impacts during construction. With implementation of these mitigation measures, impacts on these resources from construction of the proposed project would be less than significant.

66-kV Subtransmission Line Segments D and E and Telecommunications Route #3

California Historic Landmark-150 is Brand Park (also called Memory Garden). The property was given to the city in 1920 and was part of the original land grant of Mission San Fernando de Rey de España. The landmark is located across Brand Boulevard from the substation and is sufficiently removed from project construction that there would be no impact.

One cultural resource, however, may have preserved components in various locations near the border surrounding San Fernando Substation: LAN-169H, the San Fernando Mission. Trenching at the San Fernando Mission exposed cultural materials at up to 80 centimeters below the surface, dating to the Historic Era. The mission is also stated to have housed as many as 1,000 Native Americans within its residential units and possibly housed additional Native Americans at the mission (Toren et al. 1986). The site encompasses the current San Fernando Substation. Due to the depths at which historic era artifacts have been recovered from excavations at the mission site, it is possible that substation modifications (e.g., trenching, structure removal, and installation) may disturb historic resources should earth-moving activities expand beyond areas that have been subjected to disturbance in the past.

APM HZ-6 would ensure that all workers are trained about identifying historical resources and what procedures to follow if historical resources are encountered during construction. To ensure that monitoring for cultural resources during construction is completed, MM CR-1, MM CR-2, and MM CR-3 would be implemented. Should cultural resources be discovered during pre-construction cultural surveys, or at any time during construction of the proposed project, APM CR-2 would ensure that the resources would be evaluated for CRHR eligibility. With implementation of these mitigation measures, impacts under this criterion would be less than significant.

Impact CR-2: **Substantial adverse change in the significance of an archaeological resource.**
LESS THAN SIGNIFICANT

Storage Field, 66-kV Subtransmission Line Segments A, B, and C, and Telecommunications Route #1

Impacts on archaeological resources from the construction of the proposed Natural Substation and other components of the proposed project at the storage field as well as construction of 66-kV Subtransmission Line Segments A, B, and C, and Telecommunications Route #1 would be similar to impacts on historical resources from construction activities as described under Impact CR-1. APM CR-1 would ensure that SCE locates conductor pull and tension sites, where feasible, on existing level areas and existing roads to minimize the need for grading. APM CR-2 would reduce impacts should previously unidentified archaeological resources be encountered during construction. APM CR-4 would ensure that once final siting is completed for SCE's proposed project components, additional pedestrian surveys for cultural resources would be conducted, and APM HZ-6 would ensure that all workers are trained to identify archaeological resources and about what procedures to follow when archaeological resources are encountered during construction.

To ensure that archaeological surveys for areas that would be disturbed but have not yet been surveyed, and that monitoring for cultural resources during construction are completed, MM CR-1, MM CR-2, MM CR-3, and MM CR-4 would be implemented. Should archaeological resources be discovered during pre-construction archaeological surveys or at any time during construction of the proposed project, APM CR-2 would ensure that the resources would be evaluated for CRHR eligibility. With the implementation of these APMs and MMs, impacts under this criterion would be less than significant.

Telecommunications Route #2

Telecommunications Route #2 (Chatsworth Substation to the proposed Natural Substation) has not yet been surveyed for archaeological resources; therefore, MM CR-2 would be required prior to ground disturbance. A records search was conducted at the SCCIC to identify previously recorded cultural and archaeological resources, which identified the following archaeological resources that may be impacted by activities associated with construction of Telecommunications Route #2.

LAN-870 and LAN-963 are lithic scatters. These sites were recorded in 1978 and 1982, but were later destroyed by grading activities. Therefore, they would not be impacted by construction of the proposed project.

LAN-001043 was recorded in either 1978 or 1988 (site record is unclear) as the burial of a Native American child aged 8 to 11 at time of death. The site has been impacted by stream erosion, and the condition of the site is listed as destroyed. The burial was excavated by a local man and a coroner's report was prepared. The area was carefully probed and checked for further burials and artifacts with no further findings. Therefore, it would not be impacted by construction of the proposed project.

19-002827 was recorded in 2000 as a low-density stone tool quarry and lithic workshop that contains quartzite and volcanic flakes. The sites dimensions are 60 meters by 30 meters, and the site condition is listed as good. LAN-713 was identified as a temporary camp with an artifact scatter. Attempts to re-examine the site in 1981 were unsuccessful, and it is thought to have been buried or destroyed by grading activities. However, testing or monitoring of ground-disturbing work was recommended in the site update form.

MM CR-4 would reduce impacts at sites 19-002827 and LAN-713, should previously unidentified cultural resources be encountered during construction. APM CR-1 would ensure that SCE locates conductor pull and tension sites, where feasible, on existing level areas and existing roads to minimize the need for grading. APM CR-2 would reduce impacts by ensuring that significant resources that may be found during cultural resources surveys would be assessed, and APM HZ-6 would ensure that all workers are trained about identifying historical resources and what procedures to follow if such resources are encountered during construction. MM CR-1, MM CR-2, MM CR-3, MM CR-4, and MM CR-5, would be implemented to further reduce impacts during construction. With implementation of these mitigation measures, impacts on these resources from construction of the proposed project would be less than significant.

66-kV Subtransmission Line Segments D and E and Telecommunications Route #3

Impacts on archaeological resources along 66-kV Subtransmission Line Segments D and E and Telecommunications Route #3 would be similar to impacts on historical resources from construction activities as described under Impact CR-1. APM HZ-6 would ensure that all workers are trained about identifying archaeological resources and what procedures to follow if archaeological resources are encountered during construction. To ensure that monitoring for archaeological resources during construction are completed, MM CR-1, MM CR-2, and MM CR-3 would be implemented. With implementation of these mitigation measures, impacts under this criterion would be less than significant.

Impact CR-3: **Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.**
LESS THAN SIGNIFICANT

The proposed project would include ground disturbance that may impact buried and undiscovered paleontological resources along the 66-kV subtransmission line reconductoring routes, telecommunications routes, and at the proposed Natural Substation, guardhouse, and entry road widening sites. Impacts would be less likely within the Aliso Canyon Plant Station site and developed residential areas east of San Fernando Substation because trenching in that area is not anticipated to reach previously undisturbed soil. Implementation of MM CR-6, MM CR-7, MM CR-8, MM CR-9, and MM CR-10, which include the development of Paleontological Monitoring and Treatment Plans, paleontology construction monitoring, data recovery procedures, construction personnel training, and stop work procedures for unanticipated discoveries would reduce impacts on paleontological resources to less than significant.

MM CR-6: Paleontological Monitoring and Treatment Plans. Prior to construction~~ permit issuance~~, the applicant and SCE will retain CPUC staff-approved paleontologists to prepare Paleontological Monitoring and Treatment Plans, and submit to ~~the ~~CPUC staff for review and approval. The CPUC staff-approved paleontologists will have knowledge of the local paleontology and be familiar with paleontological procedures and techniques.

The Paleontological Monitoring and Treatment Plans will:

- Follow Society of Vertebrate Paleontology guidelines and meet all regulatory requirements;~~. The Paleontological Monitoring and Treatment Plans will a~~
- Address the 66-kV subtransmission line reconductoring routes, Telecommunications ~~route ~~Route #2, ~~and ~~Telecommunications Route #3, Telecommunications Route #4, Natural Substation, guardhouse, and entry road widening sites;~~. The Paleontological Monitoring and Treatment Plans will i~~
- Identify construction impact areas of moderate to high sensitivity for encountering potential paleontological resources and the shallowest depths at which those resources may be encountered;~~. The Paleontological Monitoring and Treatment Plans will d~~
- Detail the criteria to be used to determine whether an encountered resource is significant and if it should be avoided or recovered for its data potential;~~. The Paleontological Monitoring and Treatment Plans will also d~~
- Detail methods of recovery, preparation and analysis of specimens, final curation of specimens at a federally accredited repository, data analysis, and reporting;~~.~~

~~The Paleontological Monitoring and Treatment Plans will o~~

- Outline coordination strategies to ensure that CPUC staff-approved paleontological monitors will conduct full-time monitoring of all grading activities in sediments determined to have a moderate to high sensitivity. For sediments of low or undetermined sensitivity, the Paleontological Monitoring and Treatment Plans will specify what level of monitoring is necessary. Sediments with no sensitivity will not require paleontological monitoring;~~. The Paleontological Monitoring and Treatment Plans will d~~

- Define specific conditions in which monitoring of earthwork activities could be reduced and/or depth criteria established to trigger monitoring. These factors will be defined by the CPUC staff-approved paleontologists.

MM CR-7: ~~Construction Personnel Training~~Paleontological Sensitivity Training. Prior to the initiation of construction or ground-disturbing activities in areas with high paleontological sensitivity, the applicant and SCE shall ensure that all construction personnel conducting rough grading shall be trained regarding the recognition of possible subsurface paleontological resources and protection of all paleontological resources during construction grading. The applicant and SCE will complete training for all applicable personnel. Training will inform all applicable personnel of the procedures to be followed upon the discovery of paleontological resources. All personnel will be instructed that unauthorized collection or disturbance of protected fossils on- or off-site by the applicant or SCE or their representatives or employees is illegal and that violators shall be subject to prosecution under appropriate federal and state laws. Unauthorized resource collection or disturbance may constitute grounds for the issuance of a stop work order.

MM CR-8: Paleontology Construction Monitoring. Based on the Paleontological Monitoring and Treatment Plans, the applicant and SCE will conduct paleontological monitoring using CPUC staff-approved paleontological contractor~~monitor~~s. This will include monitoring during rough grading and trenching in areas determined to have high paleontological sensitivity and that have the potential to be shallow enough to be adversely affected by such earthwork as determined by the CPUC staff-approved P~~p~~aleontological ~~monitors~~ Monitoring and Treatment Plans.

MM CR-9: Stop Work for Unanticipated Paleontological Discoveries. In the event that previously unidentified paleontological resources are uncovered during implementation of the project, the applicant and SCE will ensure that ground-disturbing work would be halted or diverted away from the discovery to another location. A CPUC staff-approved paleontologist~~cal monitor~~ would inspect the discovery and determine whether further investigation is required. If the discovery is significant but can be avoided and no further impacts would occur, the resource would be documented in the appropriate paleontological resource records and no further effort would be required. If the resource is significant but cannot be avoided and may be subject to further impact, the CPUC staff-approved paleontological monitor would evaluate the significance of the resource and implement appropriate measures in accordance with the Paleontological Monitoring and Treatment Plans.

MM CR-10: Paleontological Data Recovery. Prior to final inspection after construction of project components has been completed, if avoidance of significant paleontological resources is not feasible during grading, treatment (including recovery, specimen preparation, data analysis, curation, and reporting) will be carried out by the applicant and SCE in accordance with the approved Paleontological Monitoring and Treatment Plans.

Impact CR-4: Disturb any human remains, including those interred outside of formal cemeteries.
LESS THAN SIGNIFICANT

A review of records and field studies in the proposed project area has revealed that potential disturbance of human remains is possible, especially along the 66-kV subtransmission line reconductoring routes and Telecommunications Route #2. Should human remains be discovered, however, proper protocols would be followed as specified in APM CR-3. APM CR-4 would ensure that once final siting is completed for SCE’s proposed project components, additional pedestrian surveys would be conducted. In addition, MM CR-1, MM CR-2, MM CR-3, MM CR-4, and MM CR-5, and MM CR-10 would further ensure that impacts would be reduced to less than significant.

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4.6 Geology, Soils, and Mineral Resources

This section describes the environmental and regulatory settings and discusses potential impacts associated with the construction and operation of the proposed project components with respect to geology, soils, and mineral resources.[1]

4.6.1 Environmental Setting

The following sections describe the geological conditions for the region in which the proposed project components are situated, as well as regional mineral resources. Geological conditions discussed include faulting, seismicity, soils, and geologic hazards.

4.6.1.1 Regional Geology

The proposed project components are situated within the southern boundary of the Ventura Basin of the Transverse Ranges geomorphic province of California. The Transverse Ranges run east from the San Bernardino Mountains to the Santa Ynez Mountains and Point Arguello in Santa Barbara County to the west. The proposed project component areas are generally situated along the southern side of the Santa Susana Mountains of the Western Transverse Range and within the Santa Clara River and San Fernando Valleys of northern Los Angeles and southeastern Ventura Counties. The western Transverse Range is composed of sedimentary, igneous, and metamorphic rocks ranging in geologic age from the Jurassic (144 million to 208 million years ago) to the Holocene (roughly the last 11,000 years). These mountains are interspersed with alluvium-filled basins and characterized by a similarly trending sequence of ridges and valleys formed by a combination of folding and faulting during a period of compression and uplift (Norris and Webb 1990).

The Santa Susana Mountains include steep mountains and moderate to steep hills, oriented east-west from eroded Tertiary sedimentary rocks. Mass wasting and fluvial erosion and deposition are the main geomorphic processes. These mountains are bounded to the south by the Simi Hills and the San Fernando Valley and on the north by the Santa Clara River Valley. The mountainous portions of the proposed project component areas include parts of Oat Mountain, the Santa Susana Mountains, and the Simi Hills.

Other parts of the proposed project component areas are located within the Santa Clara River Valley and the northern San Fernando Valley. The floodplain of the Santa Clara River is fairly flat; however, most of the topography within this area is rugged and characterized by steep-sided canyon lands. Elevations range from about 1,270 feet above mean sea level near the Newhall Substation along the Santa Clara River, to about 3,000 feet above mean sea level just west of Aliso Canyon within the Santa Susana Mountains (SoCalGas ~~2011~~2012). The San Fernando Valley is an east-west oriented, triangular-shaped alluvial plain, 20 miles long and located in an area of compression between the San Gabriel Mountains to the northeast and the Santa Monica Mountains to the south. The San Fernando Valley narrows from 10 miles wide at its western end to 3 miles wide at its eastern end.

[1] This section has been prepared using resources obtained from various publicly available data sources including the California Geological Survey (CGS, formerly the California Division of Mines and Geology), the Southern California Earthquake Center, and the United States Geological Survey (USGS). Updated information on landslide and liquefaction hazards was also evaluated, primarily through the review of published geologic quadrangle maps available from the CGS Seismic Hazards Mapping Program. The potential for fault rupture hazards and ground shaking hazards was evaluated by reviewing fault mapping, catalogs, and interactive maps, primarily available from the CGS or USGS. Updated soils information was obtained from the United States Department of Agriculture (USDA) Natural Resources Conservation Service Web Soil Survey database.

The geologic history of the Ventura Basin is characterized as a trough formation that accumulated sediment and fossils as the basin subsided (Norris and Webb 1990). The basin is filled with a sequence of sedimentary rocks that are middle Miocene to Holocene in age (BAS 2008). Within the basin are several prominent anticlinal hills, including the Santa Susana Mountains. Other ridges in the area consist of the Sulfur Mountains and the South Mountain–Oak Ridge Complex, which joins the Santa Susana Mountains to the east (Norris and Webb 1990).

4.6.1.2 Faults and Seismicity

Southern California is a geologically complex and diverse area, dominated by compressional forces created as the North American and Pacific tectonic plates slide past one another along the San Andreas Fault. Regional tectonic compressional forces shorten and thicken the earth's crust, creating and uplifting the local transverse mountain ranges, including the Santa Susana, Santa Monica, and San Gabriel Mountains. A variety of fractures, or faults, within the crust are created to accommodate the compressional strain, allowing one rock mass to move relative to another rock mass (Norris and Webb 1990). As a result, earthquakes are produced from the sudden movements along these faults, generating ground motion as the accumulated stress within the rocks is released as waves of seismic energy.

The Alquist–Priolo Earthquake Fault Zoning Act (Pub. Res. Cod. Div. 7, Ch. 2.5) requires the delineation of earthquake faults for the purpose of protecting public safety. Faults included in the Alquist–Priolo Earthquake Fault Zoning Program are classified by activity:

- Faults classified as "active" are those that have been determined to be "sufficiently active and well defined," with evidence of movement within Holocene time (CGS 2007).
- Faults classified as "potentially active" have shown geologic evidence of movement during Quaternary time (within the last 1.6 million years) (CGS 2007).
- Faults considered "inactive" have not moved in the last 1.6 million years (CGS 2007).

Faults generally produce damage in two ways: ground shaking and surface rupture. Seismically induced ground shaking covers a wide area and is greatly influenced by the distance to the seismic source, soil conditions, and groundwater depth. Surface rupture is limited to the areas closest to the faults. Other potential hazards associated with seismically induced ground shaking include earthquake-triggered landslides and tsunamis.

In modeling the state's seismic risks, the California Division of Mines and Geology (CDMG) classified faults into two categories:

- **Type A Faults**: These faults have slip rates greater than 5 millimeters per year (mm/yr), magnitude >7.0, and well-constrained paleoseismic data. The San Andreas and Elsinore Faults are examples of Type A faults.
- **Type B Faults:** All other faults not classified as Type A faults. Type B faults lack paleoseismic data necessary to constrain the recurrence interval of large events. The San Gabriel, Oak Ridge, Holser, and Santa Susana Faults are Type B faults (CDMG 1969).

To identify potentially active faults, the Central Compressor Station location was used as the center point of a search conducted using the EQFAULT computer program, Version 3.0 (SoCalGas 2009). In addition, faults shown on the geologic maps for areas in the vicinity of the proposed project were also identified (Dibblee 1992, 1996; SCEC 2011). A list of active or potentially active faults identified within approximately 25 miles of the proposed project component areas is presented in Table 4.6-1. Faults located adjacent to and within the proposed project component areas are shown on Figure 4.6-1. Specific faults located beneath or adjacent to each of the proposed project components are further discussed in Section 4.6.2.

Table 4.6-1 Summary of Faults Located Within 25 Miles of the Proposed Project Component Areas

Fault Name	Distance from the Proposed Central Compressor Station (miles)	Fault Segment Length (miles)	Fault Type	Slip Rate (mm/ year)	Maximum Earthquake Magnitude (M_w)	Last Rupture
San Fernando	2.7	10.6	Thrust	5	6.0–6.8	Late Quaternary, except for a short segment which ruptured slightly in 1971
Santa Susana[1]	0.5 (within proposed project component areas)	38	Thrust	5–7	6.5–7.3	Late Quaternary, except for a short segment which ruptured slightly in 1971
Northridge Hills (East Oak Ridge)	3.4	15.5	Reverse	NA	6.9	Late Quaternary
Mission Hills	4	6.2	Reverse	Less than 0.5	6.2	Late Quaternary, possibly Holocene
Big Mountain	8	7.5	Reverse	Less than 0.5	NA	(Early or Late) Quaternary
Devonshire	1.7	NA	NA	NA	7.0	Holocene
Holser	3.6	12.4	Reverse	0.4	6.5	Late Quaternary
San Gabriel	4.7	90	Primarily right-lateral strike-slip	1–5	7	Late Quaternary west of intersection with Sierra Madre Fault; Quaternary east of that intersection; Holocene only between Saugus and Castaic
Oak Ridge (Onshore)	10.1	55.9	Thrust	3.5–6	6.5–7.5	Holocene, in part; mainly Late Quaternary Slip
Whitney	1.0	NA	NA	NA	NA	Late Quaternary
Verdugo	10.3	13.0	Reverse	~0.5	6.0–6.8	Holocene; Late Quaternary along northern segment
San Cayetano	14	28	Thrust	1.3–9	6.5–7.3	Less than 5,000 years ago
Simi–Santa Rosa	15	24.9	Reverse	NA	6.7	Holocene
North Branch Simi	1.5	25	Reverse	NA	NA	Holocene
South Branch Simi	1.5	25	Reverse	NA	NA	Holocene
Sierra Madre	15.2	46.6	Reverse	0.36–4	6.0–7.0	Holocene

Table 4.6-1 Summary of Faults Located Within 25 Miles of the Proposed Project Component Areas

Fault Name	Distance from the Proposed Central Compressor Station (miles)	Fault Segment Length (miles)	Fault Type	Slip Rate (mm/ year)	Maximum Earthquake Magnitude (M_w)	Last Rupture
Hollywood	19.5	9.3	Left-reverse	0.33–0.75	5.8–6.5 (if alone; larger if rupture is simultaneous with another fault)	Holocene
Santa Monica	20.3	14.9	Left-reverse	0.27–0.39	6.0–7.0	Late Quaternary
Malibu Coast	21.7	21.1	Reverse	0.3	6.7	Holocene, in part; otherwise Late Quaternary
San Andreas–1857 Rupture	22.5	746	Right-lateral strike-slip	20–35	6.8–8.0	1857
San Andreas–Mojave	22.5	746	Right-lateral strike-slip	20–35	6.8–8.0	1857
Anacapa–Dume	22.7	NA	NA	NA	7.3	NA
San Andreas–Carrizo	23.7	746	Right-lateral strike-slip	20–35	6.8–8.0	NA
Raymond	24.5	16.2	Left-lateral; only minor reverse slip	0.10–0.22	6.0–7.0	Holocene
Newport–Inglewood (Long Beach)	24.9	46.6	Right-lateral; local reverse slip associated with fault steps	0.6	6.0–7.4	1933
Santa Ynez (East)	25.2	At least 81	Left-reverse	0.1–0.7	6.5–7.5	Late Quaternary; except for a short Holocene segment near the intersection with the Baseline fault

Sources: SoCalGas ~~2011~~2012; Blake 2000 (EQFAULT computer program, Version 3.0); CGS 2000 (Digital Database of Quaternary and Younger Faults from the Fault Activity Map of California, Version 2.0); SCEC 2011; Dibblee 1992, 1996

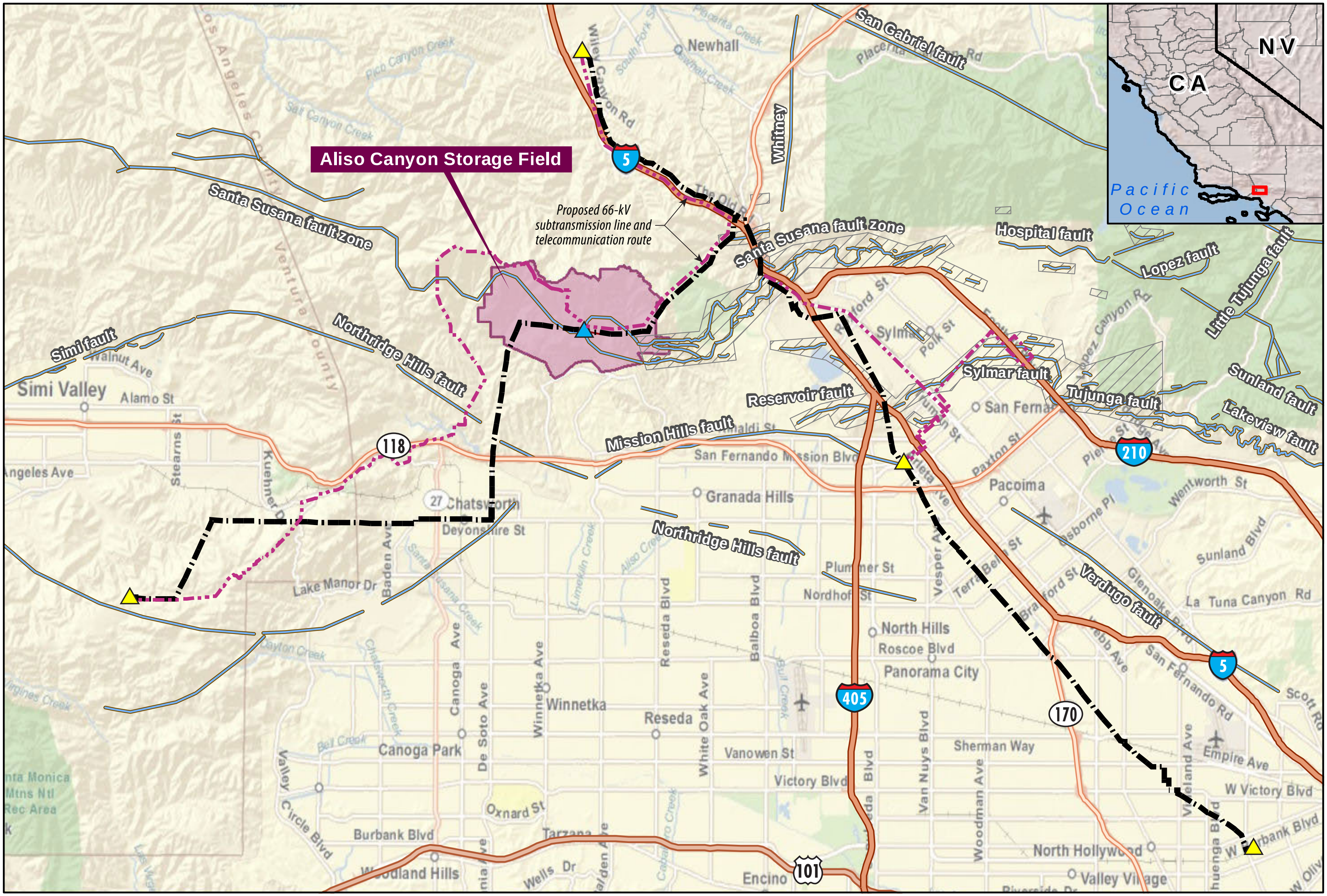
Key:

NA = Not available

Note:

[1] The distance from the proposed project (defined in this radius search as the Central Compressor Station) to the Santa Susana Fault Zone is ~0.5 miles; however, the southernmost portion of the existing 66-kilovolt subtransmission line lies within this fault zone (identified from Dibblee mapping with data from the SCEC website).

Sources: CGS 2010, SoCalGas 2009–2012



Existing SCE Substation
Proposed Natural Substation
Proposed Telecommunication Route
Existing SCE 66-kV Subtransmission Line
Fault Line
Alquist-Priolo Earthquake Zone
Aliso Canyon Storage Field

N

0 0.5 1 2 3 4 Miles

Figure 4.6-1

Faults in the Vicinity of the Proposed Project

Earthquakes on any of the active or potentially active faults could cause strong ground shaking, surface fault rupture, or liquefaction in susceptible areas. To evaluate potential seismic effects on the proposed project, modeling was conducted to estimate the maximum credible earthquake (MCE) and maximum probable earthquake (MPE). The MCE refers to the maximum earthquake potentially capable of occurring under the presently known tectonic framework. The MPE refers to the maximum earthquake that is likely to occur during a 100-year interval and is often used in the design of earthquake resistant structures.

Modeling indicated that the Holser Fault, located approximately 3.6 miles from the proposed Central Compressor Station site, would produce an MCE of maximum moment magnitude (M_w) 6.75 and an MPE of M_w 6.25. Portions of the proposed project component areas are also located within a zone of concentrated ground breakage that occurred during the 1994 Northridge earthquake (CGS 1995).

4.6.1.3 Soils

Soils beneath the various proposed project components reflect alluvial parent material, underlying rock type, extent of weathering, degree of slope, and degree of modification attributed to human activity. Table 4.6-2 describes the characteristics of major soil units underlying the proposed project component areas, including soil texture, soil location, erosion class, and shrink-swell potential of the major soil units. Soils data for the proposed project component areas were obtained from the Web Soil Survey database maintained by the U.S. Department of Agriculture Natural Resources Conservation Service (USDA 2009). Soil types specific to each of the proposed project components are further discussed in Section 4.6.2.

Table 4.6-2 Major Soil Unit Types and Characteristics

Soil Name (map unit number)	Description/Soil Texture (USDA)	Locations	Erosion Class	Shrink-Swell Potential
Anacapa (100)	Sandy loam	3	–	–
Badland (102)	–	1, 2, and 3	Low	Low
Balcom (103)	Silty clay loam	2	Medium	Moderate
Balcom (104)	Silty clay loam	3	–	–
Balcom (105)	Silty clay loam	1, 2, and 3	Very High	Moderate
Capistrano–Urban land complex (107)	–	2 and 4	Low	Low
Capistrano–Urban land complex (108)	–	2	Low	Low
Castaic and Saugus soils (CnG3)	–	2	Very High	Moderate
Castaic–Balcom (CmD)	Silty clay loam	2	Medium	Moderate
Castaic–Balcom (CmE)	Silty clay loam	1 and 2	Very High	Moderate
Castaic–Balcom (CmF)	Silty clay loam	2	Very High	Moderate
Castaic–Balcom (CmF2)	Silty clay loam	2	Very High	Moderate
Chualar–Urban land complex (109)	–	1, 2, 3, and 4	Low	Low
Conejo Urban land complex (110)	–	4	–	–
Cortina (CyA)	Sandy loam	1 and 2	Low	Low
Gaviota (116)	Sandy loam	3	Very High	Low
Gaviota (117)	Sandy loam	1, 2, and 3	Very High	Low
Gaviota (GaF2)	Rocky sandy loam	1 and 2	Very High	Low
Gaviota (GrF)	Rocky sandy Loam	3	–	–
Gaviota (126)	Rock outcrop	3	–	–
Gazos (118)	Silty clay loam	1, 2, and 3	Very High	Moderate
Gazos (119)	Silty clay loam	1, 2, 3	Very High	Moderate
Gazos (GbF)	Clay loam	2 and 3	Very High	Moderate
Gazos–Balcom complex (120)	–	2, ~~and~~ 3, and 5	Very High	Moderate
Hanford (HcA)	Sandy loam	2	Low	Low

Table 4.6-2 Major Soil Unit Types and Characteristics

Soil Name (map unit number)	Description/Soil Texture (USDA)	Locations	Erosion Class	Shrink-Swell Potential
Hanford (HcC)	Sandy loam	2	Low	Low
Lopez (121)	Shaly clay loam	1 and 2	High	Low
Metz (MfA)	Loamy sand	2	Low	Low
Metz (MgB)	Loam	2	Low	Low
Millsholm (122)	Loam	2 and 5	Very High	Low
Millsholm (MhE2)	Rocky loam	2	High	Low
Millsholm (MhF2)	Rocky loam	2	Very High	Low
Ojai (OgC)	Loam	2	Low	Low
Ojai (OgE)	Loam	2	High	Low
Ojai (OgF)	Loam	2	Very High	Low
Sandy Alluvial Land (Sa)	–	2	Low	Low
San Emigdio Urban land complex	–	4	–	–
Saugus (128)	Loam	2 and 3	High	Low
Saugus (129)	Loam	2	Very High	Low
Saugus (ScE)	Loam	2	High	Low
Saugus (ScF)	Loam	2	Very High	Low
Saugus (ScF2)	Loam	2	Very High	Low
Saugus (ShE)	Sandy loam	3	–	–
Sedimentary Rock Land (SnG)	–	3	–	–
Soper (132)	Gravelly sandy loam	2	Very High	Low
Xerorthents (138)	–	2	Low	Low
Xerorthents–Urban land–Balcom complex (139)	–	2	Low	Low
Xerorthents–Urban land–Saugus complex (143)	–	2 and 5	Low	Low
Yolo (YoA)	Loam	2	Low	Low
Yolo (YoC)	Loam	2	Low	Low
Zamora (ZaC)	Loam	2	Low	Low
Zamora (ZmD2)	Loam	3	–	–

Source: USDA 2009; SoCalGas 2012
Notes:
Locations:
1 = Storage Field Site
2 = 66-kilovolt Subtransmission Line (Segments A, B, and C) and Telecommunications Route #1
3 = Telecommunications Route #2
4 = 66-kilovolt Subtransmission Line (Segments D and E) and Telecommunications Route #3
5 = Telecommunications Route #4

Erosion Class: Based on Bureau of Land Management Standards (Natural Resources Conservation Service rating by county may be different)
0–3 = Low
3–5 = Medium
5–7 = High
>7 = Very High

Shrink-Swell Potential Descriptors:
Low = Linear extensibility less than 3%
Moderate = Linear extensibility 3 to 6%
High = Linear extensibility 6 to 9%
Very High = Linear extensibility greater than 9%

4.6.1.4 Geologic Hazards

The following sections describe the potential geologic hazards prevalent within the region. Hazards include fault rupture, ground shaking, liquefaction, landslides, subsidence, and expansive and collapsible soils.

Fault Rupture

The location of active faults that may cross beneath a transmission line route or affect a substation or other structures is a factor considered in the seismic (earthquake) design of project structures. As discussed above in Section 4.6.1.2, the proposed project is located in an area characterized by substantial faulting, and each of the various proposed project components crosses one or more faults characterized as active or potentially active. Accordingly, future earthquakes could occur anywhere within the proposed project component areas. The potential for fault rupture specific to each of the proposed project components is further discussed in Section 4.6.2.

Ground Shaking

The intensity of the seismic shaking, or strong ground motion, during an earthquake is dependent on the distance between the proposed project component areas and the geologic conditions underlying and surrounding the areas. Areas atop bedrock typically experience less severe ground shaking than those underlain by loose, unconsolidated materials. Ground movement during an earthquake can vary depending on the overall magnitude, distance from the fault, focus of the earthquake energy, and type of geologic materials underlying the project component areas (CGS 1995). Magnitude is the measure of energy released in an earthquake, while intensity measures the ground shaking effects at a particular location.

The proposed project component areas are subject to strong ground shaking in the event of a major earthquake (CGS 1995). Earthquakes occurring on faults closest to the proposed project component areas would likely generate the largest ground motion.

Liquefaction

Liquefaction is a seismic phenomenon in which loose, saturated, fine-grained soil behaves similarly to a fluid when subjected to high-intensity ground shaking. Liquefaction occurs when the following conditions exist: (1) shallow groundwater; (2) low-density, fine, clean sandy soil; and (3) high-intensity ground motion. Typically, liquefaction occurs in areas where groundwater is less than 50 feet from the surface, and where the soil consists predominantly of poorly consolidated sands. A certain ground shaking intensity is required to trigger liquefaction, depending on the magnitude, distance, direction, depth, and type of earthquake; the soil and bedrock conditions beneath the project component areas; and the topography of the proposed project areas (SoCalGas ~~2011~~2012). Liquefaction can result in vertical settlement of soils and could include lateral deformations; however, earthquakes can also induce settlement without liquefaction occurring, including within dry sands above the water table (SoCalGas ~~2011~~2012).

Landslides

Landslides, rockfalls, and debris flows may occur continuously on all slopes; some processes act slowly, while others occur suddenly, with potentially disastrous results. Landslide areas are generally confined to areas of weak or clay bedrock and adverse geologic structure (such as bedding, joints or fracture planes dipping in downslope directions). Slides can result from certain geologic features, slope steepness, excessive rainfall, earthmoving disturbance, and seismic activity. Events and actions that trigger landslides include seismic ground shaking, over-weighting the slope with either naturally deposited colluviums (i.e., loose sedimentary bodies) or artificial fill, decreasing soil cohesiveness by adding water to the materials on the slope, excavation, development, or undercutting a slope through erosive action or human disturbance.

Subsidence

Subsidence is normally the result of the withdrawal of fluids or materials from the ground, or creating subsurface voids that cause the ground surface to sink. Typically, subsidence is caused by the extraction of groundwater and/or oil or other mining activities; when fluid or material is withdrawn, the effective pressure in the drained sediments increases. Compressible sediments are then compacted due to overlying pressures no longer being compensated by hydrostatic pressure from below. Subsidence and associated fissuring have occurred in a variety of places due to fluctuating (rising and falling) groundwater tables (USGS 2000). There are several basins within the Transverse Ranges, including the San Fernando Basin and Ventura Basin, noted for petroleum production and withdrawal of oil and gas deposits that may result in subsidence (DOGGR 2002).

Expansive Soils

Expansive soils contain significant amounts of a specific type of high-plasticity clay (smectite) that expands when it becomes wet and shrinks upon drying, resulting in volume changes in the soil column. Expansive soils are generally fine-grained soils with an appreciable amount of smectitic clay. A quantitative assessment of the expansion potential of the soils was not performed for this study.

Collapsible Soils

Collapsible soils are soils that experience a decrease in volume and associated settlement as a result of a change in soil structure associated with the wetting of partially saturated subsoil. Typically, collapsible soils occur predominantly at the base of mountains where Holocene-age alluvial fan and wash sediments have been deposited during rapid runoff events.

4.6.1.5 Mineral Resources

The primary mineral resources of Los Angeles County are natural aggregates (sand and gravel), crushed rock, and petroleum (oil and gas). These resources are important to the physical and economic development of the county. Sand and gravel are typically used to produce building materials such as Portland-cement-concrete aggregate (PCC-grade aggregate), asphaltic-concrete aggregate (AC-grade aggregate), road base, railroad ballast, rip-rap, and fill (USGS 2011; SoCalGas ~~2011~~2012).

According to the California Division of Oil, Gas, and Geothermal Resources (DOGGR), oil and gas exploration and pumping from proven reserves has occurred extensively within the Santa Susana Mountains, including but not limited to numerous oil fields operated by Southern California Gas Company (SoCalGas, or the applicant), Chevron U.S.A. Inc., ExxonMobil Corp., L.A. Ventura Oil Fields Co., Placentia Oil Co., and Porter Sesnon (SoCalGas ~~2011~~2012; DOGGR 2002).

Aliso Canyon is primarily a southeast-dipping nose with Pliocene oil zones trapped up dip to the north by the Santa Susana Fault and to the west by the Frew Fault. The deeper Miocene and Eocene (56–34 million years ago) productive oil sands are trapped up dip by the south dipping Ward reserve fault in the center of the field. These deeper sands, known as the Sesnon and Frew sands, are the primary gas storage zones in the main Aliso Canyon Natural Gas Storage Field (storage field) (Solimar Energy 2008). An undrilled fault block identified next to the storage field has produced 60 million barrels of oil and 18 billion cubic feet of gas before being converted to a gas storage unit. Various oil companies (e.g., Termo, Chevron, ExxonMobil, and SoCalGas, etc.) have installed oil wells for petroleum withdrawal (Solimar Energy 2008). There are several oil fields located adjacent to the storage field, including the Newhall Oil field located to the north, the Cascade oil field located to the east, and the Oat Mountain Oil field located to the northwest (DOGGR 2002).

The Aliso Anticline was explored as a potential oil trap by drilling numerous exploratory borings within the area. Based on the DOGGR's Regional Wildcat Map 254 for District 2 and conversations with DOGGR personnel, numerous wells have been identified within the proposed project component areas. The wells within the storage field area and vicinity consist of idle, active, abandoned, and dry wells. A total of 242 oil wells have been identified within the area. Zones other than the storage field include 134 active wells, 47 inactive wells, 56 abandoned oil wells, 2 of unknown status, and 3 cancelled wells (DOGGR 2002; SoCalGas ~~2011~~2012).

Other minerals found in the proposed project component areas of commercial value are asphalt, clay, expansible shale, gypsum, limestone, and phosphate. Pursuant to the California Surface Mining and Reclamation Act (SMARA) of 1975 (Pub. Res. Code, Div. 2, Ch. 9, §2710 et seq.), and its subsequent revisions, mineral resources have been identified, mapped, and classified by Mineral Resource Zone (MRZ). MRZs have been designated to indicate the significance of mineral deposits and include the following categories:

- **MRZ-1:** Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.
- **MRZ-2:** Areas where adequate information indicates significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.
- **MRZ-3:** Areas containing mineral deposits about which the significance cannot be evaluated from available data.
- **MRZ-4:** Areas where available information is inadequate for assignment to any other MRZ. (SMGB 2000).

Aggregate resources in the county have been mapped and designated by MRZ. Those areas designated MRZ-2 are areas where significant deposits are known to exist which, per SMARA, warrant particular protection to ensure the county a long-term supply of construction material (CDC 2007; SoCalGas ~~2011~~2012).

4.6.2 Geological Setting of Project Components

The following sections describe the geology, geologic hazards, soils, and mineral resources for each of the proposed project components.

4.6.2.1 Storage Field, 66-kilovolt Subtransmission Line (Segments A, B, and C), and Telecommunications Route #1

Geology

A summary of the geologic units underlying the storage field; Segments A, B, and C of the 66-kilovolt (kV) subtransmission line reconductoring; and Telecommunications Route #1 is presented in Table 4.6-3. The lithology beneath the storage field, 66-kV subtransmission line, and Telecommunications Route #1 consists of upper Cretaceous sediments (not at surface); Tertiary and Quaternary marine sediments; and alluvial/stream channel sediments, which are thousands of feet thick. Below the thick accumulations of sediments are crystalline Basement Complexes, which are Mid-Cretaceous and older in age (Norris and Webb 1990; SoCalGas ~~2011~~2012). The northern portion of the proposed project component areas is primarily underlain by marine and nonmarine sedimentary rocks divided among the Towsley, Pico, and Saugus Formations. The Saugus Formation is mainly located within the northern portion of the proposed project area near the Newhall Substation and east of Interstate-5 (I-5). The Pico Formation is mainly located along the central portion of the proposed project area around Gavin Canyon and to just south of Rice Canyon. The Towsley Formation is mainly located along the alignment of the existing 66-kV subtransmission line, which transects I-5 to the south, and within the Sunshine Canyon Landfill. The 66-kV subtransmission line runs above all three formations (Dibblee 1992, 1996; SoCalGas ~~2011~~2012). The area from Newhall Substation to Rice Canyon is underlain by alluvium. A small area along the southwestern perimeter of the storage field is mapped as a possible surficial slide. The Sisquoc Shale is mainly located south of the Sunshine Canyon Landfill and the boundary of the storage field. The Monterey Shale and Topanga Formations are located primarily within the storage field.

Table 4.6-3 Geologic Conditions: Storage Field, 66-kV Subtransmission Line Reconductoring, and Telecommunications Route #1

Geologic Unit/Structure	Formation Name	Description/Comments
af	Artificial Fill [Recent]	Recent land disturbance; ranging from uncontrolled deposits of construction debris to engineered fill placed during land improvement projects.
Qg	Gravel Deposits [Quaternary]	Gravel and sand of major stream deposits.
Qa	Alluvial Gravel [Quaternary]	Alluvial gravel, sand, and clay of valley and floodplain areas.
Qls	Landslide Deposits [Holocene and late Pleistocene]	Rock debris from bedrock and surficial materials resulting from slides, slumps, falls, topples, and flows; generally unconsolidated.
Qoa	Older Alluvial Deposits [Quaternary]	Non-marine deposits of undifferentiated, dissected and/or uplifted, unconsolidated to poorly consolidated, non-stratified to slightly stratified sand, silt, clay, and gravel. Includes terrace, older alluvial fan, valley fill, and floodplain deposits.
QTs	Saugus Formation [Pliocene to Pleistocene]	Non-marine terrestrial and stream deposits of weekly consolidated, light gray to brown pebble-cobble conglomerate, sandstone, and lesser amounts of grayish to reddish brown soft siltstone/claystone. Conglomerate clasts consist of granitic, gneissic, metavolcanic, quartzitic, gabbroic, and anorthositic detritus in a sandy matrix.
Ts	Saugus Formation [Pliocene]	Similar to QTs but correlates in age to Tsr and Tps in parts.
Tsr	Sunshine Ranch Member [Pliocene to Pleistocene]	Similar to QTs but composed mostly of more indurated greenish-gray claystone, siltstone, and fine-grained sandstone. Contains brackish marine layers with oyster shells in the lower part. Few thin layers of peat.
Tps	Pico Formation [late Miocene to early Pliocene]	Marine and lagoon deposits of light gray to white, soft friable sandstone. Locally pebbly and contains abundant whole and fragmented bivalve shells. Grades upward into Saugus Formation.
Tp	Pico Formation [late Miocene to early Pliocene]	Marine deposits of mostly gray micaceous siltstone/claystone with minor sandstone layers. Bedded to massive.

Table 4.6-3 Geologic Conditions: Storage Field, 66-kV Subtransmission Line Reconductoring, and Telecommunications Route #1

Geologic Unit/Structure	Formation Name	Description/Comments
Ttos	Towsley Formation [early Pliocene and possibly late Miocene]	Marine clastic deposits of light gray to tan, coherent to semi-friable, medium-grained sandstone. Minor micaceous siltstone and occasionally pebbly and gritty.
Ttoc	Towsley Formation [early Pliocene and possibly late Miocene]	Marine clastic deposits of gray micaceous silty claystone and siltstone. Minor sandstone.
Tsq	Sisquoc Shale (correlates to Modelo Formation) [late Miocene]	Marine clastic deposits of dark gray to brownish gray clay shale. Bleaches to light gray.
Tm	Monterey Shale – upper part (correlates to Modelo Formation) [middle and late Miocene]	Marine deposits of dark gray brown thin-bedded siliceous shale, hard, platy, brittle, porcelaneous, cherty, closely fractured, and fissile. Weathers cream white.
Tml	Monterey Shale – lower part (correlates to Modelo Formation) [middle Miocene]	Marine deposits of dark brown semi-siliceous shale to soft shaly claystone. Weathers cream white. Includes some thin strata of calcareous shale and dolomite.
Ttus	Topanga Formation – upper sandstone [middle Miocene]	Marine deposits of light gray to white sandstone. Locally pebbly. Massive to vaguely bedded.
Tb	Topanga Formation – basalt flow [middle Miocene]	Basalt flow or possibly a diabase sill. Black, massive.

Source: Dibblee 1992, 1996

Faults and Seismicity

The proposed project component areas are located within a seismically active area of southern California, a region that has experienced numerous earthquakes in the past. Within the Santa Susana Mountains, faulting is very common; however, the majority of faults have not been evaluated for activity (SoCalGas ~~2011~~2012). The most recent major quake to occur near the proposed project component areas was the January 1994 Northridge earthquake. This quake caused the storage field to shut down for three days; however, the reservoir remained intact and field integrity was never compromised. While no major damages occurred within the storage field, some of the injection/withdrawal wells and piping experienced minor damage. Because of the seismicity of the surrounding area, there is potential for the proposed project component areas to experience strong ground shaking from local and regional active faults.

Several faults lie beneath or adjacent to this portion of the proposed project areas. The following sections describe these faults in detail.

Santa Susana Fault Zone

The Santa Susana Fault Zone (Type B fault) consists of a complex group of predominantly northwest trending, north-dipping reverse faults. The fault zone extends up to 23 miles and runs from the eastern end of the Oak Ridge Fault, near the City of Fillmore, to the Sierra Madre and San Fernando Faults to the east. The fault zone is considered to be the most significant seismic source in the northern San Fernando Valley (SoCalGas ~~2011~~2012). The most recent movement on the fault zone has been estimated as Late Quaternary (last 2.58 million years to present), except for a short segment in the San Fernando Valley which ruptured in the 1971 San Fernando earthquake, experiencing surface displacements along its trace. The Santa Susana Fault is considered capable of generating an earthquake of M_w 6.5 to 7.3 and has an estimated average slip rate of 5 to 7 mm/yr (SCEC 2011).

Whitney

The Whitney Fault (also known as the Swall–Ferrier Fault) runs north-south and is the major structural feature of Whitney Canyon in the Community of Newhall in the City of Santa Clarita (Walling 1934). Although not evident in Whitney Canyon, it is evident in Elsmere Canyon, approximately 1.75 miles north of the proposed project component areas.

San Fernando Fault Zone

The San Fernando Fault is an approximate 12-mile segment of the Sierra Madre–Santa Susana Fault system and is located approximately 3 miles east of the proposed project component areas. The fault zone has an estimated average slip rate of 2 mm/yr (SoCalGas ~~2011~~2012; CGS 2010).

The February 1971 San Fernando (Sylmar) earthquake (M_w 6.6) originated along this fault zone and ruptured the surface for approximately 12 miles in the Sylmar–San Fernando Area. The maximum slip was up to 6 feet (CGS 2010).

Oak Ridge Fault

The active Oak Ridge Fault is a steep, south-dipping reverse fault located approximately 2.5 miles north of the Newhall Substation. Segments of the Oak Ridge Fault extend for approximately 62 miles from Santa Barbara to Piru and form the boundary between Oak Ridge to the south and the Santa Clara River to the north (Ziony and Jones 1989). The Oak Ridge Fault Zone has an estimated average slip rate of 4 mm/yr (CDMG 1996). The maximum credible earthquake is M_w 6.9 for both the eastern and western parts of this fault. The M_w 6.7 1994 Northridge earthquake is thought to have occurred along the eastern end of the Oak Ridge Fault (Yeates et al. 1995; SoCalGas ~~2011~~2012).

Devonshire Fault

The Devonshire Fault is a high angle thrust fault dipping south, located up to 1.7 miles southwest of the proposed project area where the fault cuts across Limekiln Canyon one mile north of State Route (SR) 118. The Devonshire Fault thrusts over older alluvium and is thought to be pre-Holocene (older than 10,000 years). The CGS currently classifies this fault as inactive, but presumed to be potentially active (SoCalGas ~~2011~~2012; Dibblee 1992, 1996; CGS 2007; SCEC 2011). The fault has the potential to produce a maximum credible earthquake of M_w 7.0.

Soils

A shown above in Table 4.6-2, several soil types are present within the proposed project component areas. The soils are within the Castaic–Balcom, Gaviota, and Milsholm Soil associations. These soils are derived from deposits of sediment and alluvial materials, primarily from the erosion of intrusive granitic rocks, metamorphic schist, slates, and sedimentary rocks (sandstone and shale) originating from the nearby mountains.

The soils underlying the proposed project component areas consist of loamy sands, clayey loams, coarse sandy loams, and rocky sandy loams on low river terraces and alluvial deposits. These soils are generally well drained, with some excessively drained, and have a low to moderate shrink-swell potential. The susceptibility of these soils to erosion ranges from low to very high—influenced by both soil type and slope.

The silty clay and sandy loam soils underlying the proposed project component areas are classified as "saline alkali" and have a relatively alkaline pH (7.6 to 8.1). The risk of corrosion to steel is very high for ferrous metals under saturated conditions and moderately corrosive to corrosive under existing field moisture conditions (Globus 2006; Mactec 2011). The risk of caving for shallow excavations is generally low and the erosion hazard is medium to very high. The risk of corrosion to concrete is low (Mactec 2011). The shrink-swell potential is low to moderate for coarser texture soils (USDA 2009). It is anticipated that the proposed project activities could be performed using conventional grading and foundation construction techniques (Globus 2006).

Geologic Hazards

The following sections describe the potential geologic hazards prevalent around the storage field; Segments A, B, and C of the 66-kV subtransmission line; and Telecommunications Route #1. Hazards include fault rupture, ground shaking, liquefaction, landslides, subsidence, and expansive and collapsible soils.

Fault Rupture

The location of active faults that may cross a transmission line route or affect a substation or other structures is a factor considered in the seismic (earthquake) design of project structures. An estimate of the amount and type of potential surface fault displacement (offset) within the proposed project component areas considers the active San Fernando Fault Zone and potentially active Santa Susana Fault Zone. Movement along the Santa Susana Fault Zone could affect Segments A and B of the 66-kV subtransmission line from the Tap Point A to the proposed Natural Substation.

Ground Shaking

The United States Geological Survey (USGS) provides a uniform estimate of the intensity (strength; not to be confused with magnitude) of earthquake-induced ground motion based on an up-to-date assessment of potential earthquake faults or other sources. Peak horizontal ground acceleration is a commonly used benchmark that is provided for probability of occurrence and represented as a fraction of the acceleration of gravity (g) (e.g., 0.2g). The approximate estimated range of peak ground acceleration for a 2 percent (0.02) probability of being exceeded in 50 years in the proposed project component areas is between 0.59g and 0.77g (USGS 2008). The CGS estimates a peak ground acceleration of between 0.5g and 0.9g with a 10 percent probability of being exceeded in 50 years (CGS 1999). The computed largest credible peak acceleration is 0.82g, while the computed largest probable peak acceleration is 0.74g (SoCalGas ~~2011~~2012). The computed largest credible repeatable high ground acceleration is 0.54g, while the computed largest probable repeatable high ground acceleration is 0.49g. Overall, this information suggests that strong ground shaking could be experienced within the proposed project component areas.

Liquefaction

According to the State of California, Seismic Hazard Zone, Oat Mountain Quadrangle Liquefaction Zone (CDMG 1998), portions of the proposed project component areas lie within a Liquefaction Zone (areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693[c] would be required). These areas include parts of Segments A and B of the 66-kV subtransmission line and Telecommunications Route #1 located north of I-5.

Landslides

The proposed project component areas are located adjacent to or within earthquake-induced landslide zones (DMG 1998). In addition, the surrounding area and several locations along the existing and proposed 66-kV subtransmission line and Telecommunications Route #1 cross, or are within, several landslide features identified as landslide debris (Qls) that occurred during the Quaternary (Dibblee 1992, 1996). The 1994 Northridge earthquake triggered more than 11,000 landslides over an area of approximately 3,800 square miles. Most of the landslides were concentrated in an approximate 380-square-mile area that included the Santa Susana Mountains and the mountains north of the Santa Clara River Valley. Most of the triggered landslides were at shallow depths of approximately 1 to 5 meters (SoCalGas ~~2011~~2012).

Subsidence

Although fluid (groundwater, petroleum, and natural gas) withdrawal, which can result in subsidence, takes place regularly in the project area, ~~T~~the proposed project component areas are not located within ~~an~~ areas of known subsidence associated with fluid withdrawal ~~(ground water or petroleum)~~, peat oxidation, or hydrocompaction. ~~Subsidence would be primarily associated with the withdrawal of oil and gas from the sedimentary strata located within the storage field. However,~~ A~~a~~lthough both groundwater and petroleum have been removed from the ground, there is no evidence that significant subsidence has occurred or may occur in the future., and~~. The likelihood of seismically induced settlement is, therefore, considered to be remote.~~

Expansive Soils

The general expansive characteristics for soil that may be encountered along the existing 66-kV subtransmission line route were obtained from USDA soil survey estimated soil property tables. Based on soil descriptions, the soils in the proposed project component areas have a low to moderate shrink-swell potential; therefore, there is no significant potential for the presence of expansive soils within the near surface.

Collapsible Soils

Collapsible soils are unlikely to be present in the proposed project component areas, because the typical conditions that result in these soils are not found within the area.

Mineral Resources

The majority of the proposed project component areas lies in an MRZ-3 zone; however, there are several lenses of MRZ-1 along Gavin Canyon (i.e., The Old Road) in the vicinity of Poles #4-6 thru 4-9, and #5-1 thru 5-3, north and east of I-5; and a MRZ-2 zone is located adjacent (within 1,000 feet) and east-northeast of the Newhall Substation (see Appendix D for pole locations) (SoCalGas ~~2011~~2012). These zones are classified in accordance with the presence or absence of significant mineral deposits suitable for PCC-grade aggregate. The MRZ-3 zone is part of the San Fernando Valley Aggregate Production-Consumption (PC) Region; however, the significance of the mineral deposits contained in this area cannot be evaluated from available data (CDMG 1994). The storage field lies in the northwestern portion of the PC region.

The nearest identified MRZ-2 zone is the Placerita Canyon placers, located approximately 6 miles to the northeast of the proposed project component areas. Per SMARA, significant deposits of aggregate are known to exist in this area, warranting particular protection to insure the county a long-term supply of construction material.

Several active and inactive mines and mining claims are located in the vicinity of the proposed project component areas. Active mines within the vicinity include the Tapo Canyon Quarry and Tapo Canyon Pit. Both mines are reported as sand and gravel surface operations and are located approximately 9 miles west of the proposed Natural Substation. In addition, the Curtis–Hooker Corporation runs a gravel pit approximately 3 miles northwest of the Newhall Substation. The inactive claims are listed as gold claims dating to back to the early 1900s. The inactive or closed mines are listed as producers of construction materials, including sand, gravel, and limestone (USGS 2011). It is not apparent that any of the past or current mining operations would have an effect on the proposed project.

The storage field components of the proposed project are located within the former Aliso Canyon Oil Field. The Oil Field was discovered by Tidewater Associated Oil Company in 1938, and the cumulative production of oil exceeds 60 million barrels of oil and 80 billion cubic feet of natural gas. Information provided by the DOGGR indicates that there are 83 gas storage and injection wells located within the storage field (DOGGR 2002); however, an independent list of wells is maintained at the storage field, indicating a total of 116 injection/withdrawal wells, two observation wells, six flood wells, and two water disposal wells (DOGGR 2002; SoCalGas ~~2011~~2012).

4.6.2.2 Telecommunications Route #2

Geology

A summary of the geologic units underlying Telecommunications Route #2 is presented in Table 4.6-4. Telecommunications Route #2 would run from the Chatsworth Substation to the proposed Natural Substation and would cross surface geologic units such as the Saugus and Chatsworth Formations (Dibblee 1992, 1996; CDMG 1969). The Saugus Formation is located along the alignment primarily in, and to the south of, the Browns Canyon area. The Chatsworth Formation is mainly located to the north and south of SR-118. The alignment is located within the Monterey Shale and Topanga Formations to the west and northwest of the storage field.

Table 4.6-4 Geologic Conditions: Telecommunications Route #2

Geologic Unit/Structure	Formation Name	Description/Comments
af	Artificial Fill [Recent]	Recent land disturbance; ranging from uncontrolled deposits of construction debris to engineered fill placed during land improvement projects.
Qoa	Older Alluvial Deposits [Quaternary]	Non-marine deposits of undifferentiated, dissected and/or uplifted, unconsolidated to poorly consolidated, non-stratified to slightly stratified sand, silt, clay, and gravel. Includes terrace, older alluvial fan, valley fill, and floodplain deposits.
QTs	Saugus Formation [Pliocene to Pleistocene]	Non-marine terrestrial and stream deposits of weekly consolidated, light gray to brown pebble-cobble conglomerate, sandstone, and lesser amounts of grayish to reddish brown soft siltstone/claystone. Conglomerate clasts consist of granitic, gneissic, metavolcanic, quartzitic, gabbroic, and anorthositic detritus in a sandy matrix.
Kcs	Chatsworth Formation (Upper Cretaceous)	Marine clastic deposits of light gray to brown, hard, thick-bedded sandstone. Includes few thin layers of micaceous shale and siltstone. Interbedded with gray micaceous shale and siltstone (Kcsh).

Sources: Dibblee 1992, 1996; CDMG 1969

Faults and Seismicity

As with the other proposed project components, Telecommunications Route #2 is located within a seismically active area that has experienced numerous earthquakes in the past. As shown on Figure 4.6-1, the alignment crosses two faults and is located adjacent to several others. The following sections describe some of these faults in detail.

Northridge Hills (East Oak Ridge) Fault

The Northridge Hills (East Oak Ridge) Fault, also known as the Northridge (Blind) Thrust, is an inferred deep thrust fault that extends for up to 17 miles and is considered the eastern extension of the active Oak Ridge Fault. Telecommunications Route #2 crosses this fault just north of SR-118. From seismological and geodetic evidence, the Northridge Blind Thrust dips 30 to 40 degrees to the south and trends roughly east-west. The zone of aftershocks defines a fault plane that is 16 to 19 miles in length, extending to a depth of up to 12 miles beneath the City of Northridge. The Northridge Blind Thrust is located beneath the majority of the San Fernando Valley and is believed to be the causative fault of the January 1994 Northridge earthquake. The Northridge Blind Thrust is not exposed at the surface and does not present a potential surface fault rupture hazard. However, this thrust fault is an active feature that could generate future earthquakes. Petersen et al. (1994) estimates an average slip rate of 1.5 mm/yr and a maximum M_w of 6.9 for the Northridge Blind Thrust (SoCalGas ~~2011~~2012; SCEC 2011).

Mission Hills

The Mission Hills Fault is a reverse fault located east of Telecommunications Route #2 and southeast of the storage field. The last displacement was Late Quaternary, possibly Holocene (SCEC 2011). The probable magnitude of the Mission Hills Fault is 6.2 (SoCalGas ~~2011~~2012).

Simi–Santa Rosa

The Simi–Santa Rosa Fault Zone (referred to as the Simi or the Santa Rosa Fault) comprises a group of reverse faults which include the North and South Branches of the Simi Fault. The fault zone extends approximately 25 miles from the Oxnard Plain east-northeast to the west of Telecommunications Route #2 where it curves to the southeast. The most recent displacement occurred within the past 11,700 years (without historic record) (CGS 2010). The maximum earthquake magnitude is reported to be M_w 6.7 (SoCalGas ~~2011~~2012).

Soils

As shown above in Table 4.6-2, several soil types are present within the proposed project component areas. Soils underlying Telecommunications Route #2 near the Chatsworth Substation generally fall within the Gaviota and Saugus soil associations. North of the Chatsworth Substation to just south of Santa Susana Pass Road, Telecommunications Route #2 passes through an area dominated by sedimentary rock lands with intermittent presence of Gaviota and Saugus soils. Sedimentary rock lands consist of steep mountainous areas of sandstone and shale covered with a thin layer of soil and rock outcropping (USDA 1970). Along Santa Susana Pass Road and south of SR-118, the alignment passes over areas dominated by Gaviota series soils, including Rock outcrop–Gaviota complex. North of SR-118, the alignment passes from areas dominated by Gaviota series soils to Balcom and Anacapa series soils. As the alignment approaches the storage field, it passes over areas dominated by Balcom series soils and badlands. Badlands are characterized by steep, deeply eroded areas marbled with drainage channels that are generally barren or sparsely covered by vegetation (USDA 1970).

Gaviota, Saugus, Balcom, and Anacapa series soils generally consist of loamy sands, clayey loams, coarse sandy loams, and rocky sandy loams that are generally well drained. Drainage among sedimentary rock lands, rock outcrop–Gaviota complex soils, and badlands is typically excessive, with severe runoff and high erosion potential (USDA 1970).

Geologic Hazards

The following sections describe the potential geologic hazards prevalent around Telecommunications Route #2. Hazards include fault rupture, ground shaking, liquefaction, landslides, subsidence, and expansive and collapsible soils.

Fault Rupture

As shown on Figure 4.6-1, Telecommunications Route #2 crosses the Northridge Hills Fault and the Santa Susana Fault Zone. Movement along either fault could affect the Telecommunications Route #2 alignment.

Ground Shaking

The approximate estimated range of peak ground acceleration for a 2 percent (0.02) probability of being exceeded in 50 years in the Telecommunications Route #2 area is between 0.59g and 1.0g, depending upon location relative to the alignment (USGS 2008). Similarly, the CGS estimates a peak ground acceleration of between 0.3g and 0.9g with a 10 percent probability of being exceeded in 50 years (CGS 1999). Similar to the data evaluated for the other project components, this suggests that strong ground shaking could be experienced within the proposed project component areas.

Liquefaction

With the exception of a small portion of the alignment that crosses Browns Canyon, no portion of Telecommunications Route #2 is located within an area designated as susceptible to liquefaction (CGS 1998).

Landslides

The Telecommunications Route #2 alignment crosses hills and slopes identified by the CGS as susceptible to landslides both seismically and aseismically induced (CGS 1998). These landslides occur in areas with steep and unstable slopes; thus, these types of slopes in the area could experience rapid earth movement in the form of a landslide with or without a seismic trigger.

Subsidence

Portions of Telecommunications Route #2 located within the storage field may potentially fall within an area of known subsidence associated with fluid withdrawal (ground water or petroleum), peat oxidation, or hydrocompaction. Subsidence would be primarily associated with the withdrawal of oil and gas from the sedimentary strata located within the storage field. However, there is no evidence that significant subsidence has occurred, or may occur in the future. The likelihood of seismically induced settlement is, therefore, considered to be remote (SoCalGas ~~2011~~2012).

Expansive Soils

Based on descriptions of the soils underlying Telecommunications Route #2, there is no substantial potential for the presence of expansive soils within the near surface.

Collapsible Soils

Conditions that typically lead to collapsible soils are not present within or adjacent to Telecommunications Route #2.

Mineral Resources

Telecommunications Route #2 is located within an MRZ-3 zone. The closest MRZ-2 zone to the Telecommunications Route #2 alignment is located approximately 1.05 miles west of the Chatsworth Substation and is identified as an aggregate resource area (Ventura County 2000).

The closest active mines to Telecommunications Route #2 include an unnamed quarry located approximately 2.35 miles southeast of Chatsworth Substation, the Tapo Canyon Quarry, and the Tapo Canyon Pit. The latter two mines are reported as sand and gravel surface operations and are located approximately six miles north of the Telecommunications Route #2 alignment.

4.6.2.3 Telecommunications Routes #3 and #4 and Segments D and E of the 66-kV Subtransmission Line

Geology

A summary of the geologic units underlying Telecommunications Routes #3 and #4 and Segments D and E of the 66-kV subtransmission line reconductoring is presented in Table 4.6-5. Telecommunications Route #3 would run approximately 5 miles from the San Fernando Substation in the City of Los Angeles, through the City of San Fernando, to an existing fiber optic tap point in the City of Los Angeles. Telecommunications Route #4 would run approximately 5.5 miles from the San Fernando Substation in the City of Los Angeles, through the City of San Fernando, to a fiber optic connection point located in the City of Los Angeles at the entrance to Sunshine Canyon. ~~This portion of the proposed project~~These telecommunications component areas are ~~is~~ located in the northern San Fernando Valley, between the Santa Susana Mountains to the west and the San Gabriel Mountains to the north and east. The alignments cross~~es~~ areas of alluvial deposits located west and north of the Tujunga and Pacoima watersheds. Similarly, Segments D and E cross areas of alluvial deposits within the Pacoima watershed.

Table 4.6-5 Geologic Conditions: Telecommunication Routes #3 and #4

Geologic Unit/Structure	Formation Name	Description/Comments
Qal	Alluvium (Quaternary)	Clay, silt, sand, gravel or similar unconsolidated detrital material, deposited during comparatively recent geologic time by a stream or other body of running water, as a sorted or semi-sorted sediment.
Qf	Alluvial Fan Deposits (Quaternary)	Low, outspread, relatively flat to gently sloping mass of loose rock material, shaped like an open fan or a segment of a cone, deposited by a stream (especially in a semiarid region) at the place where it issues from a narrow mountain valley upon a plain or broad valley.
QTs	Saugus Formation [Pliocene to Pleistocene]	Non-marine terrestrial and stream deposits of weekly consolidated, light gray to brown pebble-cobble conglomerate, sandstone, and lesser amounts of grayish to reddish brown soft siltstone/claystone. Conglomerate clasts consist of granitic, gneissic, metavolcanic, quartzitic, gabbroic, and anorthositic detritus in a sandy matrix.
Qa	Alluvial Gravel [Quaternary]	Alluvial gravel, sand, and clay of valley and floodplain areas.

Sources: CDMG 1969; USGS

Faults and Seismicity

As shown on Figure 4.6-1, Telecommunications Routes #3 and #4 are~~is~~ partially located within a designated Alquist–Priolo Earthquake Zone. The following sections describe this fault zone and the closest adjacent fault in detail.

San Fernando Fault Zone

As shown on Figure 4.6-1, the eastern half of the Telecommunications Route #3 alignment to roughly Truman Street in the City of San Fernando and part of Telecommunications Route #4~~,~~ run~~s~~ through the San Fernando Alquist–Priolo Earthquake Zone. The San Fernando Fault Zone includes several fault segments, including the Sylmar and Topanga Faults, and is an active fault zone of an approximately 12 mile-segment of the Sierra Madre–Santa Susana Fault system.

The San Fernando Fault Zone is attributed as the source of the 1971 San Fernando (Sylmar) earthquake. The total surface rupture resulting from the earthquake was roughly 12 miles long, and the maximum slip was up to 6 feet (CGS 2010). The San Fernando Fault Zone has an estimated average slip rate of 2 mm/yr (SoCalGas ~~2011~~2012; CGS 2010).

Verdugo Fault

The Verdugo Fault is a reverse fault located approximately 2.5 miles southeast of Telecommunications Routes #3 and #4. The latest displacement on the Verdugo Fault was Late Quaternary, possibly Holocene (SCEC 2011). The probable magnitude of an earthquake on the Verdugo Fault is 6.0 to 6.8 (SoCalGas ~~2011~~2012).

Soils

As shown above in Table 4.6-2, Telecommunications Route #3 is underlain by soils belonging to the Capistrano, Chualar, and Conejo–Urban land complexes. Segments D and E are located in an area underlain by soils of the Capistrano-Urban land complex. These soils are generally characterized as well drained with moderately high to high subsoil permeability, a low shrink-swell potential, low potential for erosion, and very low runoff potential (SoCalGas ~~2011~~2012). Telecommunications Route #4 from the area from Balboa Boulevard to San Fernando Road is underlain by Xerorthents-Urban land-Saugus, Gazos-Balcom, or Millsholm loam soils, as shown above in Table 4.6-2 (SoCalGas 2012). These soils are weathered residuum, including silty clay loam, with variable origins, underlain by bedrock. These soils range from very high to low erosion potential, and from moderate to low shrink-swell potential.

Geologic Hazards

The following sections describe the potential geologic hazards prevalent around Telecommunications Routes #3 and #4 and Segments D and E. Hazards include fault rupture, ground shaking, liquefaction, landslides, subsidence, and expansive and collapsible soils.

Fault Rupture

As shown on Figure 4.6-1, the eastern half of the Telecommunications Route #3 alignment and part of Telecommunications Route #4 are ~~is~~ located within an Alquist–Priolo Earthquake Zone. The underlying San Fernando Fault Zone was responsible for the 1971 Sylmar earthquake, which ruptured the surface for approximately 12 miles. Accordingly, Telecommunications Routes #3 and #4 are ~~is~~ subject to fault rupture.

Ground Shaking

The approximate estimated range of peak ground acceleration for a 2 percent (0.02) probability of being exceeded in 50 years in the proposed project component areas is between 0.59g and 0.77g (USGS 2008). The CGS estimates a peak ground acceleration of between 0.5g and 0.9g with a 10 percent probability of being exceeded in 50 years (CGS 1999). Overall, this suggests that strong ground shaking could be experienced within the proposed project component areas.

Liquefaction

Two portions of the western half of the Telecommunications Route #3 alignment and part of Telecommunications Route #4 run through areas identified as liquefaction zones (CGS 1998, CDMG 1997).

Landslides

Neither Telecommunications Route #3 nor Segments D and E are located in areas identified as landslide zones by the CGS (1998). A portion of Telecommunications Route #4 is located within a landslide zone (CDMG 1997).

Subsidence

Telecommunications Routes #3 and #4 and Segments D and E are located within the northern San Fernando Valley. This portion of the San Fernando Valley is underlain by alluvial soils that are identified as particularly susceptible to subsidence (County of Los Angeles General Plan 1990).

Expansive Soils

Based on the description of the soils underlying Telecommunications Route #3 and Segments D and E, these soils have a low shrink-swell capacity, and accordingly, there is no substantial potential for the presence of expansive soils within the near surface. Soils underlying Telecommunications Route #4 include those that have a moderate shrink-swell potential, and therefore some potential for expansive soils.

Collapsible Soils

As the typical conditions that result in collapsible soils are not found in the area, these soils are unlikely to be present within the proposed project component areas.

Mineral Resources

Telecommunications Routes #3 and #4 and Segments D and E are located within an area designated MRZ-3. The closest MRZ-2 zone to ~~the~~ Telecommunications Routes #3 and #4 ~~alignment~~ is located approximately 0.60 miles to the east in the City of Los Angeles.

There are several inactive mines located south and southeast of Telecommunications Routes #3 and #4, but no active mines in the nearby vicinity.

4.6.3 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

The 1997 Uniform Building Code (UBC) specifies acceptable design criteria for structures with respect to seismic design and load bearing capacity. Seismic Risk Zones have been developed based on the known distribution of historic earthquake events and frequency of earthquakes in a given area. These zones are generally classified on a scale from I (least hazard) to IV (most hazard). These values are used to determine the strengths of various components of a building required to resist earthquake damage. Based on the UBC Seismic Zone Maps of the United States, and because of the number of active faults in southern California, the proposed project is located in the highest seismic risk zone defined by the UBC standard: UBC Zone IV. The state has adopted these provisions in the California Building Code (CBC).

State

Appendix G of the California Environmental Quality Act (CEQA) Guidelines identifies the criteria that must be considered when analyzing a project's potential to result in temporary and permanent impacts on mineral resources. The State of California regulatory requirements applicable to geology, soils, and mineral resources include the following:

- The Alquist–Priolo Earthquake Fault Zoning Act of 1972 (amended in 1994), which prohibits development within 50 feet of an active fault zone;
- The 2001 CBC (founded on the 1997 UBC), which requires more extensive structural seismic provisions and acceptable design criteria for structures with respect to seismic design and load bearing capacity; and
- Government Code Sections 65302(f) and 65302.1, which require a city to take seismic and other natural hazards into account in their planning programs and to outline them in their general plan.

California Surface Mining and Reclamation Act

The California State Legislature enacted the SMARA in 1975 to limit new development in areas containing significant mineral deposits. SMARA also allows the State Mining and Geology Board, after receiving classification information from the State Geologist, to designate lands containing mineral deposits of regional or statewide significance. The classification system is intended to ensure that mineral deposits of statewide or regional significance are considered in agency decisions through appropriate policies and procedures (CDC 2007).

California Division of Oil, Gas, and Geothermal Resources

Public Resources Code Section 3106 mandates the supervision of drilling, operation, maintenance, and abandonment of oil wells for the purpose of preventing damage to life, health, property, and natural resources; damage to underground and surface waters suitable for irrigation or domestic use; loss of oil, gas, or reservoir energy; and damage to oil and gas deposits by infiltrating water and other causes. In addition, the DOGGR regulate drilling, production, injection, and gas storage operations in accordance with California Code of Regulations Title 14, Chapter 4, Subchapter 1.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 provides a statewide seismic hazard mapping and technical advisory program to assist cities and counties in fulfilling their responsibilities for protecting the public health and safety from the effects of strong ground shaking, liquefaction, landslides, or other ground failure and seismic hazards caused by earthquakes. Mapping and other information generated pursuant to the Seismic Hazards Mapping Act is to be made available to local governments for planning and development purposes. The state requires that (1) local governments incorporate site-specific geotechnical hazard investigations and associated hazard mitigation as part of the local construction permit approval process; and that (2) the agent for a property seller, or the seller if acting without an agent, must disclose to any prospective buyer if the property is located within a Seismic Hazard Zone.

The State Geologist is responsible for compiling seismic hazard zone maps.

State/County Plans, Policies, Regulations, and Laws

The proposed project is subject to the applicable sections of the CBC. Los Angeles and Ventura Counties are responsible for implementing the CBC for certain structures associated with the proposed project. Regardless of whether or not the proposed project is located within an Alquist–Priolo seismic zone, certain proposed project structures must be designed in accordance with the requirements of the CBC and UBC Zone IV because the proposed project is located in a seismically active area. The CBC and UBC are considered to be the standard safeguards against major structural failures and loss of life. The goals of the codes are to provide structures that will (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, but with some structural and non-structural damage. The CBC and UBC requirements operate on the principle that providing appropriate foundations, among other aspects, helps protect buildings from failure during earthquakes. In addition, the County of Los Angeles General Plan, Seismic Safety Element (Draft 2008), includes standards and plans to reduce the loss of life, injuries, damage to property, and economic and social dislocations resulting from natural and urban related hazards.

For the Southern California Edison (SCE) components of the proposed project, SCE will comply with industry standards and California Public Utilities Commission (CPUC) General Orders. Similarly, the subtransmission line modifications would be designed consistent with CPUC G.O. 95, while the substation would be designed consistent with the Institute of Electrical and Electronics Engineers Standard 693, Recommended Practices for Seismic Design of Substations.

4.6.4 Methodology and Significance Criteria

Potential impacts on geology, soils, and mineral resources were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the CEQA Guidelines. The proposed project would cause a significant impact on geology, soils, and mineral resources if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  1. Rupture of a known earthquake fault, as delineated on the most recent Alquist–Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42);
  2. Strong seismic ground shaking;
  3. Seismic-related ground failure, including liquefaction; or
  4. Landslides.
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse; or
- Be located on expansive soils, as defined in Table 18-1-B of the UBC (1994), creating substantial risks to life or property.

Appendix G of the CEQA Guidelines also includes the following checklist items:

- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water;
- Result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state; and
- Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

The proposed project would not require the use of septic tanks and is located in an MRZ-3 zone, an area containing mineral deposits that cannot be evaluated for significance from available data. In addition, while Los Angeles and Ventura Counties have identified several areas as MRZ-2 mineral resource protection zones, none are located in the proposed project component areas. Construction and operation of the proposed project would not result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Therefore, these items are not applied as criteria in the analysis of environmental impacts presented in the following section.

4.6.5 Environmental Impacts and Mitigation Measures

4.6.5.1 Applicant Proposed Measures

The applicant has committed to the following applicant proposed measures (APMs) as part of the design of the proposed project. See Section 2.5, "Plans and Applicant Proposed Measures," Table 2-8, for a full description of each APM.

Air Quality

- **APM AQ-3: Minimization of Disturbed Areas.**

Geology and Soils

- **APM GE-1: Geotechnical Studies.**
- ~~**APM GE-2: Seismic-resistant Design Measures.**~~
- **APM GE-~~3~~2: Erosion and Sediment Control.**

There are no APMs associated with mineral resources.

4.6.5.2 Impacts Analysis

Impact GE-1: **Expose people or structures to risk of loss, injury, or death involving rupture of a known earthquake fault.**
LESS THAN SIGNIFICANT

Construction and Operation

The eastern half of the Telecommunications Route #3 and a portion of Telecommunications Route #4 ~~alignment~~ cross~~es~~ a delineated Alquist–Priolo Earthquake Fault Zone for the Sylmar Fault. These~~is~~ project components involve~~s~~ installation of ~~a~~ fiber optic lines on existing structures, and the installation of some new poles. Excluding the temporary presence of workers installing the lines, there would be no risk for exposure of people to the risk of loss, injury, or death resulting from a fault rupture. Similarly, as these~~is~~ project components do~~es~~ not include the construction of any type of building, there would be no risk of exposure of a building to any potential adverse effect resulting from fault rupture. If support structures were replaced along these~~is~~ components, they would be designed to withstand seismic risks.

With the exception of Segment C of the 66-kV subtransmission line reconductoring alignment, Telecommunications Route #1, and a small portion of the storage field, the remaining proposed project components all fall outside of an Alquist–Priolo Earthquake Fault Zone. A small portion of the storage field and Segment C of the 66-kV subtransmission line reconductoring and Telecommunications Route #1 is linked with the closest fault, the potentially active Santa Susana Fault Zone. The boundary to this fault zone is located approximately 0.5 miles from the Central Compressor Station. This fault may extend westward from a delineated Alquist–Priolo Earthquake Fault Zone, where it crosses the northern portion of Aliso Canyon, and may extend westward across the proposed Natural Substation to Tap Point A. Although the Alquist–Priolo map indicates the Earthquake Fault Zone terminates east of the proposed project component areas, it is noted that “the Santa Susana Fault Zone extends to [the] west, but [has] not yet [been] evaluated for zoning purposes” (CGS 1976). However, as required by the Seismic Hazards Mapping Act, a geotechnical investigation would be prepared by a registered civil engineer or certified engineering geologist with competence in the field of seismic hazard evaluation and mitigation as a part of APM GE-1. The geotechnical report would contain site-specific evaluations of the seismic hazard(s) affecting the proposed project. By implementing APM GE-1, information would be available on the potential for rupture of a known earthquake fault that would enable design criteria to reduce any potential impacts during construction and operation of the proposed project. Accordingly, any impact under this criterion would be less than significant.

Impact GE-2: Expose people or structures to the risk of loss, injury, or death involving strong seismic ground shaking.
LESS THAN SIGNIFICANT

Construction and Operation

The proposed project would be located in an area considered to be seismically active, given the proximity and number of potential seismic sources. The eastern half of Telecommunications Route #3 and a portion of Telecommunications Route #4 runs above a delineated Alquist–Priolo Earthquake Fault Zone for the Sylmar Fault, and there are four faults located within 5 miles of the Central Compressor Station. The closest fault, the potentially active Santa Susana Fault Zone, is located approximately 0.5 miles from the Central Compressor Station and is associated with an Alquist–Priolo Earthquake Fault Zone where it crosses the northern portion of Aliso Canyon and may extend westward across the proposed Natural Substation to Tap Point A. The active San Fernando Fault Zone is located within 2.7 miles of the Central Compressor Station. Another potentially active fault, Northridge Hills (East Oak Ridge), is located within 3.4 miles of the Central Compressor Station. The potentially active Mission Hills Fault is located within 4.0 miles of the Central Compressor Station.

Seismic shaking experienced at a specific location depends on a number of factors, such as distance from the epicenter of the earthquake, the response of the underlying soils, and the characteristics of the structures being shaken. Structures located on thick, poorly consolidated materials commonly experience higher levels of shaking and subsequent damage than structures built on more stable and consolidated bedrock. Much of the proposed project is located on bedrock units.

Ground motion caused by earthquakes is often measured in terms of acceleration. Acceleration corresponds to the force applied to something that causes it to change position or speed and is measured in terms of gravity (g). The anticipated acceleration in the Central Compressor Station area with a 2 percent probability of being exceeded in 50 years is between 0.59g and 0.77g (USGS 2008); however, the largest probable peak acceleration has been computed as 0.74g (SoCalGas ~~2011~~2012). ~~A p~~Previous geotechnical evaluations ~~was~~were prepared (Globus 2006; Mactec 2011), and additional investigations are planned; the results of which would be incorporated into final project design and engineering. The specific seismic design requirements would include those recommended in the geotechnical evaluations; those required by the CBC; and those in accordance with the appropriate industry standards, including established engineering and construction practices and methods, which would minimize the potential for failure in the event of an earthquake. By implementing APM GE-1 ~~and APM GE-2~~, the applicant would complete geotechnical investigations to identify potential threats due to seismic ground shaking; measures recommended as a result of these investigations would be implemented. ~~design the substation structures consistent with the Institute of Electrical and Electronic Engineers Standard 693 (Recommended Practices for Seismic Design of Substations) and with the applicable CBC standards for the area.~~ In addition, the proposed 66-kV subtransmission line segments and telecommunication routes would be designed consistent with requirements for withstanding seismic loading. With implementation of APM GE-1 and compliance with applicable design and building regulations and standards~~the design recommendations~~, the potential impacts caused by strong seismic shaking during construction and operation of the proposed project would be less than significant under this criterion.

Impact GE-3: Expose people or structures to the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction.
LESS THAN SIGNIFICANT

Construction and Operation

The majority of the proposed project within the storage field and along Telecommunications Route #2 is situated on bedrock, which is not susceptible to liquefaction. However, portions of the proposed project along the Segments A and B of the 66-kV subtransmission line reconductoring, ~~and~~ Telecommunications Route #1 (Structures 1–7, 10–14, and 39) are located in areas of alluvium identified as potentially susceptible to liquefaction (project alignment sheets depicting structure numbers are provided in Appendix D). Similarly, Telecommunications Routes #3 and #4 ~~is~~are located above areas of alluvium, and portions of the western half of the alignments run through areas subject to liquefaction. Implementation of APM GE-1 would require completion of geotechnical investigations to identify potential threats due to liquefaction, and measures recommended as a result of these investigations would be implemented. ~~Implementation of APM GE-2 would require the inclusion of seismic-resistant design measures as part of the design and engineering of the proposed project components.~~ Implementation of ~~these measures~~APM GE-1 and compliance with applicable design and building regulations and standards would reduce any potential construction or operational impacts to less than significant under this criterion.

Impact GE-4: Expose people or structures to the risk of loss, injury, or death involving landslides.
LESS THAN SIGNIFICANT

Construction and Operation

Portions of the proposed project traverse hills and slopes that may be susceptible to landslides both seismically and aseismically induced. These landslides occur in areas with steep and unstable slopes; these types of slopes in the area could experience rapid earth movement in the form of a landslide with or without a seismic trigger. Several areas along Segments A and B of the 66-kV subtransmission line between Newhall Substation and Tap Point A may be susceptible to landslides based on slope and soil types. Similarly, Telecommunications Route #2 and portions of Telecommunications Route #4 run~~s~~ through areas identified by the State of California as having potential for landslides. These proposed project component areas are also adjacent to or within Earthquake-induced Landslide Zones as identified by the State of California (DMG 1998). In addition, the surrounding area and several locations along the existing and proposed 66-kV subtransmission line segments cross or are within the landslide features identified as Quaternary landslide debris (Qls) by Dibblee (1992, 1996). Previous historic earthquake activity, (e.g., the 1994 Northridge earthquake) triggered landslides in the Santa Susana Mountains and the mountains north of Santa Clara River Valley.

Implementation of APM GE-1 would require completion of geotechnical investigations to identify potential threats due to landslides; measures recommended as a result of these investigations would be implemented ~~and APM GE-2 would require identification of areas susceptible to landslides and design criteria to reduce the potential for landslide-related damage to the proposed project components during both construction and operations~~. Accordingly any potential impact would be less than significant under this criterion.

Impact GE-5: Result in substantial soil erosion or the loss of topsoil.
LESS THAN SIGNIFICANT

Construction

The potential for soil erosion within the proposed project component areas is rated as low to very high depending upon the project component and location. Activities undertaken during construction that would disturb soil surfaces may result in an increased vulnerability for erosion, particularly in areas classified as having a very high potential for erosion. Table 2-7 (see Chapter 2, “Project Description”) shows the project components that would result in both temporary and permanent soil surface disturbance and potential alteration of natural drainages that could lead to soil erosion. The proposed project would permanently disturb approximately 23~~22~~ acres; however, approximately 90 percent of this area has been previously disturbed. Excess soil from project construction grading activities would be deposited at the Excess Excavated Soil Area on the storage field site. Wind and water driven erosion of soils due to grading activities might be of concern due to soil exposure and stockpiling during construction.

Grading activities associated with the proposed project components could result in wind or water erosion or loss of topsoil. The applicant will implement APM GE-~~3~~2 as part of project construction to help reduce the potential for construction-related erosion. In addition, the applicant will develop a construction Storm Water Pollution Prevention Plan (SWPPP) and update the existing operational SWPPP to include all project components based on final engineering design. The applicant shall include the design of erosion control measures, utilizing best management practices (BMPs), to avoid or minimize soil erosion and off-site deposition as required under the National Pollutant Discharge Elimination System permit for construction. These BMPs would be employed during grading and construction activities for all project components, including those components with substantial grading, such as the Central Compressor Station and the proposed Natural Substation.

Potential erosion associated with other project components, such as reengineering of the access road between 66-kV towers 27 and 28 (see Figure 2-12 in Chapter 2, “Project Description”), that require the fill and insertion of a culvert in the bottom of an unnamed seasonal wash, would be further addressed through implementation of APM AQ-3 and Mitigation Measure (MM) BR-5 (see Section 4.4, “Biological Resources”).

By implementing APM GE-~~3~~2, APM AQ-3, MM BR-5, and preparing and implementing erosion control measures during construction in compliance with the SWPPP and the County of Los Angeles grading permit, any potential impacts due to soil erosion and loss of topsoil during construction would be reduced to less than significant.

Operation

The operation of maintenance vehicles would periodically disturb road surfaces, increasing the potential for erosion. However, adherence to conditions under the facility SWPPP, implementation of erosion control measures, and utilization of BMPs would avoid or minimize soil erosion and off-site deposition; therefore, any potential impact would be less than significant under this criterion.

Impact GE-6: Located on a geologic unit or soil that is or would become unstable and result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
LESS THAN SIGNIFICANT

Construction and Operation

The proposed project would be located on land with variable relief and slope gradients. Under APM GE-1, the applicant would implement a site-specific geotechnical investigation to provide information on any potential geological hazards. Construction procedures would be conducted as discussed in the Preliminary Geotechnical Investigation Reports prepared by Globus (2006) and Mactec (2011), in order to mitigate impacts related to unstable geologic conditions. The results of the preliminary and planned site-specific geotechnical studies would be incorporated into the final design and engineering with regard to unstable geologic units. The proposed project would incorporate the geotechnical information into the proper design and precautions in order to ensure the safe and reliable operation of the project; therefore, any potential impacts that might arise during construction and operation due to potentially unstable geologic conditions would be reduced to less than significant under this criterion.

Impact GE-7: Located on expansive soil.
LESS THAN SIGNIFICANT

Construction and Operation

Expansive soils shrink or swell with changes in moisture content and are typically associated with high clay content soils. Expansive soils could affect the stability of building and equipment foundations, causing them to settle or crack. ~~A p~~Previous geotechnical ~~study~~studies (Globus 2006; Mactec 2011) identified geologic conditions and potential geologic hazards. Based on the findings of the geotechnical investigations, the proposed project activities could be performed using conventional grading and foundation construction techniques. Geotechnical aspects of design and construction, as well as specific recommendations for reducing the potential adverse effects of near-surface expansive soils and loose, potentially compressible near-surface soil, were discussed. By implementing APM GE-1~~2~~, the potential impacts during construction and operation due to expansive soil would be reduced to less than significant under this criterion.

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4.7 Greenhouse Gas Emissions

This section describes the environmental and regulatory settings and discusses potential impacts associated with the construction and operation of the proposed project with respect to greenhouse gas (GHG) emissions.

4.7.1 Environmental Setting

The term "climate change" refers to "any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer)" (EPA 2011a). This term is often used interchangeably with the term "global warming." Climate change or global warming represents an average increase in the temperature of the atmosphere near the earth's surface and in the troposphere, which can contribute to changes in global climate patterns. The global distribution of temperature increase is varied, and in some locations average temperatures have actually decreased. Climate change has been attributed to a variety of causes, including both natural and human activity (EPA 2011a). Current scientific research indicates that potential effects of climate change include variations in temperature and precipitation, sea-level rise, impacts on biodiversity and habitat, impacts on agriculture and forestry, and human health and social impacts (CNRA 2009).

Greenhouse Gases

GHGs are gases that allow solar radiation to pass through the earth's atmosphere but prevent heat from escaping, resulting in atmospheric warming. Certain GHGs occur naturally and help balance the earth's temperature; however, research indicates that since the advent of the Industrial Revolution, human activity has resulted in an elevation of the concentration of some of these gases in the atmosphere. In particular, concentrations of carbon dioxide (CO_2) emitted from the burning of fossil fuels has increased significantly. Much of the carbon in the atmosphere is absorbed by natural "carbon sinks," such as forests or ocean kelp. CO_2 is then emitted back into the atmosphere through natural processes such as animal and plant respiration, and oceanic and geological processes. These natural processes represent "sources." When balanced, the amount of CO_2 emitted from sources and absorbed by carbon sinks is roughly equal; this process is known as the "carbon cycle." As emission levels rise from human activity such as automobile use, however, carbon sinks are becoming overwhelmed and are unable to sequester the increasing amounts of CO_2. Further, other human activity, such as deforestation, can lead to the reduction of sinks. The resulting increase in GHGs in the atmosphere is now considered one of the key causes of global climate change.

In 1988, the World Meteorological Organization and United Nations formed the Intergovernmental Panel on Climate Change (IPCC) as a joint effort to assess the impact of human activity on the global climate. In 1990, the IPCC issued its first assessment report, which helped identify climate change as a serious issue and laid the groundwork for the formation of the United Nations Framework Convention on Climate Change (UNFCCC). The second assessment report, issued by the IPCC in 1995, contributed to the drafting of the Kyoto Protocol to the UNFCCC, adopted in 1997. The Kyoto Protocol asked signatories to the UNFCCC to commit to reducing emissions of four primary GHGs (CO_2, methane [CH_4], nitrous oxide [N_2O], and sulfur hexafluoride [SF_6]) and two secondary groups of GHGs (hydrofluorocarbons [HFCs] and perfluorocarbons [PFCs]) to 5 percent below 1990 emission levels by 2012. At the time of this writing, the United States remains the only signatory to the UNFCCC that has not ratified the Kyoto Protocol. The IPCC issued its most recent assessment report in 2007 and is currently working on the fifth assessment report, which will be completed in 2013/2014 (IPCC 2011).

In 2006, the State of California enacted the California Global Solutions Warming Act of 2006 (Assembly Bill [AB] 32), requiring a reduction in GHG emissions in the state to 1990 levels by 2020. AB 32 targets the same GHGs identified under the Kyoto Protocol. These gases are described further below.

Carbon Dioxide

CO_2 is a colorless, odorless gas generated by both natural and human activity. Natural sources of CO_2 include respiration by bacteria, fungus, and animals; decomposition of organic matter; evaporation of ocean water; and geological processes. The primary human-induced sources of CO_2 are combustion of fossil fuels, natural gas, and wood.

Methane

CH_4 is a highly flammable gas that is a primary component of natural gas. As with CO_2, CH_4 is produced both by natural and human activity. Natural sources of CH_4 include anaerobic decay of organic matter; geological deposits (e.g., natural gas fields); and cattle. Human-induced sources include emissions generated by the decay of organic material in landfills and fermentation of manure and other organic material.

Nitrous Oxide

As with CO_2 and CH_4, N_2O is produced by both natural and human activity. Natural sources include microbial action in soil and water, particularly at tropical latitudes. Human-induced sources include emissions from manufacturing facilities, fossil fuel power plants, and motor vehicles.

Sulfur Hexaflouride

SF_6 is a colorless, odorless, non-flammable, non-toxic gas used mainly as an insulator (when mixed with other gases, such as argon) in the manufacture of electronics.

Hydrofluorocarbons

HFCs are human-made compounds consisting of carbon, hydrogen, and fluorine atoms. HFCs were introduced as replacements for atmospheric ozone–depleting chemicals in various industrial and commercial applications. They are used in solvents, refrigerants, firefighting agents, and aerosol sprays.

Perfluorocarbons

PFCs are human-made chemicals consisting of carbon and fluorine atoms. As with HFCs, PFCs were introduced as an alternative to atmospheric ozone–depleting chemicals and are used in similar industrial and commercial applications.

Global Warming Potential

The effect of a particular GHG on global climate change depends on its global warming potential (GWP). Table 4.7-1 shows the GWP for the six GHGs described above. GWP is determined by a number of factors, including the GHG's molecular structure, the GHG's ability to absorb infrared radiation, and the amount of time the GHG can exist in the atmosphere before breaking down. These factors help determine the amount of warming potential a pound of GHG would have relative to a pound of CO_2. For example, a pound of CH_4 has 21 times the warming potential of a pound of CO_2.

Table 4.7-1 Global Warming Potential For Greenhouse Gases

Greenhouse Gas	Global Warming Potential (relative to CO_2)
Carbon Dioxide (CO_2)	1
Methane (CH_4)	21
Nitrous Oxide (N_2O)	310
Hydrofluorocarbons (HFCs)	140–11,700
Perofluorocarbons (PFCs)	6,500–9,200
Sulfur Hexafluoride (SF_6)	23,900

Source: IPCC 2007

The California Air Resources Board (CARB) reports that CO_2 represents almost 90 percent of the GHG emissions produced in California (CARB 2008). Because CO_2 is such a prevalent GHG, and the GWP for other GHGs is calculated relative to CO_2, GHGs in the atmosphere are reported in terms of CO_2 equivalency (CO_2e). CO_2e measures GHGs by multiplying the mass of each GHG emitted by its GWP to determine the equivalent amount of CO_2. For example, one pound of CH_4 is equivalent to 21 pounds of CO_2e.

Potential Effects from Climate Change

In 2008, California Governor Arnold Schwarzenegger issued Executive Order S-13-08, directing the California Natural Resources Agency (CNRA) to determine how state agencies can respond to the challenges posed by climate change. As a result, the CNRA worked with several state agencies to draft the 2009 California Climate Adaptation Strategy (CCAS). A summary of the potential effects of climate change, as identified in the CCAS, is presented below.

Temperature and Precipitation

GHGs can remain in the atmosphere for decades, thus the temperature changes over the next 30 to 40 years will largely be determined by past emissions. By 2050, temperatures could increase by an additional 1.8 to 5.4 degrees Fahrenheit (CNRA 2009). California would likely continue to have relatively cool, wet winters and dry, hot summers; however, temperature increases could become more severe in summer than winter, and inland areas could experience more pronounced warming than coastal regions. Heat waves could also increase in frequency and intensity. Precipitation patterns are anticipated to change due to increasing temperatures, leading to more rainfall and less snow. This would affect California's drinking water supply, which currently originates mainly as snowmelt runoff. More frequent flood events, due to faster runoff, could also increase stress on state and local infrastructure. Finally, these changes in precipitation could lead to more periods of drought, which could have a negative effect on native ecosystems.

Sea-level Rise

Recent studies show that sea levels rose by as much as 7 inches during the twentieth century and are anticipated to rise up to 55 inches by the end of the century (CNRA 2009). Furthermore, even if emissions were substantially lowered, research shows that sea levels will continue to rise; thus, adaptation strategies will be an important part of dealing with this impact (CNRA 2009). Sea-level rise could have a negative effect on coastal wetlands and marshes through inundation. This would not only negatively impact these specially adapted habitats but could also damage agricultural activities by way of salt water intrusion into fresh water aquifers. Additionally, loss of these habitats as a storm buffer could increase storm-related impacts, such as depleted beaches and property damage.

Biodiversity and Habitat

As temperatures and precipitation patterns change, plant and animal species adapted to specific conditions could become threatened. These species may have to shift their geographic range to adapt to the changes; however, if the species are unable to adapt, they may face extinction. As the climate shifts, changes in wildfire patterns may also emerge. While many species in California are adapted to regular fire events, higher temperatures may also result in an increase in the frequency and intensity of fires, which could harm the ability of native plant species to re-germinate between events (CNRA 2009). Overall, climate change could result in very harmful effects on biodiversity. Shifts in species ranges could increase the likelihood of habitat fragmentation, and changes in participation could lead to increased periods of drought, making ecosystems vulnerable to colonization by invasive species.

Agriculture and Forestry

The State of California has some of the most productive agricultural regions found in the world. Shifts in climate may impact the ability of certain crops (e.g., grapes, other fruits, and nuts) to produce substantial, high-quality yields. Sea-level rise, changes in growing season length, variation in precipitation, and changes in water supply could affect agricultural productivity, which could have an impact on food supplies.

The range of forest lands in the state will also likely shift in response to climate change. Temperature rise has the potential to make current forest ranges inhospitable, expand insect populations that impact tree mortality, and allow for the colonization of invasive, non-native species.

Human Health and Social Impacts

Climate change could also result in increased public health risks, including an increase in mortality and morbidity due to heat-related illness and a rise in respiratory illness due to poor air quality caused by higher temperatures. Plant species habitat that shifts due to climate change may also lead to variations in the timing and duration of allergies and the colonization of new habitat by disease vectors such as non-native animals and insects. The elderly, chronically and mentally ill, infants, and the economically disadvantaged will be the most at risk of the negative effects of climate-related illness.

Greenhouse Gas Inventories

The latest GHG inventory from the U.S. Environmental Protection Agency (EPA) indicates that the U.S. emitted just under 7 billion metric tons of GHGs in 2008 (EPA 2011b). The State of California makes up a substantial contribution of those GHG emissions: California produced 479.8 million metric tons of CO_2e according to the most recent 2005 inventory (CalEPA 2010). The state represents the second largest contributor in the U.S. and the fifteenth largest emitter of GHGs in the world (CEC 2006; CalEPA 2010).

4.7.2 Regulatory Setting

4.7.2.1 Federal

According to the EPA, "the United States government has established a comprehensive policy to address climate change" that includes slowing the growth of emissions; strengthening science, technology, and institutions; and enhancing international cooperation (EPA 2011b). To implement this policy, "the Federal government is using voluntary and incentive-based programs to reduce emissions and has established programs to promote climate technology and science" (EPA 2011c). The federal government's goal is to reduce the GHG intensity (a measurement of GHG emissions per unit of economic activity) of the American economy by 18 percent over the 10-year period from 2002 to 2012 (GAO 2003). The EPA also administers several programs that encourage voluntary GHG reductions, including ENERGY STAR, a joint program with the U.S Department of Energy to encourage energy efficient products and practices; Climate Leaders, an industry-government partnership to develop climate change strategies; and methane reduction voluntary programs (EPA and DOE n.d.; EPA 2011d; EPA 2010b). At the time of this writing, however, there are no adopted federal plans, policies, regulations, or laws directly regulating GHG emissions.

The Council on Environmental Quality issued draft guidance to federal agencies on February 18, 2010, regarding GHG emissions (CEQ 2010). The guidance states that for an agency's analysis of the direct effects of a project with respect to GHG emissions, it would be appropriate to quantify cumulative emissions over the life of the project; discuss measures to reduce emissions, including consideration of reasonable alternatives; and qualitatively discuss the link between such emissions and climate change (CEQ 2010). A summary of relevant GHG policies at the federal level are presented below.

Endangerment Finding and Cause or Contribute Finding for Greenhouse Gas

In December 2009, the EPA issued two separate findings regarding GHGs under Section 202(a) of the Clean Air Act. The Endangerment Finding states that the current and projected concentrations of the six key GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten public health and welfare. The Cause or Contribute Finding states that the combined emissions of GHGs from new motor vehicles and new motor vehicle engines contribute to GHG pollution.

Mandatory Reporting of Greenhouse Gases Rule

In 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which requires reporting of GHG emissions from large sources and suppliers in the United States. This rule requires suppliers of fossil fuels and industrial GHGs, manufacturers of vehicles and engines outside of the light-duty sector, and facilities that emit 25,000 metric tons or more of GHGs per year to submit annual reports to the EPA. The rule is intended to collect accurate and timely emissions data to guide future policy decisions on climate change.

Final Greenhouse Gas Tailoring Rule

The Final GHG Tailoring Rule, established in May 2010, sets thresholds for GHG emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule tailors the requirements of these Clean Air Act permitting programs to limit which facilities are required to obtain Prevention of Significant Deterioration and Title V permits.

4.7.2.2 State

In 2005, Governor Schwarzenegger issued Executive Order S-3-05, establishing a statewide GHG emission reduction target of 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. In 2006, Governor Schwarzenegger signed AB 32, the Global Warming Solutions Act, which capped the state's GHG emissions at 1990 levels by 2020. This is the first statewide program in the country to mandate an economy-wide emissions cap that includes enforceable penalties (CalEPA n.d.). The Climate Change Scoping Plan, approved by CARB in 2008 to fulfill AB 32, is the state's roadmap to reach GHG reduction goals (CARB 2008). The plan outlines a number of key strategies to reduce GHG emissions. The measures in the Scoping Plan will be in effect by 2012 and will include a number of early action measures aimed at reducing GHG emissions. A summary of relevant GHG legislation in California is presented below.

Assembly Bill 32 and Executive Order S-3-05

Executive Order S-3-05, issued in 2005, established statewide GHG emission reduction targets of 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. In 2006, the Global Warming Solutions Act, AB 32, was enacted with the requirement of reducing the state's GHG emissions to 1990 levels by 2020. Based on 1990 to 2004 inventories of GHG emissions in California, CARB designated a total of 427 million metric tons of CO_2e as the statewide GHG 1990 emissions level and 2020 emissions limit. This limit is an aggregated statewide limit, rather than sector- or facility-specific. Taking into account expected growth in population and energy use, the emissions reduction target is estimated to be equivalent to approximately 30 percent below business emissions as usual by the year 2020.

Senate Bill 97

The California Senate passed Senate Bill 97 in 2007, requiring the Governor's Office of Planning and Research to prepare, develop, and transmit guidelines for the feasible mitigation of GHG emissions or their effects, including, but not limited to, effects associated with transportation or energy consumption.

Climate Change Scoping Plan

The Climate Change Scoping Plan, developed by CARB in conjunction with the California Climate Action Team, outlines a number of key strategies to reduce GHG emissions. The measures in the Scoping Plan take effect in 2012, and discrete early action measures include a low-carbon fuel standard, landfill CH_4 capture, reductions from mobile air conditioning, semiconductor reductions, SF_6 reductions, and a heavy-duty vehicles measure.

CEQA Guideline Amendments

In December 2009, pursuant to Senate Bill 97, the CNRA adopted California Environmental Quality Act (CEQA) Guidelines Amendments with new language for addressing the quantification and mitigation of GHG emissions. These amendments became effective in March 2010.

4.7.2.3 Regional and Local

The South Coast Air Quality Management District (SCAQMD) is the regional agency with primary responsibility for air quality management in the project area. To address GHG regulatory developments, the SCAQMD ~~issued~~ adopted a staff proposal for an interim GHG significance threshold and guidance ~~*Draft Guidance Document: Interim CEQA Greenhouse Gas Significance Threshold*~~ (SCAQMD 2008). The purpose of the guidance ~~document~~ is to provide information on GHG legislation relative to CEQA, a brief summary of the SCAQMD's GHG process, development of the resulting staff-recommended interim GHG significance threshold proposal, and how to implement proposed thresholds.

In addition, a section of Telecommunications Route #2 (Figure 2-1) that would be constructed within Ventura County would be located within the South Central Coast Air Basin, which is part of the Ventura County Air Pollution Control District (VCAPCD). Although interim guidance similar to the SCAQMD's guidance has not yet been drafted for this district, several different options are under consideration (VCAPCD 2011, 2013), among which are options similar to the recommendations contained in the SCAQMD's interim guidance.

4.7.3 Methodology and Significance Criteria

Direct emissions of GHGs generated from equipment/vehicle usage during construction and operation of the proposed project were estimated from assumptions regarding use of equipment/vehicles and published emission factors. Direct emissions of GHGs due to SF_6 leakage from electrical equipment were estimated based on SF_6 storage capacities in this equipment and conservative leakage rates. Indirect GHG emissions associated with electricity use for the new electrical compressors to be installed were based on anticipated operation of these compressors. In addition, projected decreases in GHGs due to the removal of the existing gas turbine–driven compressors were estimated based on past equipment use, past air testing data, and published emission factors.

Potential impacts on GHG emissions were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the CEQA Guidelines. The proposed project would cause a significant impact on GHG emissions if it would:

a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

Additionally, SCAQMD guidance proposes an interim significance threshold of 10,000 metric tons CO_2e per year for stationary/industrial projects subject to CEQA review. A project's construction emissions, amortized over a 30-year period, should be added to a project's operational emissions for comparison to this proposed threshold (SCAQMD 2008). The VCAPCD has not drafted or adopted CEQA significance thresholds for GHG emissions; however, preference for CEQA GHG analyses for projects within the district is to maintain consistency with SCAQMD guidance (VCAPCD 2011, 2013). Therefore, the SCAQMD interim guidance and significance threshold is applied to the analysis of all emissions presented in this section.

4.7.4 Environmental Impacts and Mitigation Measures

Overview of Construction Impacts

During project construction, GHGs, primarily CO_2, would be emitted from engine exhaust of diesel- and gasoline-fueled construction equipment and on-road vehicles (e.g., delivery trucks and worker vehicles). Based on estimated construction equipment and vehicle use, it is estimated that 4,933 metric tons of CO_2e emissions would be generated from all project construction activities. Amortized over 30 years, construction emissions are estimated at 164 metric tons of CO_2e per year. Detailed GHG emission calculations for construction activities are included in Appendix H.

Overview of Operations Impacts

The proposed project includes the replacement of three gas turbine–driven compressors with three new electric–driven variable-speed compressor trains. The proposed Central Compressor Station would be constructed at the storage field to house these new electric variable-speed compressor trains. The proposed project would not include any additional fuel combustion sources or emission increases in existing emission sources. The removal of the three existing gas turbine–driven compressors would result in a decrease in direct GHG emissions. However, it is assumed that the use of the new electric compressor trains would result in indirect GHG emissions at electrical generating plants that supply power to the regional electrical grid.

Regular maintenance checks would be performed at the proposed Natural Substation as part of the proposed project. It is anticipated that there would be approximately three to four visits to the unmanned substation for maintenance each month. Mobile source exhaust would be generated from employee commuting for these maintenance checks.

SF_6 would be used as an insulating gas in new circuit breakers that would be installed at the San Fernando and Natural Substations. SF_6 emissions were estimated from amount of SF_6 in each circuit breaker and the anticipated leakage rate for 13 circuit breakers at the Natural Substation and four circuit breakers at the San Fernando Substation.

The projected net changes in GHG emissions associated with the proposed project are summarized in Table 4.7-2. Detailed emission calculations are presented in Appendix H.

Table 4.7-2 Greenhouse Gas Emission Increases and Decreases

Emission Type	Phase	Source	GHG Emissions (metric tons CO_2e / year)
Direct Emission Increases	Construction	Construction Equipment/Vehicles (amortized over 30 years)	~~164~~167
	Operation	Motor Vehicle Exhaust	4
		SF_6 Leakage	54
Indirect Emission Increases	Operation	Electrical Use of New Electrical Compressors	138,709
Direct Emission Decreases	Operation	Replacement of Existing Gas Turbine-driven Compressors	(209,368)
Net Annual Change in GHG Emissions			~~(70,441)~~(70,434)
SCAQMD Interim GHG Significance Threshold			*10,000*

Source: SoCalGas 2009
Key:
CO_2e = Carbon dioxide equivalency
GHG = Greenhouse gas
SCAQMD = South Coast Air Quality Management District
SF_6 = Sulfur hexafluoride

4.7.4.1 Applicant Proposed Measures

The applicant has committed to the following applicant proposed measures (APMs) as part of the design of the proposed project. See Section 2.5, "Plans and Applicant Proposed Measures," Table 2-8 for a full description of each APM.

- **APM AQ-1: Maintain Engines in Good Working Condition.**
- **APM AQ-2: Minimization of Equipment Use.**
- **APM GHG-1: Engine Maintenance.**
- **APM GHG-2: Scheduling.**

4.7.4.2 Impacts Analysis

Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
LESS THAN SIGNIFICANT IMPACT

The proposed project would generate direct emissions of GHGs from equipment/vehicle usage during construction and operation and from potential SF_6 leakage from electrical equipment (see Table 4.7-2). To reduce emissions, the applicant and SCE would maintain vehicle and equipment engines per manufacturer specifications and schedule construction activities to minimize the use of unnecessary/duplicate equipment (APM AQ-1, APM AQ-2, APM GHG-1, and APM GHG-2).

GHG emissions would also be generated indirectly at offsite electrical power plants used to supply power to the electrical grid, which in turn would supply electricity to the proposed electric-driven compressors. However, these emission increases would be offset by decreases in GHG emissions due to the removal of the existing gas turbine–driven compressors from use. The net GHG emission change associated with the proposed project would be less than the SCAQMD interim GHG significance threshold of 10,000 metric tons of CO_2e per year. It is estimated that the proposed project would result in a decrease of 70,441 metric tons of CO_2e per year during operations (Table 4.7-2); therefore, the proposed project would result in a less than significant impact under this criterion.

Impact GHG-2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.
NO IMPACT

The proposed project would be consistent with state and local plans and policies adopted for the purpose of reducing GHGs because the proposed project would provide a net decrease in GHG emissions (Table 4.7-2). Therefore, no impact would result under this criterion.

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4.8 Hazards and Hazardous Materials

This section describes the environmental and regulatory settings and discusses potential impacts associated with the construction and operation of the proposed project with respect to hazards and hazardous materials.

This section does not discuss potential impacts related to geologic hazards. Impacts from geologic hazards are discussed in Section 4.6, "Geology, Soils, and Minerals," and impacts on air quality, water quality, and biological resources are discussed in Section 4.3, "Air Quality," Section 4.9, "Hydrology and Water Quality," and Section 4.4, "Biological Resources."

4.8.1 Environmental Setting

4.8.1.1 Local Setting

Sensitive Receptors in Vicinity of the Proposed Project

Table 4.8-1 lists the closest sensitive receptors, including structures, homes, outdoor recreation facilities, schools, and hospitals, to the proposed project components.

Hazardous Material/Waste Sites in the Vicinity of the Proposed Project

Existing and past land use activities are ~~potential~~ indicators of potential hazardous material/waste storage and use. For example, many industrial sites, historic and current, are known to have soil or groundwater contamination by hazardous substances. Other hazardous ~~materials~~ waste sources include leaking underground storage tanks (LUSTs), surface runoff from contaminated sites, and migration of contaminated groundwater plumes. The proposed project study area encompasses a variety of land uses, including open space and recreation, agricultural, residential, industrial, commercial, and educational facilities.

Hazardous materials are classified as those that include solids, liquids, or gaseous materials that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, could pose a threat to human health or the environment. Environmental Data Resources (EDR), California Environmental Protection Agency (CalEPA), and Department of Toxic Substances Control (DTSC) EnviroStor database searches were completed for the project component areas where ground-disturbing activity would occur to identify any sites known to be associated with releases of hazardous materials or wastes. The EDR and DTSC databases identify locations of hazardous materials, waste storage, and release as contained in various federal, state, and local databases. EDR also compiles information from several private and proprietary sources. Table 4.8-1 lists the closest sensitive receptors to the proposed project components.

EDR searches are performed using specific addresses or roads and are therefore most useful for specific locations, such as substations. EnviroStor searches are performed using GIS mapping, which is more suitable for linear elements or larger geographic areas. The EDR database review completed for the proposed project addressed the areas of the Central Compressor Station, the Pardee Substation, the proposed Natural Substation, the Plant Power Line route, part of the 66-kilovolt (kV) subtransmission line route and Telecommunications Route #1, and the staging areas and soil processing areas within the Aliso Canyon Natural Gas Storage Field (storage field). An EnviroStor database search was completed for the remaining extent of the 66-kV subtransmission line route and Telecommunications Route #1; the San Fernando Substation; the Newhall Substation; the Chatsworth Substation; Telecommunications Route #2; and Telecommunications Route #3.

Table 4.8-1 Closest Sensitive Receptor to Proposed Project Components

Project component	Closest Sensitive Receptor	Distance from Project Component (feet)
Aliso Canyon Storage Field: Central Compressor Station; Main Office Facilities, Crew-shift Buildings, and Guardhouse; and 12-kV Plant Power Line Route	• Closest residence on Kilfinan Street • Closest residence to proposed road widening (Tampa Ave) • Closest residence to new guard house (Tampa Ave)	3,876 340 477
Proposed Natural Substation	• Closest residence on Kilfinan Street	3,493
66-kV Subtransmission Line Route Segments A, B, and C/Telecommunications Route #1	• Closest residence on Vista Ridge Drive • Closest residence on Wiley Canyon Road (near Pole #5)(1) • Closest residence on Wiley Canyon Road (near Pole #11) • Closest residence located between Towers #25 and #26 • Wiley Canyon Elementary School	88 48 30 23 522
66-kV Subtransmission Line Route Segments D and E	• Bishop Alemany High School (Pole #61) • Seminary of Our Lady Queen of Angels	315 150
Modifications to San Fernando Substation	• Seminary of Our Lady Queen of Angels • Bishop Alemany High School • Closest residences on San Fernando Mission Boulevard • San Fernando Mission	334 500 500 700
Modifications to Newhall Substation	• Closest residence on Vista Ridge Drive • Valencia Surgical Center • Valley Community Church • Living Hope Evangelical • Wiley Canyon Elementary School • Santa Clarita Pre-School	243 436 900 1,200 1,110 2,480
Modifications to Chatsworth Substation	• Residence in Brandeis (Simi Valley) • Boeing Santa Susana Field Laboratories (Simi Valley)	6,500 8,000
Telecommunications Route #2	• Closest residence on Woosley Canyon Road • Closest residence on N American Cutoff • Closest residence on Box Canyon Road • Closest residence on Santa Susana Pass Road • Closest residence on Santa Susana Pass Road • Closest residence on Santa Susana Pass Road • The Church at Rocky Peak • Residence on W Santa Susana Pass Road • Residence on W Santa Susana Pass Road • Residence near Poema Place	1,984 625 441 14 134 185 323 34 28 109

Table 4.8-1 Closest Sensitive Receptor to Proposed Project Components

Project component	Closest Sensitive Receptor	Distance from Project Component (feet)
Telecommunications Route #3	• Residence on Gridley Street (near Tap Location M6-T4)	85
	• Residences on Gladstone Avenue	49
	• Residence on Maclay Street	38
	• Residences on Foothill Boulevard	62
	• Residences on Hubbard Street	22
	• Residences on N Hubbard Avenue	35
	• Residences on South Workman Street	17
	• Residences near Kalisher Street	26
	• Residences on West San Fernando Boulevard	40
	• Mission San Fernando Rey de Espana	847
	• La Trinidad Church	747
	• Santa Rosa Catholic Church	76
	• Ancient Church of the East	11
	• San Fernando First Baptist Church	1,073
	• Seminary of Our Lady Queen of Angels	327
	• Santa Rosa Catholic School	488
	• Community Charter Middle School	372
	• Bishop Alemany High School	500
	• Nueva Esperanza School	443
	• KinderCare Learning Center	121
	• Gridley Street Elementary School	1,017
Pardee Substation	• Saugus Unified School District	2,790
	• Grace Point Mission Church	2,340
	• Residence on Copperhill Drive and Smyth Drive	3,260

Key:
kV = kilovolt
Note:
1 See Appendix D for pole locations.

EnviroStor database searches do not include a search of all toxic storage facilities and underground storage tanks included on the Cortese List. Additional Cortese List reviews were also completed for project components that were not subject to an EDR database search. The Cortese List is a compilation of lists of toxic storage facilities and underground storage tanks maintained by the California DTSC, the State Department of Health Services, the State Water Resources Control Board (Water Board), and the Integrated Waste Management Board pursuant to Government Code Section 65962.5.

In addition to the EDR, EnviroStor, and Cortese List database searches and list reviews, current aerial and street level photographs and topographic maps were reviewed for all project component areas, and a reconnaissance-level pedestrian site survey was performed of several of the proposed project component areas, including each project component within the storage field. These activities were performed to help visually identify conditions that could have the potential for soil contamination. No such additional areas were identified during this site survey.

In addition to sites discovered during database and list reviews, several areas of known or suspected soil contamination at the storage field were identified by the applicant. These areas include the proposed location for the office facilities, the proposed Central Compressor Station site, and the existing turbine-driven compressors and metering station location (Lindgreen 2009). Unknown contaminated sites could also be present in the storage field area.

EDR Database Review

The EDR database review of the proposed project components (EDR 2009a, 2009b) included a review of all databases required for review to comply with the U.S Environmental Protection Agency's (EPA's) All Appropriate Inquiry (AAI) rule for environmental due diligence, including databases of Superfund, Cerclis, Resource Conservation and Recovery Act (RCRA) Corrective Action, Violations, Leaking Tanks, Spills, and Permits sites. In addition to AAI-Compliant databases, the EDR search consisted of a review of environmental-audit databases including, but not limited to, Financial Assurance records; databases of air permits and air emission violations; databases of waste water permits and violations; and U.S. Occupational Health and Safety Administration (OSHA) records. The EDR database review also included a review of toxic storage facilities and underground tanks included on the Cortese List, which is described below.

The EDR database search identified four reported hazardous material releases in the area of the storage field (EDR 2009a):

1. A 1996 release of contaminated water when a 3-inch wastewater pipeline was struck by equipment;
2. A 1994 post-Northridge earthquake rupture of an aboveground crude oil storage tank;
3. A 1996 oil spill from well leakage; and
4. A 2007 cleanup of a release at Catch Basin #3.

None of these releases occurred within an area that would be graded during construction of the proposed project components.

The EDR database searches indicated that a transformer failure resulted in the release of hazardous materials at the Pardee Substation in 2007. The EDR database searches also indicated that for an area of the 66-kV subtransmission line and Telecommunications Route #1 project areas near I-5 and Calgrove Road, a 5-gallon drum containing isopropanol leaked in 2007 due to improper freight storage. Neither of these spills occurred where ground-disturbing activities are scheduled to occur as part of the proposed project. No other spills were reported in the EDR database searches.

EnviroStor Database Review

The DTSC EnviroStor database review (DTSC 2011) included an assessment of the following:

1. **Federal Superfund Sites:** Indicates whether the site is listed on the federal "Superfund" National Priorities List (NPL). The list of sites is developed and maintained by the EPA, which typically has primary regulatory oversight for the sites listed on the NPL. EPA delists a site from the NPL when all cleanup activities have been certified as complete.
2. **State Response Sites:** Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.
3. **Voluntary Cleanup Sites:** Identifies sites in a DTSC program that allows motivated parties who are able to fund the evaluation, investigation, cleanup, and DTSC's oversight to move ahead at their own pace to investigate and remediate their sites.
4. **School Sites:** Identifies proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination.

5. **Evaluation Sites:** Identifies suspected, but unconfirmed, contaminated sites that need or have gone through a limited investigation and assessment process.
6. **Military Evaluation:** Identifies closed military facilities with confirmed or unconfirmed releases where DTSC is involved in investigation and/or remediation. Sites may be classified as closed bases, open bases, or Formerly Used Defense Sites.
7. **Corrective Action/Hazardous Waste Permit:** Includes investigation and cleanup activities at hazardous waste facilities (either RCRA or state-only) that were eligible for a permit or received a permit. These facilities historically treated, stored, disposed, and/or transferred hazardous waste.
8. **GeoTracker LUFT/SLIC:** Sites in the GeoTracker database include those identified as leaking underground fuel tank (LUFT) sites or Spills-Leaks-Investigations-Cleanups (SLIC) sites.

Results of the EnviroStor database search showed that no hazardous materials, waste storage, or release locations are located within 0.5 miles of the remainder of the area of the existing 66-kV subtransmission line. The EnviroStor database search identified two sites within 0.5 miles of Telecommunications Route #3: a voluntary cleanup site listed on the federal Superfund database approximately 0.05 miles southeast of the route near the corner of 1st Street and Harding Street, and a waste treatment plant listed on the tiered permitting database approximately 0.3 miles northeast of the route near San Fernando Road and Sayre Street (DTSC 2011).

The Newhall and San Fernando Substations are both identified in the EnviroStor database searches as having generated hazardous wastes in the past under temporary generator identification numbers. Neither substation was identified as a location where a hazardous substance or waste has been released to the soil. In addition, the EnviroStor database search confirmed that no soil releases have been recorded at properties adjacent to either substation (DTSC 2011).

The Chatsworth Substation is located within the larger footprint of the Santa Susana Field Laboratory, an active rocket testing facility co-operated by the National Aeronautics and Space Administration (NASA) and the Boeing Company. Four surface impoundments designated as RCRA hazardous waste treatment/storage units were previously located at the Santa Susana Field Laboratory site. These impoundments were discontinued by 1985, and residual wastes, liquids, sediments, liner, and some underlying contaminated soils associated with the impoundments were removed in 1988 and 1989. In addition, soils and groundwater at the Santa Susana Field Laboratory site have been contaminated by past releases. A post-closure hazardous waste facility permit was issued in May 1995 and renewed in 2005, for remaining contamination from past releases at the Santa Susana Field Laboratory site. Three ex-situ groundwater treatment systems have also been installed at the Santa Susana Field Laboratory site to clean up contaminated groundwater (DTSC 2011).

Cortese List

Sites and facilities included on the Cortese List include the following: the Water Board GeoTracker database (list of LUST sites) (SWRCB 2011), the Water Board list of solid waste disposal sites with waste constituents above hazardous waste levels outside the waste management unit, and the Water Board's list of active Cease and Desist Orders and Corrective Action Orders. A review of the Cortese List was completed for the Newhall Substation, San Fernando Substation, Chatsworth Substation, 66-kV subtransmission line route, Telecommunications Route #1, Telecommunications Route #2, and Telecommunications Route #3 project component areas, using a buffer of 0.5 miles consistent with the EnviroStor database search described above.

66-kV Subtransmission Line Reconductoring

One verification monitoring site is located approximately 0.18 miles southwest of the 66-kV subtransmission line reconductoring route on Coltrane Avenue near Weldon Canyon Mountainway. However, ~~T~~this site is separated from the reconductoring route by Interstate 5 (I-5). The route would cross the Sunshine Canyon Landfill, which is a land disposal site with open verification monitoring (SWRCB 2011).

Newhall Substation

Nine LUST cleanup sites are located within 0.5 miles of the Newhall Substation, including six closed (cleaned up) sites, two open site assessments, and one open remediation site. The sites under assessment are located adjacent to I-15, approximately 0.37 miles west of the Newhall Substation, and the remediation site is located on Lyons Avenue and Everett Drive, approximately 0.32 miles east of the Newhall Substation. Ten permitted underground storage tanks are also located within 0.5 miles of the Newhall Substation; the closest is located approximately 0.15 miles southeast of the substation. These sites are located approximately the same distance from the 66-kV subtransmission line and Telecommunications Route #1 project component route, where the route follows Wiley Canyon Road (SWRCB 2011).

Telecommunications Route #2

Telecommunications Route #2 would cross the Santa Susana Field Laboratory, described above. This project component would run adjacent to a Boeing open site assessment where solvents contaminated an aquifer. The telecommunications component would cross approximately 0.07 miles (370 feet) north of a permitted underground storage tank on Iverson Road in Chatsworth, California. This telecommunications component would also cross within 0.08 miles (420 feet) of an underground storage tank site adjacent to Oat Mountain Way near the edge of the storage field (SWRCB 2011).

Chatsworth Substation

One closed diesel fuel LUST cleanup site is located approximately 0.25 miles east of the Chatsworth Substation. Another closed LUST cleanup site with former heating oil contamination is located approximately 0.4 miles east of the substation. A third closed diesel fuel LUST cleanup site is located approximately 0.45 miles east of the substation. These sites are all located along F Street in Simi Valley, within 0.10 miles of the Chatsworth telecommunication route (SWRCB 2011).

Telecommunications Route #3

In addition to the sites near the San Fernando Substation listed above, several active cleanup sites are located near Telecommunications Route #3. Two open LUST cleanup sites are located on Truman Street, one block southwest of the portion of the telecommunications line that would extend along First Street in San Fernando. An open LUST cleanup site is also located on San Fernando Road, two blocks southwest of the portion of the telecommunications route that extends along First Street. One open gasoline LUST cleanup site is on the same street as, and adjacent to, a portion of the telecommunications route that extends along South Workman Street. One open site currently undergoing cleanup for volatile organic compounds is also located approximately 0.25 miles southeast of the telecommunications route. Another open cleanup site with unidentified contaminants is located adjacent to the telecommunications route at Hubbard Street and Glenoaks Boulevard. A gasoline cleanup site is also located approximately 0.23 miles northeast of the telecommunications route at Gladstone Street and Hubbard Street (SWRCB 2011).

In addition, 24 permitted underground storage tanks and 15 closed LUST sites are located within 0.5 miles of Telecommunications Route #3. Five of the closed LUST sites are located adjacent to (on the same street as) portions of the telecommunications route. These closed LUST sites are located at San Fernando Mission Boulevard and Laurel Canyon Road, Laurel Canyon Road and Rinaldi Street, Hubbard Street and Glenoaks Boulevard, Hubbard Street and Foothill Boulevard, and Foothill Boulevard and Maclay Street. Seven of the permitted underground storage tanks (USTs) are located adjacent to the telecommunications route. These USTs are located at San Fernando Mission Boulevard and Laurel Canyon Road, Laurel Canyon Road and Rinaldi Street, Hubbard Street and Foothill Boulevard, Foothill Boulevard south of Hubbard Street, Foothill Boulevard between Gridley Street and Femmont Street (two tanks), and Foothill Boulevard and Maclay Boulevard (SWRCB 2011).

Telecommunications Route #4

Telecommunications Route #4 would cross approximately 500 feet south of one underground storage tank cleanup site on Filbert Street in Sylmar, and within 100 feet of a SLIC site, on Central Avenue. This telecommunications component would also cross within 100 feet of several underground storage tank cleanup sites on or adjacent to San Fernando Road, including one site at 1601 San Fernando Road and another at 1601 Truman Street (SWRCB 2011).

San Fernando Substation

One gasoline LUST cleanup site is located approximately 0.28 miles northeast of the San Fernando Substation. Another LUST cleanup site with soil contaminated by aviation fuel is located approximately 0.45 miles west of this substation. Three permitted USTs and one closed LUST site are located within 0.5 miles of the San Fernando Substation (SWRCB 2011).

4.8.1.2 Hazardous Materials and Hazardous Waste

Table 4.8-2 lists hazardous materials currently in use in the areas of the proposed project components. Further details regarding hazardous materials currently in use in the proposed project component areas are presented in Table 4.8-3.

Table 4.8-2 Hazardous Materials Currently In Use in Proposed Project Component Areas

Proposed Project Area or Activity	Current Hazardous Materials and Wastes Used During Operation
Proposed main office facilities and crew-shift building site	Minor household chemicals.
Porter Compressor Plant, Dehydration Plant 1 (Dehy 1), Dehydration Plant 2 (Dehy 2)	Mercaptan mix (odorant added to natural gas; total tank volume of 6,000 gallons and estimated annual use of approximately 1,000 gallons)
Staging areas and soil processing site	Occasional temporary small quantities of corrosion chemical for well servicing.
Newhall Substation, Chatsworth Substation, and San Fernando Substation	Transformer oil (electrical transformers); sulfur hexafluoride (SF_6) (circuit breakers); battery acid (battery backup systems); minor maintenance chemicals (paints, lubricants, and gases); waste transformer oil; oily debris; universal wastes (waste batteries and fluorescent lights); and minor trash and metal scrap.

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Table 4.8-3 Summary of Hazardous Materials Inventory Statement for Aliso Canyon Storage Field as Required by CUPA

	Location Within Facility	Dehy1	Dehy 2	Dehy 3	KVS Bldg	Haz Mat Storage Area	Fuel Station	Limekiln	Porter Gathering Plant	Sesnon Gathering Plant	TDC	East Field	UG Storage	Porter Compressor Plant	West Field
Common Name	Material														
Triethylene Glycol	Triethylene Glycol	X	X	X											
Attach	Methyl Cyclohexane and Alkyl aryl Sulfanate					X									
Estor GLX	TDC Petroleum Lubricating Oil					X									
Gear Oil	Petroleum Lubricating Oil					X									
Hot Oil Heater Oil	Mineral Oil					X									
Mobil Therm 603	TDC Lubricating Oil	X				X									
Paint	Mineral Spirits, Xylenes, Titanium Dioxide					X									
Soluble Oil B	Petroleum Oil					X									
Turbine Oil	Turbine Oil					X									
Waste Lead Paint	NA					X									
Waste Oil/Soil/Debris	NA					X									
Helium		X	X		X									X	
Natural Gas – Maxitherm BTU Calibriation Gas		X	X		X						X			X	
Nitrogen		X	X								X				
Odorant	50/50 Blend THT and TBM	X	X											X	
Mobil SHC 630	Lubricant		X												
Hot Oil Heater Oil	Vegetable Oil Derivative	X	X												
Diesel	Diesel Fuel No. 2						X								
Gasoline	Gasoline						X								
Calibration Gas – Nitric Oxide	Nitric Oxide and Nitrogen				X						X				
Calibration Gas – Oxy/Nitrogen	Oxygen and Nitrogen				X						X				
Fresh Oil	Mobil Pegasus 50S SAE 30				X										
Crank Case Oil	NA				X										
Waste Oil					X										
Crude Oil (Sweet)	NA							X		X					
Cationic Polymer in Dispersion	NA								X						
Corrosion Inhibiter	See CUPA Sheet								X	X					
Emulsion Breaker	See CUPA Sheet								X	X					
Inhibiter	See CUPA Sheet								X						
Biocide	See CUPA Sheet								X						
Crude Oil/Waste Water	NA								X	X					
Electrolyte	Sulfuric Acid and Lead										X				
Nitric Oxide	Nitrogen and Nitric Oxide										X				
Nitrogen Oxide	Nitrogen and Nitrogen Oxide										X				
Oxygen											X				
Acetylene											X				
CO2											X				
Emulsion Breaker	Petroleum Hydrocarbon											X			
EC2017A	See CUPA Sheet											X			
Emulsion Breaker	Heavy Catalytically Reformed Naphtha											X			
Natural Gas	Methane												X		
Emulsion Breaker	See CUPA Sheet														X

Source: SoCalGas 2013
Key:
BTU = British Thermal Units
CO_2 = carbon dioxide
CUPA = Certified Unified Program Agency
Dehy = Natural Gas Dehydration Unit
Haz Mat = hazardous materials
KVS bldg. = Building housing the KVS compressor engine
NA = Not Applicable
TBM = Tertiary Butyl Mercaptan
TDC = Turbine-Driven Compressor
THT = Tetrahydrothiophene
UG = underground

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Table 4.8-~~3~~4 lists the historical average quantities of hazardous wastes that have been used at the storage field during the previous three years based on hazardous waste disposal records. The storage field currently uses Evergreen Oil Recycling, Clean Harbors, and Southern California Gas (SoCalGas)–Pico Rivera for disposal of hazardous waste.

Table 4.8-~~3~~4 Type and Quantity of Hazardous Waste at the Aliso Canyon Storage Facility

Waste Material	Quantity
Engine oil (recycled)	9,000 – 12,000 gallons/year
Filters (recycled)	15 – 120 per year
Tank bottoms (liquids and solids)	200 – 6,000 gallons/year; 10 – 2,600 yards^3/year
Lead paint	200 – 6,000 gallons/year; 10 – 2,600 yards^3/year
Waste paint	5 – 120 gallons/year
Contaminated soil	4,500 – 21,000 pounds
Waste grease	250 pounds/year
Antifreeze	110 gallons/year
Parts cleaner	80 gallons/year

Note:
Mercaptans/odorization is used only during withdrawal and therefore is not included in this table (volume of use would not change as a result of the proposed project).

4.8.1.3 Hazards, Safety, and Emergency Response

Natural Gas and the Aliso Canyon Storage Reservoir

Consumer-grade natural gas comprises primarily methane (70–90 percent), and can also include smaller concentrations of ethane, propane, butane, and pentane. In its purest form, natural gas is a colorless, odorless gas. An odorant, mercaptan, is added to natural gas intended for consumption as a safety measure to allow for detection in the event of a leak. Natural gas is not a toxic substance; however, natural gas is flammable and combustible when a flammable concentration is present within an enclosed space in the presence of an ignition source. Methane is also an asphyxiant and may replace oxygen within an enclosed space. Methane has an ignition temperature of 1,000 degrees Fahrenheit and is flammable at concentrations between 5 and 15 percent in the air. Natural gas leaks can occur at any stage of the natural gas commercial use process, including during exploration, extraction, production, transport, storage, and distribution.

At the storage field, natural gas from the underground reservoir is extracted via wells and transported via a series of pipelines to larger pipelines that move the gas to SoCalGas's (or the applicant's) customers, which include residential, commercial, industrial, electrical generation, and wholesale entities. Natural gas to be injected into the underground reservoirs is also transported to the storage field via large pipelines. The underground natural gas reservoir at the storage field consists of two storage zones within sandstone, siltstone, and shale, topped by a shale caprock which provides a seal to the reservoir (SoCalGas ~~2011~~2013). The caprock is approximately 300 feet thick. The depth of the natural gas storage zone below the caprock ranges from 7,100 feet to 9,400 feet below ground surface (bgs). The storage field includes 116 withdrawal and injection wells, two observation wells, six flood wells, and two water disposal wells. The average depth of the storage field wells is approximately 8,500 feet bgs. Although well sizes vary, most of the injection and withdrawal wells at the storage field have a 7-inch or 9 and 5/8-inch production casing.

Natural gas migration refers to the uncontrolled, underground movement of natural gas from a contained state (e.g., from a reservoir or well) to an uncontained state (e.g., in the air, soil, etc.). Gas migration from an underground well to the surface can occur in three ways: (1) from defective cementing of new wells or abandoned wells, (2) through over-pressurization of cracks or faults, and (3) through the formation of new fractures when the natural gas injection pressure is higher than the original naturally occurring pore pressure~~due to the natural gas injection and storage process~~. In the Aliso Canyon storage reservoir, injection pressure does not exceed the original naturally occurring pore pressure at the time of discovery of the reservoir.

During most years of storage field operations, the applicant conducts a geotechnical study of the underground reservoir at periods of low and high inventory. In order to conduct these studies, all of the wells are "shut in" (injection and withdrawal pressure in the wells are halted), and the reservoir is allowed to achieve an equilibrium pressure over the course of several days. Results of these studies are reviewed by a reservoir engineer, who compares current storage field pressure and inventory to the calculated inventory.

Other information about storage field operations, such as metering, control, and safety measures employed at the facility, are described in Section 2.2.1.2 (Chapter 2, "Project Description").

Facility and Industry Safety Records

Natural Gas Transmission

Approximately 2.2 million miles of natural gas transmission and distribution pipelines are in operation in the U.S. (GAO 2004). Serious accidents (those resulting in a fatality, injury, or property damage of $50,000 or more) on interstate natural gas pipelines average upwards of 65 per year[1] (GAO 2004). In 2009 and 2010, respectively, 60 and 52 serious accidents associated with natural gas transmission and distribution took place (PMHSA 2011). Between 2001 and 2010, annual average property damage (private and public) costs resulting from significant onshore gas transmission incidents were estimated at over $77 million (PMHSA 2011). Table 4.8-~~4~~5 shows a summary of significant incidents that have occurred in the process of natural gas transmission in the U.S. from 2001 to 2010.

Table 4.8-~~4~~5 Summary Statistics, National Gas Transmission Significant Incidents (2001–2010)

Year	Number	Fatalities	Injuries	Property Damage (millions)
2001	45	2	5	$14
2002	40	1	4	$20
2003	62	1	8	$52
2004	43	0	2	$9
2005	64	0	5	$215
2006	59	3	3	$29
2007	55	2	7	$39
2008	47	0	5	$112
2009	60	0	11	$43
2010	52	10	61	$240
Ten-Year Average	53	2	11	$77

Source: PMHSA 2011

On September 9, 2010, a 30-inch Pacific Gas and Electric Company (PG&E) natural gas pipeline exploded in San Bruno, California in a residential neighborhood resulting in the deaths of eight people, multiple injuries, and the destruction of 37 residences (NTSB 2010). In response to the San Bruno pipeline explosion, both the National Transportation Safety Board and the California Public Utilities Commission (CPUC) initiated separate reviews to investigate the cause of the explosion and rulemaking change processes. The CPUC announced on February 24, 2011, that it will set new rules for the safe and reliable operation of natural gas pipelines in California (CPUC 2011).

[1] This estimate includes consideration of liquefied natural gas facilities and of gas pipeline activities such as gas gathering, transmission, and distribution.

In addition, the CPUC began a penalty consideration phase into whether PG&E's gas transmission pipeline recordkeeping was unsafe, whether it violated the law, and whether deficient PG&E recordkeeping caused or contributed to the pipeline rupture in San Bruno. Through this process, the CPUC will examine PG&E's system for classifying the risk of pipelines in urban areas and the company's standards for inspecting pipelines.

In response to the fatal explosion in San Bruno, PG&E is also in the process of hydrostatic testing of 150 miles of its pipelines. During this testing, sections of pipe are pressurized with water to a much higher level of pressure than the normal operating pressure for gas flow through the pipe. Such testing can detect areas of leaks and necessary repairs or sections that require replacement. On October 24, November 4, and November 6, 2011, hydrostatic testing resulted in the rupture of three PG&E pipeline sections (PG&E 2011; San Francisco Chronicle 2011).

Natural Gas Pipeline Purging

Natural gas pipelines are purged by displacing one gas with another while taking the pipelines in or out of service. The U.S. Chemical Safety and Hazard Investigation Board (CSB) has identified natural gas pipeline purging activities as an area of serious safety concern because of damage caused by these activities (CSB 2010a), including two pipeline purging-related incidents in 2009 and 2010. A June 9, 2009, explosion at a ConAgra Slim Jim plant in Garner, North Carolina, and an explosion at the Kleen Energy plant in Middletown, Connecticut, on February 7, 2010, resulted in nine fatalities within a period of eight months.

The CSB found that the primary cause of the gas explosions was gas purging activities resulting in a gas release that exceeded the lower explosive limit (CSB 2010b). Potential ignition sources that were close to gas purging activities, and the proximity of nonessential personnel in the area during these activities were also determined to contribute to the severity of the incidents.

In February 2010, the CSB issued urgent safety recommendations to the National Fire Protection Association (NFPA), the American Gas Association, and the Chair of the NFPA National Fuel Gas Code (NFPA 54/ANSI Z223.1) Committee to enact a tentative interim amendment and permanent changes to the code. The changes would require the following actions related to purging of fuel gas piping at industrial, commercial, and public facilities:

a. Purged fuel gases shall be directly vented to a safe location outdoors, away from personnel and ignition sources;

b. If it is not possible to vent purged gases outdoors, purging gas to the inside of a building shall be allowed only upon approval by the authority having jurisdiction[2] of a documented risk evaluation and hazard control plan. The evaluation and plan shall establish that indoor purging is necessary and that adequate safeguards are in place such as:

   - Evacuating non-essential personnel from the vicinity of the purging;

[2] The NFPA defines the Authority Having Jurisdiction as an "organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure" such as a local fire marshal or building official (NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, 2006 Edition, 654-6). Where it is not possible to implement safety controls, NFPA standards can grant decision-making authority over exceptions to safety requirements to the authority having jurisdiction.

- Providing adequate ventilation to maintain the gas concentration at an established safe level, substantially below the lower explosive limit; and
- Controlling or eliminating potential ignition sources.

c. Combustible gas detectors are used to continuously monitor the gas concentration at appropriate locations in the vicinity where purged gases are released; and

d. Personnel are trained about the problems of odor fade and odor fatigue and warned against relying on odor alone for detecting releases of fuel gases.

The CSB also recommended to the International Code Council and the Chair of the International Fuel Gas Code Committee that the revised gas purging provisions of the National Fuel Gas Code, consistent with CSB recommendation 2009-12-I-NC-R1, be incorporated into the International Fuel Gas Code.

Storage Field Safety Record

A summary of safety incidents that occurred at natural gas storage facilities in California from 1970 to the present was prepared for the proposed Sacramento Natural Gas Storage Project in 2007 (SERA 2007). This summary concluded that underground natural gas storage facilities generally have a very low number of incidents affecting the safety of employees and the general public. Five storage failures or accidents were reported at natural gas storage facilities in California between 1976 and 2006, none of which were reported to have caused injuries or loss of life. At some storage fields, migration of storage gas beyond the reservoir has resulted in problems such as contamination of groundwater, but such gas migration typically remains in the subsurface and poses no threat to the public or structures on the surface. The report included recommendations for minimizing safety and environmental problems at gas storage reservoirs, including implementation of specific measures addressing reservoir integrity, casing integrity, wellhead design and maintenance, surface facility operation and maintenance, and pipeline maintenance and monitoring.

Existing records show that two safety incidents occurred at the Aliso Canyon storage field since operations began in the 1970s. In 1976, sand erosion in pipelines resulted in the blowout of a heavy wall tee, which started a well fire and temporary shutdown of operations in the local area of the well. This fire was sparked from static electricity from moving sand particles. The incident did not result in any fatalities, and equipment damage was minor. Heavy wall tees have since been replaced at the storage field with “target tees” for curved pipeline routing. In addition, probes placed in pipelines to monitor flow, ultrasonic equipment used to monitor pipeline wall thickness, and periodic pipeline inspections are used to ensure against damage from erosion (SERA 2007). Pipeline shutoff valves have also been installed to ensure containment and gas shut-in in the event of a blowout.

A second safety incident occurred in January 1993, during the Northridge 6.7 magnitude earthquake in the region. Ground moving and shaking caused ~~significant~~ minor equipment damage to pipelines at Aliso Canyon, ~~.and multiple pipeline ruptures,~~ resulting in a temporary suspension ~~shutdown~~ of operations in order to thoroughly inspect the entire system before resuming operations. No fire, explosion, injuries, or deaths were reported at the storage field as a result of this incident (SERA 2007). A tank filled with crude oil ruptured during the incident, resulting in the loss of 5,000 gallons of oil. Total reported property damage was estimated at $30 million.

Fire Hazards

Wildfires are a common occurrence in southern California. Wildland fires resulting from either natural or human-made causes that occur in brush, grasslands, or fallow agricultural areas are capable of causing widespread damage to neighboring conservation preserve lands, in addition to threatening the lives and personal property of residents located in wildfire-prone areas. In the proposed project area, elevated wildland fire risk is associated with areas of hilly terrain, highly flammable native vegetation, and susceptibility to high winds, particularly during late summer and fall "Santa Ana" conditions.

In October 2008, the Sesnon fire caused wide-ranging damage in the Porter Ranch, Twin Lakes, and Indian Hills communities, and burned portions of the storage field property. From October 13 to 18, the fire burned more than 14,000 acres, resulting in large-scale evacuations in the area. During the fire, 89 structures were damaged, and 15 residences were destroyed. The cause of the fire was attributed to a downed electrical distribution line that sparked dry brush (CAL FIRE 2008). The storage field property is subject to occasional fires (Garcia 2012). On September 1, 2012, a small (less than 0.5 acres) brush fire was caused on the storage field facility property by a faulty splice on an SCE electric line (SoCalGas 2013). Storage field facility staff contacted the City of Los Angeles Fire Department, who responded and suppressed the fire within an hour of its report.

The California Department of Forestry and Fire Protection (CAL FIRE) is the state agency responsible for fire protection in State Responsibility Areas (SRAs) of California and also identifies and maps fire risks in Federal Responsibility Areas, SRAs, and Local Responsibility Areas (LRAs) (CAL FIRE 2009). CAL FIRE identifies five types of fire hazard severity (extreme, very high, high, moderate, and little or no threat), and makes recommendations for "very high fire hazard severity zones."

Figure 4.8-1 shows the fire hazard zones and responsibility areas for each project component (CAL FIRE 2007). The storage field is located entirely within a Very High fire hazard severity zone and almost entirely within the SRA. The Central Compressor Station, Natural Substation, Plant Power Line, main office facilities, crew-shift buildings, and guardhouse would all be located within the SRA. The reconductoring component of the proposed project would traverse the SRA and two LRAs under the jurisdiction of the City of Los Angeles, Los Angeles County, and the City of Santa Clarita.

The majority of the reconductoring component would cross areas designated as Very High fire hazard severity zones with a portion of the line crossing High, Moderate, and Unzoned areas within the City of Santa Clarita near the Newhall Substation. Proposed project components within urbanized locations, including the Newhall Substation, the San Fernando Substation, the Sylmar Substation, the MacNeil Substation, and the San Fernando reconductoring component, are not subject to wildland fire hazard analysis by CAL FIRE. The Chatsworth Substation is located within a Very High fire hazard zone within Ventura County. For more information on fire protection services in the areas of the proposed project components, see Section 4.13, "Public Services and Utilities."

As discussed in Section 4.13.1.1 of this document, the proposed project in located within an Initial Action Zone, which applies to sites that span multiple jurisdictions or are highly susceptible to brush fires. Both the Los Angeles County and City of Los Angeles fire departments would respond to a fire at the storage field, regardless of jurisdiction. The Los Angeles County Fire Department would respond to fires at the location of any project component within Los Angeles County; the City of Los Angeles Fire Department would respond to fires at the location of any project component within the City of Los Angeles; and the Ventura County Fire Department would respond to a fire at the Chatsworth Substation.

Within the storage facility site, the parking lot in front of a building known as the New Shop has been identified as a primary evacuation zone, while the parking lot across the street from the KVS building has been identified as a back-up evacuation zone. The main office parking lot has been identified as an evacuation zone for employees working within the main office. No roads within the facility have been designated as evacuation routes.

~~Electric and Magnetic Fields~~

~~Electric and magnetic fields (EMFs) occur both naturally and as a result of human activity across a broad electrical spectrum. Naturally occurring electric and magnetic fields are caused by the weather and the earth's geomagnetic field. The fields caused by human activity result from the technological application of the electromagnetic spectrum for uses such as communications, appliances, and the generation, transmission, and local distribution of electricity. After several decades of study regarding potential public health and safety risks associated with EMF from power lines, research results remain inconclusive.~~

~~In 1993, the CPUC implemented decision D.93-11-013, which requires utilities to use "low-cost or no-cost" EMF reduction measures for EMFs associated with electrical facilities that require certification under CPUC General Order 131-D. The decision directed utilities to use a 4 percent benchmark for low-cost mitigation. This decision also implemented a number of EMF measurement, research, and education programs. The CPUC did not adopt any specific numerical limits or regulation on EMF levels related to electric power facilities. The CPUC's January 27, 2006, decision (D.06-01-042) affirmed the 1993 decision on the low-cost/no-cost policy to mitigate EMF exposure for new utility transmission and substation projects. For further information about EMFs and CPUC guidelines, refer to http://www.cpuc.ca.gov/PUC/energy/Environment/ElectroMagnetic+Fields.~~

Airports

No public or public use airports are located within 2 miles of the storage field. The Whiteman Airport is located approximately 2.7 miles southeast of the San Fernando Substation, approximately 2.5 miles at its closest point to Telecommunications Route #3. The Van Nuys Airport is located approximately 7 miles southeast of the storage field site and approximately 4.7 miles southwest of the San Fernando Substation, where reconductoring and installation of telecommunications would occur.

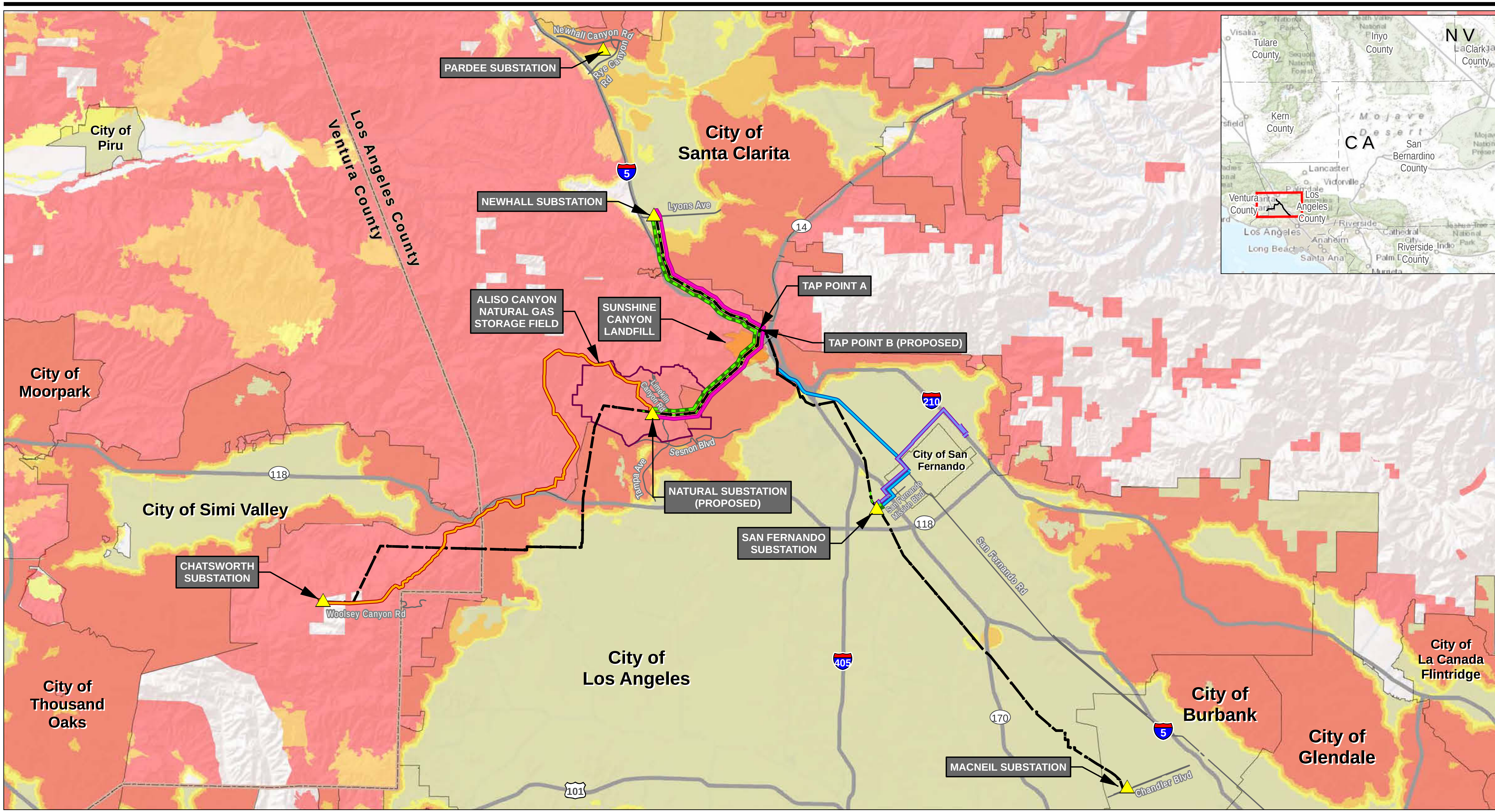
Several private helipad and private airstrips are also located in the vicinity of the proposed project component areas. The Merle Norman Cosmetics–Sylmar Helipad is located approximately 3.4 miles southeast of the 66-kV subtransmission line reconductoring component, approximately 1.3 miles northwest of Telecommunications Route #3, and approximately 2.3 miles northwest of the San Fernando Substation. The Spears Helipad is located approximately 2.7 miles southeast of the 66-kV subtransmission line reconductoring component, approximately 2.7 miles northwest of Telecommunications Route #3, and approximately 2.9 miles northwest of the San Fernando Substation.

4.8.2 Regulatory Setting

4.8.2.1 Federal

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act, also known as "Superfund," outlines regulations for the cleanup of the toxic waste sites nationwide. In 1986, Superfund was amended by the Superfund Amendment and Reauthorization Act (SARA), Title III, also known as the Emergency Planning and Community Right-to-Know Act. SARA Title III and the Clean Air Act of 1990 established a nationwide emergency planning and response program and imposed reporting requirements for businesses that store, handle, or produce significant quantities of extremely hazardous materials. These acts require states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such material is stored or handled at a facility.



Source: California Department of Forestry and Fire Protection 2006, 2007, SoCalGas 2009 to 2012

- 66-kV Subtransmission Line Reconductoring Route (Proposed)
- Telecommunications Route #1
- Telecommunications Route #2
- Telecommunications Route #3
- Telecommunications Route #4
- Existing 66-kV Subtransmission Line
- Local Responsibility Area (Unzoned)

Fire Hazard Severity Zones
- Moderate
- High
- Very High

0 1 2 4 Miles

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

Note: State Responsibility Area was adopted in 2007. Local Responsibility Area was drafted in 2007.

Figure 4.8-1
Map of Fire Hazard Severity Zones in the State and Local Responsibility Areas of California

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Toxic Substances Control Act

The Toxic Substances Control Act of 1976 (15 USC 2601, et seq.) authorizes the EPA to track industrial chemicals produced within or imported into the United States. Under this act, the EPA screens and tests industrial chemicals that pose a potential health hazard to humans and/or the environment. This act grants the EPA the authority to control and ban newly developed industrial chemicals and other chemicals that pose a risk in order to protect public and environmental health.

Resource Conservation and Recovery Act

The 1976 RCRA enables the EPA to administer a regulatory program that extends from the manufacture of hazardous materials to their disposal, thus regulating the generation, transportation, treatment, storage, and disposal of hazardous waste at all facilities and sites within the United States.

Hazardous Materials Transportation Act

The primary objective of the Hazardous Materials Transportation Act (HMTA) of 1975 is to provide adequate protection against risks to life and property inherent in the transportation of hazardous materials in commerce. HMTA empowers the U.S. Department of Transportation (DOT) to regulate the transportation of hazardous materials by rail, aircraft, vessel, and public highway. Amendments in 1976 and 1990 substantially revised existing provisions and added new requirements for chemicals that the DOT has determined pose unreasonable risks to health, safety, and property during transport activities. Hazardous materials regulations are subdivided by function into four areas:

- Procedures and/or Policies – 49 Code of Federal Regulations [CFR] Parts 101, 106, and 107;
- Material Designations – 49 CFR Part 172;
- Packaging Requirements – 49 CFR Parts 173, 178, 179, and 180; and
- Operational Rules – 49 CFR Parts 171, 173, 174, 175, 176, and 177.

Gas Pipeline Operations and Safety Regulations

Regulations addressing the safety and operations of natural gas pipeline transportation are promulgated under Title 49 CFR, USC Chapter 601 and Parts 190–199, and include the Natural Gas Pipeline Safety Act, the Hazardous Liquid Pipeline Safety Act, and the Pipeline Safety Improvement Act. These regulations establish a required level of safety and provide for various technologies that the pipeline operator may use to achieve these requirements.

As previously discussed, Title 49 CFR 192 defines pipe class locations based on population densities in the vicinity—as density increases, safety requirements become more rigorous—and contains design specifications based on those classes. Title 49 CFR, Parts 190–199 also contain regulations for pipeline safety standards as well as requirements for safety procedures and plans. Part 192.605 outlines the requirements for operations procedural manuals for operations, maintenance, and emergencies. Part 192.615 outlines requirements for emergency response plans for natural gas pipeline operators. Operators of gas pipelines are also required to have specific qualifications.

Natural Gas Pipeline Safety Act

The DOT provides oversight for natural gas pipeline transportation under the Natural Gas Pipeline Safety Act of 1968. The DOT Pipeline and Hazardous Materials Safety Administration, Office of Pipeline Safety, administers the national regulatory program to ensure the safe transportation of gas and other hazardous materials by pipeline.

Hazardous Liquid Pipeline Safety Act

The Hazardous Liquid Pipeline Safety Act of 1979 and amendments authorize the DOT to regulate pipeline transportation of hazardous liquids (including crude oil, petroleum products, anhydrous ammonia, and carbon dioxide).

Pipeline Safety Improvement Act

In 2002, the U.S. Congress passed the Pipeline Safety Improvement Act (PSIA) of 2002, HR 3609, to strengthen the nation’s pipeline safety laws. Under the PSIA, gas transmission operators are required to develop and follow a written integrity management program containing all the elements described in Part 192.911 of the DOT regulations to address the risk on all transmission pipeline segments of High Consequence Areas (HCAs). Specifically, the law establishes an integrity management program that applies to all HCAs.

The DOT’s Office of Pipeline Safety outlines pipeline design requirements that are based on population density in the region and, generally, more stringent design requirements correspond to areas with higher population densities (49 CFR 192.3). Areas in the vicinity of the pipeline are divided into “class location units.” A unit is defined in 49 CFR 192 as “an on-shore area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline.” Class location units are therefore confined to the area within 660 feet of 1 mile of contiguous pipeline. Class location units are considered HCAs if the area contains 46 or more buildings intended for human occupancy; is within 100 yards of either a building or a small, well-defined outside area such as a playground, recreation area, outdoor theater, or other place of public assembly; or where buildings with four or more stories aboveground are prevalent.

EPA Risk Management Program

The EPA’s Risk Management Program requires companies of all sizes that use certain substances to develop a company-specific Risk Management Program that includes detailed safety precautions and maintenance plans; an adequate emergency response program is also required. The information in the Risk Management Program assists local emergency response personnel in case of an accident or exposure. The Risk Management Program is part of the Clean Air Act (42 USC 7401 et seq.).

OSHA 29 Code of Federal Regulations, Parts 1910 and 1926

OSHA regulates worker safety during pipeline construction activities. Chapter 29 CFR Parts 1910 and 1926 prescribe federal safety standards for such activities, including process safety management of highly hazardous chemicals (1910.119), and gas welding and cutting (1926.350).

National Fire Protection Association 780, National Electrical Code

To avoid electrical hazards, a thorough knowledge by electrical contractors of the National Electric Code (NEC) is required to install any electrical power system. The NEC covers the installation of electrical

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[3] Design standards based on nearby populations have not been developed for natural gas storage facilities; however, there are pipeline components associated with the Central Compressor Station as described in Chapter 2, “Project Description.” Therefore, guidelines developed for natural gas pipelines are used for the purposes of this analysis.

conductors, equipment, and raceways; signaling and communications conductors; and equipment and optical fiber cables for public and private premises. ~~The components of the Phase 3 Expansion may require special permission from the Butte County authority with jurisdiction for the enforcement of this code.~~

4.8.2.2 State

California regulations concerning hazardous materials and wastes are considered equal to or more stringent than federal regulations. As a result, the EPA has granted the State of California primary oversight responsibility to administer and enforce hazardous materials and waste management programs. State regulations require planning and management to ensure that hazardous materials and wastes are handled, stored, and disposed of properly in order to reduce risk to human health and the environment. The following laws and regulations pertain to hazardous materials and wastes.

California Code of Regulations, Title 22, Chapter 11

Title 22 of the California Code of Regulations, Division 4.5, Chapter 11 contains regulations for the identification and classification of hazardous wastes. The code defines a waste as hazardous if it has any of the following characteristics: ignitability, corrosivity, reactivity, and toxicity. Article 3 provides detailed definitions of each characteristic. Articles 4 and 5 provide lists of RCRA hazardous wastes, non-RCRA hazardous wastes, hazardous wastes from specific sources, extremely hazardous wastes, hazardous wastes of concern, and special wastes.

California Health and Safety Code

The California Environmental Quality Act (CEQA) guidelines define “extremely hazardous substances” as those defined by Section 25532(2)(g) of the California Health and Safety Code. These include the substances listed in Appendix A of Part 355 (commencing with Section 355.10) of Subchapter J of Chapter I of Title 40 of the CFR, which provides a list of extremely hazardous substances and their threshold planning quantities.

Section 25150.7 of the California Health and Safety Code outlines procedures and regulations for the management and disposal of treated wood waste. Wood waste, including wooden utility poles, may have been treated with preservatives~~pesticides~~ to protect the wood during use. Because these preservative~~pesticide~~ treatments could leach into water supplies when disposed of, Section 25150.7 was developed to restrict how and where treated wood waste could be disposed.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Material Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a plan that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as raw or unused materials that are part of a process or manufacturing step. They are not considered to be hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste.

California Health and Safety Code, Article 1 requires emergency response plans for facilities that store hazardous materials in excess of 55 gallons, 500 pounds, or 200 cubic feet. Facilities that handle more than these indicated quantities of hazardous materials must submit a Hazardous Materials Business Plan to the Certified Uniform Program Agency (CUPA).

Hazardous Waste Control Act

The Hazardous Waste Control Act established the state hazardous waste management program, which is similar to, but more stringent than RCRA program requirements. Title 26 of the California Code of Regulations describes the requirements for the proper management of hazardous waste under the Hazardous Waste Control Act, including the following:

- Identification and classification;
- Generation and transportation;
- Design and permitting of recycling, treatment, storage, and disposal facilities;
- Treatment standards;
- Operation of facilities and staff training; and
- Closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for the identification, packaging, and disposal of such waste. Under the Hazardous Waste Control Act and Title 26, the generator of hazardous waste must document waste from generation to transporter to disposal. Copies of this documentation must be filed with the DTSC.

DTSC operates programs to protect California from exposure to hazardous wastes through the following practices and procedures:

- Handling of the aftermath of improper hazardous waste management by overseeing site cleanup;
- Prevention of the release of hazardous waste by ensuring those who generate, handle, transport, store and dispose of wastes do so properly;
- Enforcement against those who fail to appropriately management hazardous wastes;
- Exploration and promotion of measures to prevent pollution and encourage reuse and recycling;
- Evaluation of site-specific soil, water, and air samples and the development of new analytical methods;
- Practice in other environmental sciences, including toxicology, risk assessment, and technology development; and
- Involvement of the public in DTSC's decision making.

Emergency Services Act

Under the Emergency Services Act, the state developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous material or hazardous waste is an important segment of the plan administered by the California Emergency Management Agency (CalEMA). CalEMA coordinates the response of agencies that include the CalEPA, California Department of Transportation, California Highway Patrol, regional water quality control boards, air quality management districts, and county disaster response offices.

California Occupational Health and Safety Administration

The California Occupational Health and Safety Administration (Cal/OSHA) is responsible for the development and enforcement of workplace safety standards and ensuring worker safety in the handling and use of hazardous materials. Cal/OSHA requires businesses to prepare Injury and Illness Prevention

Plans and Chemical Hygiene Plans. The Cal/OSHA Hazards Communication Standard requires that workers be informed of the hazards associated with the materials they handle. Manufacturers are required to label containers, provide Material Safety Data Sheets in the workplace, and provide worker training.

Under Title 8 of the California Code of Regulations, Cal/OSHA establishes requirements for safe working conditions and safety-related reporting in California and regulates electrical safety (Electrical Safety Orders). The primary intent of the Title 8 requirement is to protect workers, but compliance with these regulations also reduces potential hazards for non-construction workers and project vicinity occupants through the implementation of required controls relating to site monitoring, reporting, and other activities.

Conservation of Petroleum and Gas

The California Code of Regulations, Public Resources Code 01, and the California Laws for the Conservation of Petroleum and Gas, Division 3, Chapter 1, Articles 4 and 5 contain regulations governing the production, operation, and maintenance of oil and gas facilities. Regulations cover construction and operation procedures ranging from well completion, well abandonment, blowout prevention, orders for repair, abandoned wells, hazardous wells, to unreasonable waste of gas, as described in part below.

Order of Repair, Section 3224

The supervisor shall order such tests or remedial work that, in the supervisor's judgment, is necessary to prevent damage to life, health, property and natural resources; protect oil and gas deposits from damage by underground water; prevent the escape of water into underground formation; or prevent the infiltration of harmful substances into underground or surface water suitable for irrigation or domestic purposes.

Division of Oil, Gas, and Geothermal Resources

The California Division of Oil, Gas, and Geothermal Resources (DOGGR) regulates the production of oil, gas, and geothermal resources within California. Physical hazards, storage field maintenance, and operations within natural gas storage fields are under DOGGR's jurisdiction, to the extent that DOGGR's statutes and regulations apply to such hazards and activities (for example, hazards associated directly with reservoir or wellhead leakage would fall under DOGGR's jurisdiction). Before a permit is issued, DOGGR engineers review all aspects of a proposed natural gas storage project to ensure no gas migration from the intended injection zone will take place and that there will be no contamination of any freshwater aquifers. In addition, all operators must report monthly injection or withdrawal volumes and well pressures to DOGGR and are subject to annual review of operations.

Other Applicable State Regulations

Various other state regulations have been enacted that affect hazardous waste management; those relevant to the proposed project are listed below.

California Public Resources Code

The California Public Resources Code includes fire safety regulations that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment that has an internal combustion engine; specify the requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided onsite for various types of work in fire-prone areas.

California Public Resources Code Sections 4292 and 4293

California Public Resources Code Sections 4292 and 4293 address vegetation management in transmission line corridors. Within SRAs that include mountainous land, forest-covered land, brush-covered land, or grass-covered land, owners and managers of electrical transmission lines are required to maintain a firebreak consisting of a clearing of not less than 10 feet in each horizontal direction from the entire outer circumference of ~~the~~ poles or towers that support electrical infrastructure that could be a source of ignitions and therefore present a fire risk, including switches, fuses, transformers, and lightning arresters. California Public Resources Code Section 4293 requires the felling, cutting, or trimming of dead, rotten, decayed, diseased, or otherwise weakened trees that may affect or fall on an electric line.

California Code of Regulations Section 15126.2 (CEQA Guidelines)

Section 15126.2 of the CEQA Guidelines requires an environmental impact report (EIR) to identify and focus on the significant environmental effects of proposed projects, including significant environmental effects the project might cause by bringing development or people into an affected area. This section of the CEQA Guidelines requires that an EIR evaluate any potentially significant impacts of locating development in areas susceptible to hazardous conditions, including wildfire risk areas as identified on hazards maps.

CPUC General Orders and Decisions

The CPUC regulates the construction and operation of overhead transmission lines in California through the implementation and oversight of several rules and regulations known as General Orders (GOs). GO 95 and GO 165 would apply to the proposed project.

GO 95: Rules for Overhead Electric Line Construction

GO 95 is the main CPUC rule regulating the design, construction, operation, and maintenance of overhead electric lines in California. The order includes safety standards for overhead electric lines, including minimum conductor ground clearance, electric line inspection requirements, and vegetation clearance requirements. Rule 35, Tree Trimming, of the order defines minimum vegetation clearances around power lines. This rule also requires that utility providers remove dead, rotten, and diseased trees that overhang or lean toward a span of an electric line. Rule 31.2, Inspection of Lines, of the order requires that lines be inspected frequently to ensure that they are in good condition, and that lines temporarily out of service be inspected and maintained to prevent a hazard.

GO 112-E: Design, Construction, Testing, Maintenance and Operation of Utility Gas Gathering, Transmission and Distribution Piping Systems

GO 112-E establishes safety requirements for pipelines transporting gas within a storage field. Pipelines such as those in operation at the storage field facility are designed, constructed, tested, maintained, and operated in accordance with GO 112-E. Compliance with this general order includes requirements for odorization of natural gas, annual surveys of pipelines for leaks, continual patrols of pipelines for unusual conditions and corrosion, valve maintenance, and overpressure protection. The CPUC's Gas Safety and Reliability Branch audits SoCalGas's compliance with GO 112-E.

GO 165: Inspection Requirements for Electric Distribution and Transmission Facilities

GO 165 establishes requirements for electric distribution and transmission facilities (excluding those facilities contained in a substation) regarding inspections to ensure safe and high-quality electrical service. This order establishes a minimum period between inspections, and record-keeping requirements for utilities with regards to patrols and inspections.

GO 166: Standards for Operation, Reliability, and Safety during Emergencies and Disasters

GO 166 applies to all electric utilities subject to the jurisdiction of the CPUC, and addresses electric service reliability and safety. The purpose of the order is to insure that jurisdictional electric utilities are prepared for emergencies and disasters in order to minimize damage and inconvenience to the public which may occur as a result of electric system failures, major outages, or hazards posed by damage to electric distribution facilities. Investigations as required by this order are conducted following every major outage, pursuant to and consistent with Public Utilities Code Section 364(c) and Commission policy.

~~*CPUC Decision 12-01-032: Decision Adopting Regulations to Reduce Fire Hazards Associated with Overhead Power Lines and Communication Facilities*~~

~~On January 12, 2012, the CPUC adopted an order instituting rulemaking to revise and clarify Commission regulations relating to the safety of electric utility and communications infrastructure provider facilities. The decision adopted regulations to reduce fire hazards associated with overhead power lines and aerial communication facilities located in close proximity to power lines, including revisions to GO 95, GO 165, and GO 166. GO 166 was revised to require investor-owned electric utilities in Southern California, such as SCE, to prepare and submit plans to prevent power-line fires during extreme weather events.~~

CPUC Order Instituting Rulemaking to Revise and Clarify Commission Regulations Relating to the Safety of Electric Utility and Communications Infrastructure Provider Facilities (R.08-11-005)

In November 2008, after the Sesnon Fire, the CPUC Commission issued an Order Instituting Rulemaking to Revise and Clarify Commission Regulations Relating to the Safety of Electric Lines and Communications Infrastructure Provider Facilities (Electric Safety OIR). The purpose of the Electric Safety OIR was to determine whether CPUC regulations addressing potential hazards, such as fires, that could result from electric transmission and distribution lines required revision or clarification.

The Commission issued Decision 09-08-029 (Phase 1 – Measures to Reduce Fire Hazards in California Before the 2009 Fall Fire Season, or Phase 1 Decision) in this proceeding in August, 2009. The Phase 1 Decision required the application of GO 95 to non-electric utilities (such as SoCalGas). As a result of the Phase 1 Decision, SoCalGas was required to comply with GO 95 with regard to vegetation clearance and management around distribution power line poles, and clearance between electric wires and trees on the storage field property. Other requirements of GO 95, including those requiring that "wind loading" (forces that act on poles and lines due to wind) be taken into account in the design and construction of power lines, also became applicable to the distribution power line system on the storage field property as a result of the decision.

In the next phase of this proceeding (Decision 12-01-032 – Decision Adopting Regulations to Reduce Fire Hazards Associated with Overhead Power Lines and Communication Facilities, or Phase 2 Decision), on January 12, 2012, the CPUC adopted an order instituting rulemaking to revise and clarify CPUC regulations relating to the safety of electric utility and communications infrastructure provider facilities. This decision adopted further regulations to reduce fire hazards associated with overhead power lines and aerial communication facilities located in close proximity to power lines, including revisions to GO 95, GO 165, and GO 166. GO 166 was revised to require investor-owned electric utilities in Southern California, such as SCE, to prepare and submit plans to prevent power-line fires during extreme weather events. In addition, the Phase 2 Decision clarified that certain inspection and reporting requirements under GO 165 were now applicable to facilities belonging to non-electric utilities, such as the storage field property owned and operated by SoCalGas.

The Commission is anticipated to issue a Phase 3 Decision under the Electric Safety OIR that will reflect input from Los Angeles County and CAL FIRE. The Phase 3 Decision will establish regulations for electric distribution lines in areas of high fire risk. Phase 3 will address the establishment of:

- Standards for wood structures and materials that will allow utilities to reliably obtain prescribed safety factors enforceable by the Commission;
- Modern materials and practices, with the goal of improving fire safety; and
- Fire safety standards for the design and construction of electrical infrastructure in areas of high fire threat.

In addition, the Phase 3 Decision will address whether and how proposed fire safety standards should apply to existing facilities in high fire threat districts, as well as the development of a plan for reporting to the Commission's Consumer Safety and Protection Division.

CPUC Rulemaking 11-02-019: Order Instituting Rulemaking on the Commission's Own Motion to Adopt New Safety and Reliability Regulations for Natural Gas Transmission and Distribution Pipelines and Related Ratemaking Mechanisms

Senate Bill 705, approved October 7, 2011, enacted into law an amendment to Public Resources Code Section 963, which declares that, with regard to natural gas facilities, "it is the policy of the state to place safety of the public and gas corporation employees as the top priority and require that the distribution rate of a gas corporation include sufficient revenues and employee staffing to provide for prompt revision of service to the public consistent with this policy." CPUC Rulemaking 11-02-019, filed February 24, 2011, establishes mechanisms for compliance with this law, including a requirement for each gas corporation in the state to develop and implement a plan for the safe and reliable operation of its gas pipeline facilities. SoCalGas's plan to comply with this requirement is currently in preparation and under revision.

4.8.2.3 Local

In response the 1991 East Bay Hills Fire in Oakland, the California State Legislature passed Senate Bill 1841, with the intent of improving the coordination of state and local responses during disaster incidents. Under Senate Bill 1841, the Office of Emergency Services was required to establish the Standardized Emergency Management System (SEMS) in coordination with state and local agencies. The SEMS system provides a common management structure and language to aid in coordination between agencies and local governments. The SEMS system also established a master mutual aid agreement and program. Local governments are required to use SEMS in order to be eligible for state funding for emergency response services.

Los Angeles County

Los Angeles County has adopted an Operational Area Emergency Response Plan (ERP) under SEMS. Under the plan, the County of Los Angeles serves as the Operational Area Coordinator for all cities within the county's boundaries. The plan defines the type and scopes of disasters that could occur within the operational area; defines roles, responsibilities, and chains-of-command; and outlines procedures for disaster notification and response. While the plan generally notes that damage to transportation routes could hamper emergency operations or exacerbate a disaster, the plan does not identify any emergency response or evacuation routes within the operational area. The plan does establish a transportation branch to coordinate transportation in the event of an emergency incident.

Los Angeles County also has a business plan requirement for businesses that handle hazardous materials and/or generate hazardous waste. Such businesses are required to submit unified program consolidated forms to the Health Hazardous Materials Division (LA County CUPA 2009). The CUPA also requires that businesses that use, store, or handle hazardous materials above threshold amounts file a Hazardous Materials Business Plan to the local emergency response agency. In this case, the applicant would file a Hazardous Materials Business Plan with the Los Angeles Fire Department.

City of Los Angeles

The City of Los Angeles participated in the SEMS system and is in the process of preparing a Hazard Mitigation Plan; however, at this time, the plan has not been approved by the Federal Emergency Management Agency. The Emergency Operations Board in Los Angeles publishes the Citywide Logistics Annex for emergency incidents. The annex outlines emergency response procedures and establishes roles and responsibilities related to the logistics of responding to emergency incidents. The annex notes that "the efficient transportation of needed resources is critical to response and recovery operations," but does not identify any emergency response or evacuation routes. Instead, the annex identifies the individuals and groups that would be responsible for coordinating and implementing the transportation of needed resources in the event of an emergency incident.

City of San Fernando

The City of San Fernando does not have an adopted emergency response plan.

City of Santa Clarita

An SEMS has been adopted by the City of Santa Clarita. The City of Santa Clarita has a Hazard Mitigation Plan that emphasizes reducing risks and minimizing effects from natural hazards through pre-event risk identification, assessment, and mitigation. The plan does not identify emergency response or evacuation routes, but does contain a policy to increase participation in regional planning for emergency transportation routes and to identify and publicize information regarding emergency transportation routes. The plan also identifies a number of roadways and bridges for enhancement to provide additional mobility in the event of an emergency. These include the Cross Valley Connector–Golden Valley segment between Centre Pointe parkway and Sierra Highway, the Golden Valley off/on ramp, McClean Bridge, Newhall Ranch Road, and the San Francisquito Bridge.

Local Agency Inspections for Fire Safety

Local agencies with jurisdictional responsibility to provide fire safety, including Los Angeles County and the City of Los Angeles, regularly conduct site visits, formal inspections of vegetation clearance, and general overviews of the storage field facility. Formal inspections for fire safety are conducted by the Los Angeles County Fire Department staff annually, in coordination with storage field facility environmental management staff. In addition, storage field facility staff provide operational overviews for all new fire agency staff assigned to inspect and monitor the area of the storage field facility (Schwecke 2012).

4.8.3 Methodology and Significance Criteria

Potential impacts from hazards and hazardous materials were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the CEQA Guidelines. The proposed project would cause a significant impact related to hazards and hazardous materials if it would:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment;

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area;

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

g) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Appendix G of the CEQA Guidelines also includes the following checklist item:

- For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.

The proposed project components, however, would not be located within the vicinity of a private airstrip. Therefore, this item is not applied as a criterion in the analysis of environmental impacts presented in the following section.

4.8.4 Environmental Impacts and Mitigation Measures

4.8.4.1 Proposed Project Hazardous Material and Waste

Table 4.8-~~5~~6 summarizes the types of hazardous materials and wastes currently used within each of the proposed project component areas; materials which would be utilized or generated during proposed project construction activities; and materials and wastes which would be present during project operational and maintenance activities. Hazardous materials used during construction of the Central Compressor Station, main office facilities, crew-shift buildings, and guardhouse would be mainly oil and fluids from construction equipment, rags, contaminated soil, and solvents (i.e., normal construction waste). In general, chemical use during operation of the Central Compressor Station will be similar to that at existing operations at the storage field, although ~~C~~construction of the proposed project would result in a reduction in the use of oil (because the new compressors would use less oil than the existing compressors) and presence of lead paint (because old structures with lead paint would be removed during construction) within the storage field area.

Areas within the proposed project component areas that may contain hazardous materials are described below.

Telecommunications Route #2

Approximately 200 feet of Telecommunications Route #2, in the area near the Natural Substation, would be excavated for the installation of part of the fiber optic cable in an underground trench. The volume of excavated material is estimated to be approximately 520 cubic yards. Review of databases listing active contaminated/cleanup sites indicates that no such sites are present within this area of disturbance.

Table 4.8-~~5~~6 Hazardous Material Usage in Proposed Project Component Areas During Construction and Operation

Proposed Project Area or Activity	Current Hazardous Materials and Wastes Used During Operation	Hazardous Materials and Wastes Used or Generated During Proposed Project Construction	Hazardous Materials and Wastes Anticipated During Proposed Project Operation
Proposed Central Compressor Station	Not applicable	Diesel fuel and/or gasoline (for vehicles and construction equipment); minor vehicle maintenance; and construction chemicals. Soil contaminated with waste oil or gas condensates.	~~Natural gas (within compressors and piping); lubricating oils (within equipment); and minor maintenance chemicals. Waste oil, gas stream condensates, oily debris, minor trash, and metal scrap.~~ Same as current use (see Table 4.8-3).
Proposed main facilities and crew-shift buildings	Minor household chemicals.	Demolition debris (metal, wood, sheetrock, and asphalt/concrete paving). Fuels, minor vehicle maintenance and construction materials, and soil contaminated with waste oil or gas condensates.	Same as current use (see Table 4.8-3).
Staging areas and soil processing site	Occasional, temporary, small quantities of corrosion chemical for well servicing.	Diesel fuel and/or gasoline (for vehicles and construction equipment); minor vehicle maintenance; and construction chemicals.	Not applicable (temporary use areas only).
Guardhouse	None	Demolition debris (asphalt, soil, sheetrock, and asphalt/concrete paving). Fuels, concrete, and scrap steel from old poles.	Same as current use (see Table 4.8-3).
Proposed 66-kV subtransmission line reconductoring route	None	Fuels, concrete, minor vehicle maintenance, and other construction materials. Waste soil, wood poles, and scrap steel from old poles.	Minor maintenance chemicals.
Proposed Plant Power Line	None	Fuels, concrete, minor vehicle maintenance, and other construction materials. Waste soil and waste treated wood poles/components.	Minor maintenance chemicals.
Newhall Substation	Transformer oil (electrical transformers); sulfur hexafluoride (SF_6) (circuit breakers); battery acid (battery backup systems); minor maintenance chemicals (paints, lubricants, and gases); waste transformer oil; oily debris; universal wastes (waste batteries and fluorescent lights); minor trash; and metal scrap.	Diesel fuel and/or gasoline (for vehicles and construction equipment); and minor vehicle maintenance and construction chemicals.	Same as current use (see Table 4.8-3).

Table 4.8-~~5~~6 Hazardous Material Usage in Proposed Project Component Areas During Construction and Operation

Proposed Project Area or Activity	Current Hazardous Materials and Wastes Used During Operation	Hazardous Materials and Wastes Used or Generated During Proposed Project Construction	Hazardous Materials and Wastes Anticipated During Proposed Project Operation
Proposed Natural Substation	Not applicable	Diesel fuel and/or gasoline (for vehicles and construction equipment); minor vehicle maintenance and construction chemicals; and transformer oil.	Transformer oil (mineral oil for electrical transformers); SF_6 (circuit breakers); battery acid (battery backup systems); minor maintenance chemicals (paints, lubricants, and gases); waste transformer oil; oily debris; universal wastes (waste batteries and fluorescent lights); minor trash; and metal scrap.
Chatsworth Substation	Transformer oil (electrical transformers; SF_6 (circuit breakers); battery acid (battery backup systems); minor maintenance chemicals (paints, lubricants, and gases); waste transformer oil; oily debris; universal wastes (waste batteries and fluorescent lights); minor trash; and metal scrap.	Minor maintenance chemicals.	Same as current use (see Table 4.8-3).
San Fernando Substation	Transformer oil (electrical transformers; SF_6 (circuit breakers); battery acid (battery backup systems); minor maintenance chemicals (paints, lubricants, and gases); waste transformer oil; oily debris; universal wastes (waste batteries and fluorescent lights); minor trash; and metal scrap.	Diesel fuel and/or gasoline (for vehicles and construction equipment); minor vehicle maintenance; and construction chemicals.	Same as current use (see Table 4.8-3), except that the quantity of SF_6 would increase slightly.

Review of databases listing active contaminated/cleanup sites indicates some potential for contamination at the following location, which is located within the area of Telecommunications Route #2. No project-related trenching activity is proposed in these areas:

- Santa Susana Field Laboratory (Rocketdyne) is a military evaluation site undergoing ongoing remediation and investigation activities. Telecommunications Route #2 passes through the boundaries of this site, but does not pass through areas that are being actively investigated or remediated.

Chatsworth Substation

Review of databases listing active contaminated/cleanup sites indicates some potential for contamination at the following locations, which are located near the Chatsworth Substation. No project-related trenching activity is proposed in these areas:

1. NASA Area 2 site is identified as a military evaluation site, and has not yet been investigated. Documentation indicates that past activities at this site, which is located at the western end of the Telecommunications Route #2, supported rocket-testing activities at the Santa Susana Field Laboratory.
2. Los Angeles Defense Area Nike 88 is a military evaluation site, and has not yet been investigated. This site is the former location of a U.S. Army anti-aircraft/anti-missile installation.

Telecommunications Route #3

Approximately 1,200 feet of Telecommunications Route #3 would be excavated for the installation of part of the fiber optic cable in an underground trench. The volume of excavated material is estimated to be approximately 3,120 cubic yards.

The applicant's records review of this proposed project component (SoCalGas ~~2011~~2013) indicated that there were two areas where soil contamination could be encountered during trench excavation activities:

1. In the area of a gasoline station located on the northwest corner of the intersection of Hubbard Street and Glenoaks Boulevard, detectable concentrations of fuel-related compounds in soil have been reported in a relatively limited area.
2. In the area of a vacant property (a former gasoline station) at 1404 San Fernando Road, leaking gasoline has impacted groundwater. Soil remediation has been completed at this site and current remediation activities are focused on groundwater cleanup; nevertheless, residual soil contamination may remain in this area.

None of the trenching locations proposed for Telecommunications Route #3 are located on or within the vicinity of these sites of known historical contamination. If it were encountered, contaminated soil at both locations would be expected to be confined to relatively small, well-defined areas.

4.8.4.2 Existing Safety, Emergency Planning, and Inspection Programs

This section provides an overview of emergency service, health and safety, and hazardous material programs and plans to properly respond to emergency incidents at the existing storage field facility and in the proposed project component areas.

Southern California Gas Safety Procedures

Programs to maintain safe and healthy working conditions and pipeline safety procedures at the storage field have been established by the applicant in compliance with applicable federal, state, and local requirements. Inspections, electronic monitoring, and equipment and pipeline testing are all implemented at the storage field to reduce the risk associated with potential emergency incidents. Pipeline inspection and survey activities take place on a monthly and annual basis. ~~Storage pipelines are also cleaned regularly prior to the start of the injection season.~~ In addition, pressure safety valve inspections are completed and recorded annually, and high pressure pipeline testing is completed every seven years.

Additional measures in place at the storage field include:

- **Compressor Equipment Inspections and Maintenance.** The storage field operator regularly inspects the condition and operation of the equipment and facilities prior to and during startup of the existing compressor station. Operating conditions are also monitored through a Supervisory Control and Data Acquisition (SCADA) system. The SCADA system provides early warning for any abnormal conditions within the gas process train that may require maintenance, repairs, or, if conditions warrant, shutdown of operations. Maintenance of the existing compressor equipment includes daily site inspections.
- **Emergency Shutdown (ESD) System.** An ESD system is in place at the storage field to provide the storage field operator the ability to immediately stop facility operations in the event of an emergency. The ESD system can be activated manually (valve stations) or automatically (fusible links[4] in the compressor station building) (Bittleston 2009). When activated, the ESD system blocks and bleeds all gas pipelines in the compressor station area, which prevents gas from these pipelines from becoming a fire fuel source.
- **Pressure Relief Valves and Blowdowns.** Pressure relief along compressor station pipelines is necessary for safe operation. Regular and emergency *blowdowns*—events of pressure release through valves or vents—provide for some of this pressure relief. During normal operations, sectional piping is usually blown down whenever a compressor unit shuts down. In addition, abnormal emergency conditions trigger activation of emergency shutdown valves and initiate a controlled blowdown of the entire facility. Both of these types of blowdowns rapidly depressurize the piping and equipment in a controlled manner. Depressurization is also accomplished via pressure safety valves. These valves activate only when the pressure exceeds a pre-set level on piping. In normal operating mode, and even under the first level of alarm mode, in which the emergency shutdown valves are activated, the pressure safety valves do not open.
- **Well Integrity Management.** The condition and integrity of injection wells at the facility is monitored daily to annually through mechanical integrity tests, which are completed according to the requirements of DOGGR.

Southern California Gas Fire/Emergency Action Plan and Other Fire Measures

The applicant maintains a Fire/Emergency Action Plan for the storage field (SoCalGas ~~2011~~2013). Elements of this plan include:

- Emergency escape procedures, including evacuation procedures and assembly areas;
- Designation of a fire protection team, which consists of the on-duty operating crew and is led by the on-duty crew manager;
- Procedures for fire alarm, including notifications via telephone and/or hand-held radio;
- Procedures for critical plan operations prior to evacuating, including emergency shutdown as necessary, implementation of internal emergency notification system as necessary, and notification procedures for management and operating staff;
- Procedures to account for all employees after evacuations have been completed;
- Training of employees, including annual requirements;
- Medical first aid duties;

[4] A *fusible link* generally consists of two strips of metal connected by an alloy that melts at a certain temperature, resulting in the separation of the two pieces of metal.

- Procedures, training, and housekeeping for potential fire hazards, such as those related to natural gas, process gas, injection gas, and withdrawal gas; motor oils, gasoline, transmission fluids and other fluids; paints and solvents; and other materials; and
- Facility contact information, including for the Storage Manager, Maintenance Supervisor, and Operations Supervisor.

Other measures that SoCalGas employs to address fire prevention and safety at the storage field include (Bittleston 2009):

- Participation in the state's Red Flag Fire Prevention Program, which monitors various fire hazard conditions such as air temperature, wind speed, humidity, and live and dead fuel moisture content. Upon declaration by the National Weather Service of a Red Flag Warning, SoCalGas staff determine whether weather conditions (including wind conditions and relative humidity) require a Gas Operations Shut-off Event. In this event, storage field facility staff shut off power to the electrical distribution system, de-energizing the system, until after weather conditions improve and a visual inspection of the electrical facilities is completed (Schwecke 2012);
- "Hot Work Permit" procedures, whereby every worker on the storage field facility site performing any work that could produce heat or sparks is required to comply with detailed fire prevention measures while the work is in progress (Schwecke 2012);
- Fire detection/alarm systems in certain critical facility buildings, and ultraviolet/infrared detectors in some areas;
- Fire extinguishing systems placed in certain critical facility buildings;
- Fire extinguishers, hydrants, and monitors located throughout the facility property;
- A fire water system, whereby a portion of each water storage tank is dedicated to fire water storage;
- A brush clearance system for maintaining well sites, pipeline supporting structures, and other facility areas free from excess vegetation;
- An overhead electrical system fire prevention program that includes brush clearance, tree trimming, avian protection measures, and shutdown procedures for Red Flag days (as described further below); and
- Non-combustible building construction.

SoCalGas also maintains Transmission Command Post Procedures and a communication process in the event of emergency incidents (SoCalGas ~~2011~~2013).

Maintenance and Inspection of Existing Storage Field Facility Electric Distribution System

In order to provide compliance with GO 95 and GO 128, including requirements as instituted in the Phase 1 and 2 decisions of the Electric Safety OIR, SoCalGas has adopted San Diego Gas & Electric's (SDG&E's) standards for engineering, design, construction, upgrade, inspection, and repair for the storage field facility's electric distribution system, as established in SDG&E's Corrective Maintenance Program Manual (Schwecke 2012).

To ensure that standards for construction and maintenance of the electrical system at the storage field facility are followed, SoCalGas employs a licensed distribution line contractor to perform inspections, maintenance, and repairs to the overhead electric distribution system at the facility. In order to provide quality assurance of the work performed by this contractor, SDG&E staff physically inspect any corrective work conducted, for compliance with SDG&E's design requirements and GO 95.

Pursuant to the Phase 2 Decision and as of 2012, SoCalGas's electrical contractors also conduct regular inspections of the electrical system on the storage field facility property, pursuant to GO 165 requirements for patrol inspections, detailed inspections, and intrusive inspections of electrical facilities (Schwecke 2012). SDG&E also performs quality assurance reviews of any corrective work that is completed as a result of these inspections. All work undertaken by or on behalf of SoCalGas at the storage field facility pursuant to the requirements of GOs 95 and 165 is subject to review and audit by the CPUC.

Fire Safety Improvements to Storage Field Facility Electric Distribution System Since 2008

After the Sesnon Fire, and in response to the CPUC's Phase 1 and 2 decisions under the Electric Safety OIR described above, SoCalGas rebuilt and upgraded significant portions of the electric distribution system at the storage field. The applicant indicates that approximately 150 wood poles were replaced, and 65,000 feet (12.3 miles) of distribution-level power lines were rebuilt on the storage field site (Schwecke 2013). Since 2008, the applicant verified that all poles in the electric distribution system on the storage field meet or exceed wind loading requirements as set forth in GO 95, conducted confirmatory testing of wood poles in the system, and reviewed all pole equipment to ensure safety (proper sizing and voltage rating). The applicant also made the following improvements to the electric distribution system infrastructure on the storage field property (Schwecke 2012):

- Installation of 498 vibration dampers ,which reduce stresses and fatigue on electric conductors due to wind forces;
- Replacement of about 48 standard fuses with non-expulsion fuses (which reduce potential for fires by reducing potential ignition sources);
- Replacement of about 1,500 bolted parallel groove connectors with fired wedge connectors, which are less susceptible to vibration and more reliable than the former connectors;
- Replacement of about 1,500 older, ceramic insulators with new, Hendrix insulators, which further reduce potential ignitions from power line infrastructure; and
- Installation of avian protection devices, which reduce the chances of the inadvertent electrocution of birds on electric lines, thus further reducing the risk of fire.

Brush Clearance at the Storage Field Facility

Per the requirements of GO 95 as well as Public Resources Code Sections 4292 and 4293, the applicant coordinates with local fire officials (primarily officials from the Los Angeles County and City of Los Angeles Fire Departments) to ensure that vegetation at the storage field facility is managed to reduce fire risk. Standards uses by the applicant and its contractors include SDG&E's vegetation management recommendations, and guidance as contained in CAL FIRE's *Powerline Fire Prevention Field Guide* (Schwecke 2012, 2013). The applicant or its contractors clear all brush within an approximately 200-foot-wide buffer along the storage field facility's southern boundary with City of Los Angeles residential neighborhoods.

Brush clearance and tree trimming around electrical infrastructure is also performed on the storage field facility property in accordance with the results of annual surveys of vegetation on the storage field. Brush clearance and tree trimming is completed once a year on the storage field facility property after the winter/spring growing season; additional brush clearance may also be completed later in the year (summer) if late-season rain results in re-growth of vegetation.

Southern California Edison Specification E-2005-104: Transmission Line Project Fire Plan

Specification E-2005-104 was developed for use by Southern California Edison (SCE) and its construction contractors to provide uniform guidelines for prevention, control, and extinguishing of fires during transmission line construction projects. Not all sections of the specification are applicable to every SCE project. The specification is expected to be used in conjunction with project-specific construction specifications.

Other SoCalGas Permits and Plans Addressing Hazards and Hazardous Materials

The storage field is permitted under the Los Angeles County CUPA. The CUPA permit is administered by the Chemical Unit, Health Hazardous Materials Division, and Environmental Review Unit (Forestry Division) of the Los Angeles County Fire Department. The permit includes a Hazardous Waste Generator (RCRA-Large Quantity Generator [LQG]) Program, a Hazardous Materials Disclosure Program, and an Underground Storage Tank Program.

Under the RCRA-LQG Program, the applicant transports or contracts transportation of hazardous materials in compliance with DOT regulations. California Vehicle Code and DOT regulations require that shipments of hazardous materials be accompanied by a shipping Bill of Lading that lists the proper DOT shipping name, DOT hazard class, UN or NA identification number for the material, and a 24-hour emergency response number. Hazardous materials are transported with proper labeling information, package markings, and transport vehicle placards applicable to the type of shipment and transportation being utilized. Short-term (90 days) onsite storage is available for drum waste. Within this time limit, an applicant-certified truck transports the drums to the applicant’s long-term storage facility in Pico Rivera, California. Any bins or waste piles are sampled and categorized onsite.

The storage field also submits Business Plan Annual Renewal Certification every year, for the following:

- Hazardous Material Inventory Statement;
- Consolidated Contingency Plan; and
- Cal-Accidental Release Prevention Program.

4.8.4.3 Project Safety, Emergency Planning, and Inspection Programs

The applicant and SCE would implement several plans and measures to address safety during construction and operation of the proposed project components, including the storage facility’s Illness and Injury Prevention Program and employee safety training programs, as well as the following:

- **Construction Safety and Emergency Response Plans (CSERPs).** The applicant and SCE would develop CSERPs with the project construction contractors, and the CSERPs would be a part of the bid response. The CSERPs would be specific to the construction activities being performed, the location of the construction activities, and the current Red Flag status. The CSERPs would be developed based on the existing procedures in place for the storage field and implemented by SCE. The CSERPs would include standard health and safety provisions for all construction activities (measures addressing pipeline safety and safety procedures for working with electrical infrastructure, for example), in compliance with Cal/OSHA regulations and requirements, as well as requirements for regular audits of construction activities. The CSERPs would also include fire control and emergency response measures (as described below in ~~Applicant Proposed Measure~~Mitigation Measure [~~APM~~MM] HZ-~~8~~2).

- **Updated Storage Field Facility Fire/Emergency Action Plan.** The storage field facility Fire/Emergency Action Plan would be updated and modified after final construction of the project components. The updated Fire/Emergency Action Plan would be prepared per the requirements of Title 49 CFR 192.615 and the California Code of Regulations Titles 8, 19, and 22, and would provide a description of procedures to coordinate emergency response with responsible service agencies and contact information for emergency response personnel. The updated Fire/Emergency Action Plan would cover the Central Compressor Station and pipelines, and include specific procedures for coordination with local public safety officials.
- **Compressor Maintenance Plan.** SoCalGas staff would develop a site-specific Compressor Maintenance Plan for the facility per the requirements of Title 49 CFR 192.605. The maintenance plan would include detailed requirements for site and equipment inspections (including daily inspections of the compressor equipment), monitoring (including monitoring through the use of SCADA systems), maintenance, and security procedures. All operating and inspection personnel would complete training designed specifically for operation of the new compressors. Annual pressure safety-valve inspections and high-pressure pipeline inspections and testing would continue to be conducted and recorded at the storage field.
- **Central Compressor Station Equipment Operations.** Similar to the existing operations at the storage field facility, the operator at the Central Compressor Station would control valve line-up and sequencing for gas movement between the proposed Central Compressor Station and gas pipelines. The operator would regularly inspect the condition and operation of the equipment and facilities prior to and during startup operations. As under existing safety procedures at the storage field, gas and fire sensors would monitor all equipment and automatically shut down the facility if unusual conditions are detected.
- **Hazardous Materials Management.** During construction and operational activities at the storage field, hazardous materials and wastes would be handled in accordance with procedures outlined in SoCalGas's existing hazardous materials management procedures. In addition, best management practices prescribed in the Storm Water Pollution Prevention Plan (SWPPP), in compliance with the National Pollution Discharge Elimination System General Permit for Construction Activities under the Clean Water Act, and the Spill Prevention Control and Countermeasures (SPCC) Plan would be followed.
- **Process Hazard Assessment.** The applicant's construction contractor would perform a Process Hazard Assessment (PHA) on all aspects of the design of the applicant's project components within the storage field, including the new pipeline. The PHA would include an analysis of the interaction of the new equipment, piping, and valves within the existing facility, to ensure the continuation of safe operation and maintenance of the entire facility.
- **SCE Fire Management Plan.** SCE would develop a Fire Management Plan for the operation of both the Natural Substation and the sections of the subtransmission line routes classified with a high risk for wildfires, per existing SCE procedures and protocols. Measures in the Fire Management Plan would include the maintenance of fire extinguishing equipment at the proposed Natural Substation; the clearance of extraneous, potentially flammable materials from the substation area; and regular brush clearance around the substation and the areas of the subtransmission line routes classified with a high risk for wildfires.
- **SoCalGas Downed Power Line Detection and Repair.** The applicant will include design features, and implement safety procedures, to address downed power line conditions along the Plant Power Line. In the event of a downed section of this line, voltage and electrical current anomalies would be detected by equipment (an automatic recloser) at the applicant's Ward substation. This recloser would automatically open the circuit which would cut the power to the entire storage field. Electrical monitors around the storage field area would sense the drop in

voltage and current and send an alarm to the facility's SCADA system. The facility would then notify an electrical contractor to repair the line, investigate the cause, and recommend modifications to the system if needed. The contractor response time would be generally two hours or less. If the downed power line were to result in a fire, the fire department would be notified immediately. Local fire responses to the facility are generally 5 minutes or less.

- **SCE Downed Power Line Detection and Repair.** As part of standard procedures, SCE monitors all of its lines for all potential system disturbances. A downed power line along one of SCE's 66-kV lines would be detected when the power flowing (or, more accurately, not flowing properly) through a circuit trips a protective mechanism known as a relay, which either results in a "lock out" or "multiple relay" status. Lockouts and multiple relays occur each about 15 seconds after a problem occurs. When a lock out occurs, the line becomes de-energized and remains so until the problem is identified. When such a problem occurs, SCE initiates a physical patrol of the line, according to SCE operating procedure, in order to locate the source of the interruption. If a multiple relay occurs but the circuit does not lock out, SCE performs a physical patrol of the line in an attempt to determine the cause of the multiple relay operations. A downed power line is not re-energized until the entire line is patrolled and damaged facilities are repaired. SCE would implement these measures for the 66-kV subtransmission line reconductoring project component.

In addition to these plans, procedures, and measures, the applicant's ~~and SCE's~~ existing site-specific hazardous materials business plans, SPCC plans, and SWPPP address hazardous materials and waste storage, handling, and emergency procedures for proposed project activities at the existing substations and storage field. SCE's existing site-specific Hazardous Material Business Plans, SPCC Plans, and standard SCE operating procedures would address hazardous material storage and use and specify protective measures, notifications, and cleanup requirements for accidental spills or other releases of hazardous materials that could occur at existing substations and other proposed project components, as applicable. For other proposed SCE project components, standard SCE operating procedures and the site-specific SWPPP would address hazardous materials storage and use and specify protective measures, notifications, and cleanup requirements for accidental spills or other releases of hazardous materials that could occur.

~~4.8.4.4 Electric and Magnetic Fields~~

~~In order to comply with CPUC's January 27, 2006, decision D.06-01-042 addressing EMFs, SCE would incorporate the following low-cost/no-cost measures into the design of the SCE proposed project components:~~

1. ~~A minimum ground clearance of 35 feet would be maintained along all 66-kV subtransmission line routes near schools and residences;~~
2. ~~The reconductored 66-kV subtransmission line conductors would be arranged on each structure to reduce magnetic fields. For example, the six conductors on a double-circuit alternating current subtransmission line would be arranged as follows where the letters A, B, and C indicate the three different phases of the conductors: the left side of the utility structure would support conductors A, B, and C (top to bottom or equivalent) and the right side would support conductors C, B, and A (top to bottom or equivalent);~~
3. ~~The substation transformers, switchracks, buses, and underground duct banks would be installed away from the easement boundary of the proposed Natural Substation and property line of the San Fernando Substation; and~~
4. ~~The substation transfer and operating buses would be configured such that the transfer bus is closer to the nearest easement boundary of the proposed Natural Substation.~~

4.8.4.5 EIR Public Scoping Comments

Comments received from members of the public during the scoping period regarding Hazards and Hazardous Materials primarily addressed the safety of natural gas storage operations at the storage field site, and fire risk that could be associated with downed power lines and inadequate brush removal around electrical infrastructure. More detail regarding public scoping comments is presented in Appendix B.

While fire hazards and issues related to public safety are addressed and mitigated as necessary in the discussion below, comments specifically related to the Sesnon fire received during the public comment period that were not also related to the proposed project are not addressed in this document.

4.8.4.6 Applicant Proposed Measures

The applicant has committed to the following APMs as part of the design of the proposed project. See Section 2.5, "Plans and Applicant Proposed Measures," Table 2-8, for a full description of each APM.

- **APM HZ-1: Federal Aviation Administration Consultation.**
- ~~**APM HZ-2: Plant Power Line Inspection and Maintenance.**~~
- **APM HZ-3: Hazardous Materials Spill and Release Prevention.**
- **APM HZ-4: Contaminated Soil Disposal.**
- **APM HZ-5: Hazardous Materials Use and Storage and Hazardous Waste.**
- **APM HZ-6: Worker Environmental Awareness Training.**
- **APM HZ-7: Wood Pole Recycling and Disposal.**
- ~~**APM HZ-8: Construction Fire Control and Emergency Response Measures.**~~

4.8.4.7 Impact Analysis

Evaluation of hazards and hazardous materials impacts from construction and operation of the proposed project components included the review of relevant city and county hazards and hazardous materials standards, the existing environment along the proposed project area, and the projected hazards and hazardous materials impacts associated with the use of construction and operations equipment and vehicles, and maintenance activities. County maps were reviewed to determine the proximity of the proposed project to schools, hazardous materials sites, and airports. In addition, land use plans and topographic maps were researched for relevant information on the existing hazards and hazardous materials issues.

Proposed project components that would not involve ground disturbance, would not result in the use of hazardous materials during construction or operation, or would not interact with airports, airstrips, schools, or wildland fire considerations are not included in this assessment. These components include installation of upgraded relay systems and equipment at the Newhall, Chatsworth, San Fernando, and Pardee Substations and construction support activities. Project activities that would be undertaken at the Newhall Substation, the Chatsworth Substation, and the Pardee Substation would be minor, comprising primarily upgrades within existing substations, and would require minimal construction activity.

The existing withdrawal, injection, and observation wells at the storage field would not be affected by construction of the proposed project, nor would new wells be constructed as part of the proposed project. Additionally, there are no abandoned wells on the proposed project site, and no well abandonments are planned as part of the proposed project. No hazards are anticipated to result from the proposed increase in injection capacity at the storage field from 300 million standard cubic feet per day to 450 million standard cubic feet per day, because the increase in capacity would be within the maximum allowable injection pressure of 3,600 pounds per square inch permitted by DOGGR for the storage field reservoir, and because the existing injection wells at the facility have been designed sufficiently to accommodate the increase in injection pressure (Hesson 2012). Project conditions, including the performance of the injection wells, would be submitted by the applicant to DOGGR and reviewed on an annual basis to confirm that the storage field is operating within safe limits.

Sensitive Receptors

Notwithstanding workers at the storage field, there are no structures or well-defined outdoor areas within 660 feet (0.125 miles) of the Central Compressor Station site. The closest structures include residences along Kilfinan Street, which are located approximately 3,876 feet (0.73 miles) from the Central Compressor Station site; there are no other sensitive receptors within 660 feet (0.125 miles) of the site.

The proposed Central Compressor Station includes the installation of approximately 550 feet of new natural gas pipeline to connect the station to the existing suction, discharge, blowdown headers, and the existing emergency shutdown system. For this analysis, based on distances for relative risk based on Federal Office of Pipeline Safety location classes (as described above under “Pipeline Safety Improvement Act”), a distance of 660 feet from the proposed Central Compressor Station site was determined a conservative distance to use to assess potential risk from hazards related to the new pipeline.

For the 66-kV subtransmission line reconductoring and telecommunications routes, a distance of 0.25 miles (1,320 feet) from the midpoint of Segments A, B, C, D, E, and F and the telecommunications routes was used to assess potential risk from hazards and hazardous materials. The closest residence to the proposed Natural Substation is located on Kilfinan Street at a distance of approximately 3,493 feet (0.66 miles). The closest residence to Segments A, B, and C of the reconductoring component of the proposed project include a residence on Wiley Canyon Road, located approximately 30 feet from the existing 66-kV subtransmission line in the City of Santa Clarita, and another residence within the Crescent Valley Mobile Home Park, located approximately 23 feet from the existing 66-kV subtransmission line in the Newhall Pass area. The school closest to any of the proposed project components is located approximately 522 feet from the existing 66-kV subtransmission line.

Two schools are located within 0.25 miles (1,320 feet) of the San Fernando Substation where Segments D and E of the 66-kV subtransmission line reconductoring project component and Telecommunications Route #3 would be located. The closest residence is approximately 500 feet from the San Fernando Substation. The San Fernando Mission cultural site is located approximately 700 feet from the substation.

Impact HZ-1: Significant hazard from routine transport, use, or disposal of hazardous materials.
LESS THAN SIGNIFICANT

During both construction and operation of the proposed project components, hazardous materials including oils, lubricants, fuels, and other substances as listed in Table 4.8-~~5~~6 would be transported, used, and disposed as waste, as discussed above. Accidental releases or spills could result in exposure of the public to hazards.

During both construction and operation activities, hazardous materials and wastes would be handled, stored, recycled, and disposed of according to applicable manufacturer specifications as well as local, state, and federal regulations, and in accordance with the best management practices listed in the applicant and SCE's construction SWPPPs, SPCC plans, and hazardous materials management programs, as well as the applicant's SWPPP for operations and SCE's standard operating procedures.

Construction

The bulk of the hazardous materials that would be stored and transported as part of the construction of the proposed project components consist of vehicle and equipment fuels and lubricants. During construction, small quantities of fuels would be transported and/or transferred within the areas of the proposed project components in order to facilitate fueling of construction equipment. Construction equipment would also routinely fuel at the staging areas within the storage field, at the existing substations, and at additional locations within the area of the 66-kV subtransmission line that have not yet been determined, to minimize the quantity of temporary fuel storage. Helicopter fueling would occur at staging areas at SCE's Pardee Substation or at any of the local airports selected by the contractor for use during construction.

Within the storage field and the existing substations, all transfer and storage of hazardous materials that are oil products is controlled by existing SPCC plans. The SPCC plans also provide for spill prevention training of applicable personnel and maintaining spill cleanup equipment on hand. Within the areas of the 66-kV subtransmission line and telecommunications routes, most fueling is expected to be performed from a self-contained service vehicle, or from small (5 gallons or less), portable containers. Standard SCE operating procedures require service vehicles to carry spill containment equipment.

Several large (approximately 1,000-gallon capacity) mineral oil-filled electrical transformers would be installed at the proposed Natural Substation. The transformers would either be filled and transported to the substation, or filled with oil once they are set into place. If filled onsite, the oil transfer operation would be controlled by the procedures specified in the existing storage field SPCC plan. Transportation of either the transformer oil or the filled transformers to the proposed Natural Substation site would be controlled by federal and state requirements for the transport vehicle, driver, and load. Vehicles transporting oil to the site would carry spill control equipment.

Construction waste management would be performed in accordance with federal, state, and local regulations and requirements. The majority of construction-related wastes would be inert materials (clean soil, vegetation, metal scrap, packaging materials, etc.), most of which would be containerized and disposed of at a licensed facility. The applicant maintains service contracts with three licensed haulers and disposal facilities for the handling, recycling, disposal, and treatment of hazardous and non-hazardous wastes: Evergreen Oil Recycling, Clean Harbors, and the Southern California Gas Company Pico Rivera Base Facility.

Wooden utility poles and wooden components treated with preservatives would be managed in accordance with California Health and Safety Code Section 25150.7 requirements. In order to comply with this code, SCE would dispose of treated wooden poles only at a Class I hazardous landfill or in a composite-lined portion of a solid waste landfill unit that meets the requirements outlined in the code (APM HZ-7).

The applicant and SCE would ensure that construction procedures are implemented that would minimize the potential for hazardous material spills and releases (APM HZ-3), store and use hazardous materials as specified in APM HZ-5, and train workers as specified in APM HZ-6. Additionally, because the proposed project would comply with federal, state, and local regulations for the management of hazardous materials and the disposal of hazardous waste and because the applicant would contract with licensed haulers and disposal facilities, the proposed project would result in a less than significant impact from the transport and disposal of construction waste.

Operation

Hazardous material use, transport, and storage associated with the operation of the proposed project components would be similar to current use, transport, and storage. There would be no net change in chemical use at any of the existing substation facilities.

Hazardous materials that would be transported to and used at the proposed Natural Substation and the proposed Central Compressor Station consist of lubricants (e.g., gear oil), maintenance chemicals, and transformer oil for substation electrical equipment. Procedures for the transport of hazardous materials are established in accordance with applicable regulations and a qualified transporter would be used. As previously described, the applicant maintains contracts with three licensed haulers and disposal facilities for the handling, recycling, disposal, and treatment of hazardous and non-hazardous wastes: Evergreen Oil Recycling, Clean Harbors, and the Southern California Gas Company Pico Rivera Base Facility.

Hazardous materials storage at the proposed Natural Substation and the Central Compressor Station would be in accordance with the hazardous materials business plans and SPCC plans developed for each location and with each chemical's Material Safety Data Sheet. Implementation of ~~T~~these plans in conjunction with ~~would provide for both physical and operational spill controls that protect against releases including designs with~~ containment and/or diversionary structures and equipment would ~~to~~ prevent an oil discharge from leaving the substation and Central Compressor Station property. In addition, both locations are fenced and, as shown in Table 4.8-1, are located approximately 0.63 and 0.71 miles, respectively, from the nearest sensitive receptors.

During routine operations, small amounts of hazardous waste, such as waste oil, oily rags, and other debris, would be generated by substation and Central Compressor Station operations. These amounts would be similar to the amounts listed in Table 4.8-~~5~~6. These wastes would be managed in accordance with the county-issued hazardous materials/hazardous waste license and state and local regulations, including secure storage and offsite disposal at an approved facility as outlined in the hazardous materials business plans.

With the implementation of the applicant and SCE's APMs and other plans and measures, and through compliance with all federal, state, and local regulations, impacts under this criterion would be less than significant.

Impact HZ-2: Significant hazard from accident conditions involving the release of hazardous materials.
LESS THAN SIGNIFICANT WITH MITIGATION

Hazards to the public or the environment could occur due to an upset or accident involving the release of hazardous materials used, stored, or transported as part of the proposed project. These include natural gas and the hazardous materials addressed above under Impact HZ-1 as well as hazardous materials stored onsite or at the staging areas. A number of potentially contaminated soil and/or groundwater sites have been identified within the vicinity of proposed project components, as described above. Hazards could result due to the disturbance of existing and unknown contaminated sites during construction or operation and maintenance activities. The applicant and SCE would ensure that any soil from excavation and grading activities that is suspected of being contaminated with oil or other hazardous materials is characterized and disposed offsite at an appropriately licensed waste facility (APM HZ-4). In addition, where contaminated soils are anticipated to be present, the applicant will conduct chemical analysis of soils to be excavated concurrent with the final engineering geotechnical soils analysis. MM HZ-1 would be required to ensure that soil sampling and contaminated soil contingency plans are in place prior to the disturbance of contaminated soils and that impacts would be less than significant.

MM HZ-1: ~~Soil Sampling and~~ Contaminated Soils Contingency Plan. The applicant will prepare a ~~Soil Sampling and~~ Contaminated Soils Contingency Plan that would outline procedures for testing soils in locations where contaminated soils are suspected to be present including the office building and Central Compressor Station site locations. The ~~Soil Sampling and~~ Contaminated Soils Contingency Plan will also outline the steps that would be implemented if contaminated soils are encountered during pre-construction soil sampling and testing or if they are encountered at any point during construction. Provisions outlined in this plan would include phone numbers of city, county, state, and federal agencies and primary, secondary, and final cleanup procedures. In addition, the plan would address health and safety procedures to minimize environmental impacts in the event that hazardous soils or other materials are encountered during construction of the project, including measures such as worker training, containerization and storage, and monitoring. The plan would also establish security measures to prevent unauthorized entry to cleanup sites and to reduce hazards outside the investigation/cleanup area and would identify appropriate, licensed disposal facilities, and haulers.

Natural gas may be released from the proposed pipelines due to pipeline failure, an accident resulting in pipeline damage, or rupture, including natural disasters or operational error. Natural gas may also migrate from the reservoir through existing wells or fissures in the subsurface rock, affecting nearby residents or the local environment. If natural gas was to reach a combustible mixture and an ignition source was present, a fire and/or explosion could occur, resulting in possible injuries and/or deaths.

As described above, the Central Compressor Station design would incorporate numerous features designed to detect and prevent natural gas release and address potential accident conditions, similar to the current compressor station, in compliance with federal and state pipeline safety requirements. These measures are the same as those applicable to the existing compressor station; therefore, the protective design features would be substantially similar, and the risk associated with operation would likewise be similar, or less, for the proposed Central Compressor Station as for the existing facility. With the replacement of the obsolete gas turbine—driven compressors and existing compressor equipment with new, electric-driven equipment, the safety of storage field operations is likely to increase. As previously discussed, the safety record for the existing facility is excellent, with two incidents occurring since operations began in the 1970s.

Existing safety programs and procedures that are in place at the storage field, including inspections and annual review of operations by DOGGR, address equipment safety, well integrity, and inspections, and provide for emergency shutdown procedures. As part of the proposed project and as discussed above, the applicant would implement further plans and procedures to address risks related to natural gas release during construction and operations. In addition to these plans, procedures, and measures, the applicant and SCE's existing site-specific hazardous materials business plans, SPCC plans, and SWPPPs address hazardous materials and waste storage, handling, and emergency procedures for proposed project activities at the existing substations and storage field. For other proposed SCE project components, standard SCE operating procedures and site-specific SWPPPs would address hazardous materials storage and use and specify protective measures, notifications, and cleanup requirements for accidental spills or other releases of hazardous materials that could occur.

As part of the plans and procedures that the applicant would implement for operations at the storage field, an updated Fire/Emergency Action Plan would be prepared, in compliance with federal regulations. The plan would establish procedures to minimize hazards resulting from a natural gas emergency including communication protocols, emergency shutdown and pressure reduction procedures, and the availability of personnel, equipment, tools, and materials onsite for use during an emergency incident.

As discussed above under Impact HZ-1, fuel would be stored within the storage field at the Pardee Substation, Chatsworth Substation, San Fernando Substation, and at additional locations along the 66-kV subtransmission line that have not yet been determined, for construction equipment and vehicle refueling. Helicopter fueling would occur at staging areas at SCE's Pardee Substation or at any of the local airports selected by the contractor for use during construction. All storage of fuels would follow~~be controlled by~~ the existing SPCC plans.

As part of constructing the proposed Natural Substation, several large (approximately 1,000-gallon capacity) oil-filled electrical transformers would be installed. The proposed Natural Substation grading design would incorporate SPCC ~~plan~~ requirements (40 CFR Part 112.1–Part 112.7) because of the planned operation of oil-filled transformers at the substation ~~in accordance with 40 CFR Part 112.1–Part 112.7~~. Typical SPCC requirements include secondary containment ~~curbs and berms designed and installed~~ to contain spills.

An estimated total of 210 pounds of sulfur hexafluoride (SF_6) is proposed to be put in place at the Natural Substation, with a smaller volume proposed for the San Fernando Substation. Hazards to humans from exposure to SF_6 include ~~would be related to~~ asphyxiation if SF_6 were to collect in a confined space. The circuit breakers at these substations would all be located outdoors, thus confinement of SF_6 and potential risk to human health would be unlikely. Additionally, SCE utilizes gas handling equipment that minimizes SF_6 leakage, and new switches incorporate sealing designs to minimize the risk of leakage.

The applicant would be required to incorporate and include measures addressing pipeline purging procedures issued by the U.S. Chemical Safety and Hazard Investigation Board and adopted into the National Fuel Gas Code; therefore, any risks associated with pipeline purging would be sufficiently addressed, reducing these risks to a less than significant level.

The installation of the 66-kV subtransmission line and telecommunications route project components could expose workers to high voltage electricity. For overhead transmission line installation, SCE's worker safety requirements include that the line be deenergized during critical construction periods, creating an "outage." Such outages would be short term in nature, and SCE would coordinate any required outages with the California Independent System Operator to ensure that customer service is not affected. SCE would employ workers with sufficient safety training for installation of electrical components. In addition, as part of standard construction procedures, SCE would create and implement a Health and Safety Plan that would cover each of the electric transmission-related project components. Any impacts on workers related to exposure to high voltage electricity would therefore be less than significant.

Because the storage field project components would be designed in compliance with all safety regulations for natural gas transmission, storage, and hazardous material storage, as well as existing plans and procedures implemented by the applicant, the risk of hazards related to releases is unlikely. Additionally, the applicant and SCE would implement construction procedures that would minimize the potential for hazardous material spills and releases (APM HZ-3), store and use hazardous materials as specified in APM HZ-5, and train workers as specified in APM HZ-6. Hazards due to the release of fuels, oil, or other hazardous materials would also be minimized through the incorporation of SPCC plan requirements and secondary containment structures. With the implementation of plans, procedures, and measures to address the risk of release, as well as the implementation of MM HZ-1, and with the applicant and SCE's compliance with existing regulations and policies, impacts under this criterion would be less than significant.

Impact HZ-3: Emit hazardous emissions or involve handling hazardous materials, substances or waste within one-quarter mile of an existing or proposed school.
LESS THAN SIGNIFICANT

No public or private schools are located within 1 mile of the storage field project components. Bishop Alemany High School and the Seminary of Our Lady of the Angels are located within 0.25 miles of 66-kV subtransmission line reconductoring component Segments D and E, the existing San Fernando Substation, and Telecommunications Route #3. Five other schools are also located within 0.25 miles of Telecommunications Route #3, and one school is located within 0.25 miles of the Newhall Substation (Table 4.8-1).

Diesel-powered vehicles and construction equipment would be used during construction of the proposed project components. Diesel exhaust emissions are considered toxic by the California Air Resources Board. The use of construction equipment would result in diesel exhaust emissions within 0.25 miles of schools along the 66-kV subtransmission line reconductoring component, near the San Fernando and Newhall Substations, and Telecommunications Route #3. However, given the distance between these project components and the schools and given that construction would be temporary and would not take place at any single location for an extended period of time, impacts due to diesel exhaust emissions would be less than significant.

The distance from these schools to the 66-kV subtransmission line reconductoring component, coupled with the implementation of appropriate safety measures by the applicant, as previously discussed under Impact HZ-1 (APM HZ-3, APM HZ-5, and APM HZ-6), would ensure that reconductoring activities would ~~not result in~~ minimize the potential for leaks or spills of hazardous or acutely hazardous materials ~~and no impacts on schools would result~~. Handling of hazardous materials is controlled through existing construction standard operating procedures and regulation-required mechanisms including the SPCC plan and hazardous materials business plans, which specify spill prevention and control procedures. Therefore, impacts from handling hazardous or acutely hazardous materials would be less than significant.

Impact HZ-4: Be located on a site that is included on a list of hazardous materials sites.
LESS THAN SIGNIFICANT WITH MITIGATION

Soil disturbance associated with the proposed project components would not occur on a hazardous material site identified in the EDR report or EnviroStor database search, as described in Section 4.8.1.1. Based on the review of other databases and lists (including Water Board and DTSC lists) that comprise the Cortese List, no sites are located where project-related ground disturbance would occur.

Undiscovered subsurface soil contamination may be present at locations on the storage field based on the activities that are occurring and have occurred within the facility. Sites where soil contamination may be present include the proposed main office and crew-shift building location, the proposed Central Compressor Station site, and the existing turbine-driven compressors and metering station location (Lindgreen 2009). No ground-disturbing activity would occur at the turbine-driven compressors and metering station location. At the main office and crew-shift building and Central Compressor Station sites, soil samples would be collected and analyzed before construction occurs. Soil testing would occur prior to construction in order to prevent groundwater contamination, dust contamination, and human health impacts on workers if ground-disturbing activities were to occur on contaminated soil. To clarify the soil testing procedures and disposal methods for potentially contaminated soil located within areas where ground disturbance would occur, the applicant would comply with MM HZ-1, which requires developing and approving a Soil Sampling and Contaminated Soils Contingency Plan prior to beginning construction. This plan would also outline the steps that would be implemented if contaminated soils are encountered during pre-construction soil sampling.

The 66-kV subtransmission line reconductoring component would cross the Sunshine Canyon Landfill, which is a land disposal site where open verification monitoring is occurring. The tubular steel poles installed as part of this component would be installed ~~at elevation~~ on the edges of the Sunshine Canyon Landfill disposal areas, and the conductor would span the facility; therefore, no earth-moving activity would occur within the disposal areas of the Sunshine Canyon Landfill itself, and there would be no potential to spread contamination through dust or into any aquifers. There are no other Cortese List sites located within 0.10 miles of the 66-kV subtransmission line reconductoring component. Therefore, there would be no impact under this criterion as a result of reconductoring activity.

Telecommunications Route #2 would be located within 0.10 miles of three closed LUST sites and two permitted USTs. Approximately 200 feet of the route would be installed underground in existing conduit. Ground-disturbing construction activities within this project component are not anticipated to disturb known or unknown contaminated sites.

Telecommunications Route #2 crosses over a developed area. This analysis only considers those Cortese List sites that would be located on the same block as the telecommunications route because, in most instances, the proposed project would be separated from the Cortese List sites by buildings and roadways and, therefore, would have no impact on those sites. The San Fernando telecommunications route would be installed primarily on existing overhead structures with the exception of four locations: exiting the San Fernando Substation, under I-5, under I-210, and from the fiber optic connection to Gridley Street. No Cortese List sites are located within one block of the San Fernando Substation. A number of Cortese List sites are located on Laurel Canyon Road; however, Laurel Canyon Road is located approximately one block from I-5. A number of Cortese List sites are located on Foothill Boulevard, approximately one block from I-210. The final segment of undergrounding, near Gridley Road, on the east side of I-210 near the SCE interconnect site, is not located within one city block of any Cortese List sites. No construction-related disturbance would take place in the vicinity of Cortese List sites; ground disturbance would occur only within the immediate vicinity of the fiber optic route, which is separated from the sites listed above by existing development. Therefore, there would be no impact under this criterion as a result of the San Fernando telecommunications component.

With the implementation of MM HZ-1, impacts under this criterion would be less than significant.

Impact HZ-5: Safety hazards for people residing or working in the project component areas that are within the area of an airport land use plan or within 2 miles of an airport.
LESS THAN SIGNIFICANT

The proposed project components are not located within an airport land use plan or within 2 miles of a public airport or public use airport. Several private helipads are located within 2 miles of the proposed project components. The Merle Norman Cosmetics–Sylmar Helipad is located approximately 3.4 miles southeast of the 66-kV subtransmission line reconductoring component, approximately 1.33 miles northwest of Telecommunications Route #3, and approximately 2.3 miles northwest of the San Fernando Substation. The Spears Helipad is located approximately 2.7 miles southeast of the 66-kV subtransmission line reconductoring component, approximately 2.7 miles northwest of Telecommunications Route #3, and approximately 2.9 miles northwest of the San Fernando Substation.

The Van Nuys Airport is located approximately 7 miles southeast of the storage field and approximately 4.7 miles southwest of the San Fernando Substation. The Whiteman Airport is located approximately 2.7

miles southeast of the San Fernando Substation, approximately 2.45 miles at its closest point to Telecommunications Route #3.

It is unlikely that the proposed project components would interfere with airport operations or air traffic. The closest airport to any of the proposed project components is a heliport that would be located 1.33 miles from Telecommunications Route #3. This telecommunications component would require the underbuilding of fiber optic cable on existing structures, which would result in a minor incremental change to existing conditions.

The applicant would be required to obtain a Hazard/No Hazard determination from the Federal Aviation Administration (FAA) for any structures taller than 200 feet that would be installed within 20,000 feet of a runway. The only proposed project components that would potentially be more than 200 feet in height would be the tubular steel poles installed as part of the reconductoring component of the proposed project. Under APM HZ-1, SCE would coordinate with the FAA to ensure that tall structures, such as the tubular steel poles, do not present a hazard to air safety in the area.

SCE would file the necessary FAA Form 7460 for structures (poles/towers/conductors) that exceed notification requirements outlined in FAA Part 77. SCE would file the form upon completion of final engineering and prior to construction per FAA Part 77. If conductor or tubular steel pole heights would reach more than 200 feet above ground level, marker balls or lights would be installed on the conductor or tubular steel pole if required by the FAA.

Because Telecommunications Route #3 would be the only component located within 2 miles of an airport and would not interfere with airport operations, and because the applicant would obtain a Hazard/No Hazard determination from the FAA as required, the impact under this criterion would be less than significant.

Impact HZ-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
LESS THAN SIGNIFICANT

No emergency response or evacuation routes have been identified in the vicinity of the proposed project components. The City of Santa Clarita has identified specific roadways and bridges for improvement to facilitate emergency response and evacuations; these roadways and bridges are not within the vicinity of the proposed project component areas. Therefore, the proposed project would not impair or interfere with an adopted emergency response or evacuation plan in the area. For further information regarding circulation in the area of the proposed project components, see Section 4.15, "Transportation and Traffic."

The applicant maintains a Fire/Emergency Action Plan, which includes coordination with local and county public safety agencies and emergency service providers. The plan currently identifies evacuation zones within the facility but does not identify evacuation or emergency response routes. The applicant's emergency response plans would be revised and updated to include proposed facilities and their operations. The applicant and SCE would also develop fire management measures, including notification procedures, as part of Construction Safety and Emergency Response Plans developed in consultation with their contractors for use during construction and operation of proposed project components (~~APM~~MM HZ-~~8~~2, below).

The proposed project would not impair the implementation of or physically interfere with adopted emergency response or evacuation plans; therefore, a less than significant impact would occur.

Impact HZ-7: **Expose people or structures to a significant risk involving wildland fires.** *LESS THAN SIGNIFICANT WITH MITIGATION*

Construction

As shown on Figure 4.8-1 and discussed above, the majority of the areas of the proposed project components, including the Central Compressor Station, proposed Natural Substation, Plant Power Line, main office and crew-shift buildings, guardhouse, Chatsworth Substation, Telecommunications Route #2, and the majority of the 66-kV subtransmission line reconductoring component, would be constructed in a Very High fire hazard severity zone~~area~~ as designated by CAL FIRE. Segments of the reconductoring component would cross High, Moderate, and Unzoned areas within the City of Santa Clarita near the Newhall Substation. The Newhall Substation, the San Fernando Substation, the Sylmar Substation, the MacNeil Substation, and the San Fernando reconductoring component would be located in Unzoned, developed areas. The baseline level of risk for fire hazard in the project areas, especially for the project components located on the gas storage facility site, is extremely high, and damage from wildland fire in this area could be severe, as evidenced by the damage caused by the 2008 Sesnon fire. Project construction and operation would therefore pose a threat to the fire safety of adjacent residential communities.

~~The applicant and SCE have outlined p~~Precautionary measures that would be employed to minimize the potential for fire during construction activities are outlined in ~~APM~~ MM HZ-~~8~~2. Furthermore, construction areas for the proposed project would be grubbed of vegetation and graded prior to the staging of equipment, which would lessen the potential for a construction vehicle to start a fire. In addition, the storage field facility operators perform a number of other precautionary measures to minimize fire risk within the storage field, as discussed above. Fire hydrants, fire monitoring systems, and extinguishers are located throughout each area of the facility, and the facility implements a brush clearance program for keeping active operational areas, including proposed construction locations and overhead electrical system components, free from excess plant growth. Certain operations are also curtailed or shut down during Red Flag Warnings. Also, the storage field has its own fire water system, with a portion of each water storage tank dedicated for fire water storage.

With regard to construction of the 66-kV subtransmission line reconductoring component, the substations, and the telecommunications components, SCE follows standard protocols that are implemented when the National Weather Service issues a Red Flag Warning (~~APM~~ MM HZ-~~8~~2). These include inspections to ensure that standard measures that address smoking and fire rules, storage and parking areas, use of gasoline-powered tools, use of spark arresters on construction equipment, road closures, use of a fire guard, fire suppression tools, fire suppression equipment, and training requirements are implemented. Additionally, trained fire suppression personnel and fire suppression equipment would be established at key locations, and portable communication devices (i.e., radio or mobile telephones) would be available to construction personnel.

> **MM HZ-2: Construction Fire Control and Emergency Response Measures.** To address the risk of fire during construction of the proposed project components, the applicant and SCE will develop fire control and emergency response measures as part of the Construction Safety and Emergency Response Plans developed in consultation with their contractors for use during construction of the proposed project components. The Construction Fire Control and Emergency Response Measures will describe fire prevention and response practices that the applicant and SCE will implement during construction of the proposed project components to minimize the risk of fire and, in the case of fire, provide for immediate suppression and notification. SCE's Construction Fire Control and Emergency Response Measures will also be generally consistent with SCE's Specification E-2005-104, Transmission Line Project Fire Plan (February 21, 2006).

The Construction Fire Control and Emergency Response Measures shall specify that the applicant and SCE, or the respective construction contractors, shall furnish all supervision, labor, tools, equipment, and material necessary to prevent starting any fire, control the spread of fires if started, and provide assistance for extinguishing fires started as a result of project construction activities.

Labor shall include the assignment of Fire Risk Managers who will be present at each proposed project component area during construction activities, whose sole responsibility will be to monitor the contractor's fire-prevention activities, and who will have full authority to stop construction in order to prevent fire hazards.

1. The Fire Risk Managers shall:
    a. Be responsible for preventing, detecting, controlling, and extinguishing fires set accidentally as a result of construction activity;
    b. Review the Fire Control and Emergency Response Measures with the fire patrolperson and construction employees prior to starting work at each project area;
    c. Ensure that all construction personnel are trained in fire safety measures relevant to their responsibilities. At a minimum, construction personnel shall be trained and equipped to extinguish small fires;
    d. Be equipped with radio or cell phone communication capability; and
    e. Maintain an updated key personnel and emergency services contact (telephone and email) list, kept onsite and made available as needed to construction personnel.
2. Equipment shall include:
    a. Spark arresters that are in good working order and meet applicable regulatory standards for all diesel and gasoline internal combustion engines, stationary and mobile;
    b. One shovel and one pressurized chemical fire extinguisher for each gasoline-powered tool, including but not restricted to compressors, hydraulic accumulators, gardening tools (such as chain saws and weed trimmers), soil augers, rock drills, etc.;
    c. Fire suppression equipment to be kept on all vehicles used for project construction; and
    d. An onboard self-extinguishing fire suppression system capable of extinguishing any equipment-caused fire to be kept on heavy construction operating equipment.
3. Measures to be undertaken by the applicant, SCE or the respective construction contractors, and monitored and enforced by the Fire Risk Manager, at each of the project areas during construction activities, shall include:
    a. The installation of fire extinguishers at the proposed Central Compressor Station site;
    b. The prohibition of smoking at each construction job site as follows: no smoking in wildland areas; no smoking during operation of light or heavy equipment; limit smoking to paved areas or areas cleared of all vegetation; no smoking within 30 feet of any area in which combustible materials (including fuels, gases, and solvents) are stored; no smoking in any project construction areas during any Red Flag Warnings that apply to the area;
    c. The posting of no smoking signs and fire rules on the project bulletin board at all contractor field offices and areas visible to employees during fire season;
    d. The maintenance of all construction areas in an orderly, safe, and clean manner. All oily rags and used oil filters shall be removed from project construction areas. After construction activities are completed in each project area, the area shall be cleaned of all trash and surplus

materials. All extraneous flammable materials shall be cleared from equipment staging areas and parking areas;

  e. Confinement of welding activities to cleared areas having a minimum radius of 10 feet measured from place of welding, and observed by the Fire Risk Manager;

  f. Prevention of the idling of vehicles with hot exhaust manifolds on dirt roads with dead combustible vegetation under the vehicle;

  g. The provision of portable communication devices (i.e., radio or mobile telephones) as needed to construction personnel and communication protocols for onsite workers to coordinate with local agencies and emergency personnel in the event of fire or other emergencies during construction or operation of the proposed project; and

  h. Any additional measures as needed during construction to address fire prevention and detection, to lower the risk of wildland fires.

4. Measures will also include the following requirements that would involve coordination between the applicant and SCE, and the Fire Departments and CAL FIRE:

  a. The applicant and SCE or the respective construction contractors shall furnish any and all forces and equipment to extinguish any uncontrolled fire near the project component areas as directed by Fire Department or CAL FIRE representatives;

  b. The applicant and SCE or the respective construction contractors shall abide by all restrictions to construction activity that may be enforced by the Fire Departments and/or CAL FIRE during Red Flag Warning days; and

  c. In the event that SCE or their construction contractor sets fire to incinerate cleared vegetation, the Fire Risk Manager shall notify the Fire Departments and/or CAL FIRE in advance of the burning. Special care shall be taken to prevent damage to adjacent structures, trees, and vegetation. The applicant will not burn cleared vegetation during construction activities.

5. Measures will also include additional, special provisions for days when the National Weather Service issues a Red Flag Warning. Standard protocols implemented during these periods will include:

  a. Measures to address storage and parking areas;

  b. Measures to address the use of gasoline-powered tools;

  c. Procedures for road closures as necessary;

  d. Procedures for use of a fire guard as necessary; and

  e. Additional fire suppression tools and fire suppression equipment, and training requirements.

With the measures proposed by the applicant and SCE and required by law to minimize the risk of wildfire, the impact of the proposed project construction under this criterion would be less than significant.

Operation

Overall, operation of the proposed project components is not likely to substantially change the existing exposure of persons or structures to wildland fire risk because project operations would be similar in nature and scope to the existing operations at the storage field and the existing transmission lines and substations. Fire safety inspections in the area of the storage field and the SCE rights-of-way in the project area during the last five years have not resulted in any notices of violations as documented on CAL FIRE form LE-38 (SoCalGas 2013, SCE 2013).

The applicant's Fire/Emergency Action Plan, which would be updated with measures specific to the proposed project components, addresses current operations at the storage field site and applies to emergencies that occur at the site. This planning document establishes protocols for evacuation, including escape procedures, activation of the fire warning system, and other critical plant operations, such as shutting off the gas supply to affected buildings and equipment and powering down gas pumps (SoCalGas ~~2011~~2013). The storage field managing and environmental staff also coordinate~~s~~ with the Los Angeles County Fire Department on safety and inspection programs to mitigate the risk of wildland fires during operation of the proposed project.

Power lines can ignite wildfires through failure of the support structure due to high winds, defect, or other damage (such as accident or corrosion); failure of other transmission equipment such as exploding transformers or damaged insulators; conductor-to-conductor contact or conductor contact with vegetation or a foreign body (e.g., airplane, wildlife, or debris); or accident during maintenance. The 66-kV subtransmission line reconductoring and telecommunication route project components would involve the replacement of older infrastructure, such as wooden structures, conductor wire and supporting structures, with new elements, such as conductor wire and steel poles. Older electrical infrastructure components are more likely to sag and break and result in downed power line conditions, and thus represent a higher fire risk than newer poles and wire. Because it would result in upgrades of older infrastructure along the 66-kV subtransmission line and telecommunications routes, the proposed project would reduce the fire risk associated with these components. The proposed Natural Substation and 1,200-foot Plant Power Line represent new electrical infrastructure in areas where such infrastructure does not exist; unlike areas along the 66-kV subtransmission line and telecommunications routes, the risk of fire in these areas would increase slightly as a result of the proposed project.

The electrical transmission and telecommunications components of the proposed project would be constructed and maintained in a manner consistent with California Public Resources Code Sections 4292 and 4293, which regulate vegetation management in transmission line corridors. The electrical transmission and telecommunications project components would also be constructed and maintained in a manner consistent with CPUC GO 95 and CPUC GO 165. Consistent with these and other applicable federal and state laws, SCE would maintain an area of cleared brush around energized electrical equipment associated with the 66-kV subtransmission line, minimizing the potential for fire, where applicable. Per these regulations and as described above, SCE would maintain an area of cleared brush around energized electrical equipment associated with the reconductored 66-kV subtransmission line and telecommunications routes in order to minimizing the potential for fire. The applicant-owned Plant Power Line would also be subject to the same requirements, including requirements for brush clearing as required by California Public Resources Code Sections 4292 and 4293 and CPUC GO 95 and CPUC GO 165~~; in addition, the applicant would inspect and maintain the line to reduce wildfire hazard in the area, per APM HZ-2~~. In addition, as described above, the applicant would implement design and procedures to detect downed conductors along the Plant Power Line, ensure that downed lines remain de-energized until the problem is identified, and dispatch an electrical contractor to repair the line within two hours of detection.

SCE would also implement a Fire Management Plan to address fire risk in the area of the transmission line, telecommunications cable, and proposed Natural Substation project components after construction. SCE participates in the Red Flag Fire Prevention Program, which monitors fire hazard conditions, including air temperature, wind speed, humidity, and live and dead fuel moisture content, to further reduce wildland fire risk. In addition, as described above, SCE would implement existing design and procedures to detect downed power lines within 15 seconds of a lock out or multiple relays, to ensure that downed power lines remain de-energized until the problem is identified, and to initiate a patrol of the line as soon as a problem is detected. In addition, per GO 166 and CPUC Decision 12-01-032, and as of

January 12, 2012, SCE is required to prepare and submit plans to prevent power-line fires during extreme weather events.

Implementation of the plans, programs, and measures described above and compliance with existing regulations and policies would address fire hazards during construction and operation of the proposed project components; nonetheless, risks involving wildland fires during construction and operation would still be very high. In order to further reduce fire hazards to a less than significant level and ensure that fire minimization measures are adequate and consistent for the diverse aspects of the proposed project, the applicant and SCE would implement MM HZ-~~2~~3:

> **MM HZ-3~~2~~: Fire Department Review and Coordination.** Prior to construction of the proposed project components, the applicant and SCE will coordinate with ~~CAL FIRE,~~ the City of Los Angeles Fire Department and the Los Angeles County and Ventura County Fire Departments (Fire Departments) according to the location of the proposed project components~~, to the satisfaction of the lead agency~~. The applicant and SCE will submit the following materials ("fire management information") for review by the Fire Departments: proposed project components and design, specific construction methods and equipment, and a description of plans and measures including but not limited to the applicant's Fire/Emergency Action Plan, SCE's Fire Management Plan, the applicant's and SCE's Construction Safety and Emergency Response Plans, and measures that would be undertaken by the applicant and SCE to further address risks involving wildland fires during construction and operation of the proposed project components (including Fire Control and Emergency Response Measures). The Fire Departments will review the applicant and SCE's fire management information prior to construction and operation (as appropriate) of the proposed project components, in accordance with each respective fire department's codes, regulations, ordinances, guidelines, and other policy which may guide such review, including but not limited to:
>
> 1. The County of Los Angeles Fire Code (2011), including permits as required under Chapter 1, Section 105; Chapter 3, Section 325 (Clearance of Brush and Vegetative Growth); Chapter 4 (including Section 404.3.2, Fire Safety Plans, and 408.7.5, Emergency Plan); and Chapter 14 (fire safety during construction and demolition);
> 2. The County of Los Angeles Building Code (2011), which would apply to buildings within the project area that would require plan review from the County of Los Angeles Fire Department; and
> 3. CAL FIRE's *Power Line Fire Prevention Field Guide* (2008).
>
> ~~The applicant and SCE will also submit the fire management information along with a record of contacts and coordination with the Fire Departments to the CPUC, for review and approval prior to construction of the proposed project components~~ The Fire Departments will submit written confirmation of the completion of this review to the applicant and SCE prior to project construction and operation. The applicant will also submit any revisions of the facility Fire/Emergency Action Plan related to operation of the Central Compressor Station, for the same level of review ~~and approval~~, prior to the start of project operations at the storage field.

With the implementation of MM HZ-~~2~~3 and given the measures proposed by the applicant and required by law to minimize the risk of wildfire, the impact of the proposed project components under this criterion would be less than significant.

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4.9 Hydrology and Water Quality

This section describes the environmental and regulatory settings and discusses potential impacts associated with the construction and operation of the proposed project with respect to hydrology and water quality.

4.9.1 Environmental Setting

The proposed project is located in the Santa Susana Mountains of northern Los Angeles County and southeastern Ventura County. The regional climate is generally arid and average rainfall ranges from 14 to 16 inches in the Santa Clara River Valley to 15 to 23 inches in the San Fernando Valley (DWR 2004, 2006). Elevations range from sea level at the Ventura Coast to about 6,500 feet in the San Gabriel Mountains. The following sections describe surface water features, groundwater, wetlands, and flood zones in the proposed project area, as well as the project water supply and water requirements.

4.9.1.1 Surface Water

The proposed project lies within the Santa Clara River (HUC[1] 18070102), Los Angeles River (HUC 18070105), and Calleguas Creek (HUC 18070103) Watersheds, which are divided by the east-west trending Santa Susana Mountains. Drainage from the north slope of the Santa Susana Mountains flows north into the portion of the Upper Santa Clara River Basin located in Los Angeles County. Drainage from the southern slopes of the mountains generally flows south into the Los Angeles River Basin. The Calleguas Creek Watershed is located almost entirely within Ventura County and extends west from the Los Angeles River Watershed to the Pacific Ocean. The Calleguas Creek Watershed is bound to the north by the Santa Susana Mountains, South Mountain, and Oak Ridge, and to the south by the Simi Hills and the Santa Monica Mountains (Calleguas Municipal Water District 2005).

Figure 4.4-1 in Section 4.4, “Biological Resources”, and Figures F-1 and F-2 in Appendix F show the proposed project components relative to local hydrological features. Project components located within the Los Angeles River Basin include the Central Compressor Station, the Plant Power Line, the main office and crew-shift buildings, the guardhouse, the proposed Natural Substation, and a segment of Southern California Edison’s (SCE’s) existing Chatsworth–MacNeil–Newhall–San Fernando 66-kilovolt (kV) Subtransmission Line (Structures 36 to 60 are located between Milepost (MP) 4 and MP 8) that would be reconductored as part of the proposed project (see Figure 2-1 of Chapter 2, “Project Description”; project alignment sheets depicting structure numbers are provided in Appendix D). The portion of Telecommunications Route #1 that would run concurrent with the 66-kV subtransmission line, as well as the entirety of Telecommunications Routes #3 and #4, the installation of telecommunications equipment at the San Fernando Substation, and part of Telecommunications Route #2 between the Chatsworth and Natural Substations (MP 0 to MP 10 on Figure 2-1) would also be located within the Los Angeles River Watershed.

The remainder of the proposed 66-kV subtransmission line modification (Poles 1 to 35, located between MP 0 and MP 4 on Figure 2-1), and the installation of proposed telecommunications equipment at the Newhall Substation, would take place within the Santa Clara River Watershed. The portion of the Santa Clara Watershed located within Los Angeles County is known as the Upper Santa Clara River Basin, and the portion of the basin located in Ventura County is known as the Lower Santa Clara River Basin. All project components located within the Santa Clara River Watershed are within the Upper Santa Clara River Basin.

[1] Hydrologic Unit Code, as used by the United States Geologic Survey.

A portion of Telecommunications Route #2 between the Chatsworth and Natural Substations (between MP 10 and MP 15 on Figure 2-1) would cross into the Calleguas Creek Watershed. The installation of telecommunications equipment at the Chatsworth Substation would also take place within the Calleguas Creek Watershed.

Los Angeles River Basin

The southern slopes of the Santa Susana Mountains drain south into the Los Angeles River Basin, which covers a land area of approximately 834 square miles in unincorporated Los Angeles County and incorporated areas of the Cities of Los Angeles, Burbank, and San Fernando. Land uses within the basin generally consist of residential development and open space (LACDPW 1996). The river flows 51 miles from its headwaters in Canoga Park to Long Beach, where it discharges to the Pacific Ocean. Excluding the Glendale Narrows, the river is now channelized. Numerous tributaries discharge to the river in the vicinity of the San Fernando Valley, including Aliso Canyon Wash, Bull Creek, Limekiln Canyon Creek, and Wilbur Creek. These tributaries generally trend north-south and drain the southern slope of the Santa Susana Mountains. Bull Creek and Aliso Canyon Wash are completely channelized (LACDPW 2009a). Lakes and reservoirs in this river basin include the Los Angeles Reservoir, the Chatsworth Reservoir, the Sepulveda Flood Control Basin, and Hansen Dam.

Washes and creeks in the Los Angeles River Basin are intermittent to ephemeral, with surface flow typically present only during or after storm events. Significant surface flow does not typically occur until major storm events, during which the soil underlying non-channelized washes becomes saturated (LACDPW 2006). Many of the tributaries in the basin have been channelized for flood control; proposed project components are located in areas upstream of Los Angeles County Department of Public Works (LACDPW n.d.) flood control channels.

As shown on Figure F-1, the portions of the proposed 66-kV subtransmission line route to be reconductored and Telecommunications Route #1 in the Los Angeles River Basin, south of Tap Point A, are located in an area within and south of the Santa Susana Mountains and within the drainage areas of Sunshine Canyon, Bee Canyon, Aliso Canyon Wash, Wilbur Creek, Bull Creek, and Limekiln Canyon, which are drained by the Weldon Canyon Flood Control Channel, Bull Creek, Aliso Creek, Wilbur Creek and Limekiln Creek/Wash, all tributaries of the Los Angeles River (LARWQCB 1995). A section of both the 66-kV subtransmission line and Telecommunications Route #1 (Structures 40 through 60) crosses over these two washes, as well as several other intermittent drainages.

The remainder of the proposed project components located within the Los Angeles River Basin are located near and adjacent to Limekiln Creek/Wash, which runs parallel to the access road into the Aliso Canyon Natural Gas Storage Field (storage field) site, as well as several other intermittent and ephemeral drainages. The Los Angeles Reservoir is located down gradient from some project components; however, drainage from these areas collects and discharges into Bull Creek, bypassing the reservoir.

Upper Santa Clara River Basin

The Upper Santa Clara River Basin drains approximately 786 square miles and comprises mainly open space and residential land uses in unincorporated Los Angeles County and the City of Santa Clarita; a small portion of the total land area also includes commercial and industrial land uses (LACDPW n.d). Major surface water features in the Upper Santa Clara River Basin include the Santa Clara River and its tributaries. The Santa Clara River generally flows west from its headwaters in the Angeles National Forest, near Acton, California, and travels approximately 100 miles to the City of Ventura, where it discharges into the Pacific Ocean. The Upper Santa Clara River Basin is characterized generally by north-south flowing, intermittent or ephemeral tributaries where surface flow is typically present only during or after storm events (RWMG 2008). The principal tributaries in the upper basin include Castaic Creek, Bouquet Creek, San Francisquito Creek, and the Santa Clara River South Fork (RWMG 2008). Lakes and reservoirs in this river basin include Castaic Lake, Pyramid Lake, and Bouquet Reservoir. Castaic Lake is a reservoir for the California State Water Project. Bouquet Reservoir is a part of the Los Angeles aqueduct system, which moves water from the Mono Basin and Owens Valley to the City of Los Angeles.

The sections of the 66-kV subtransmission line and Telecommunications Route #1 within the Upper Santa Clara River Basin cross over several seasonal drainages and the South Fork of the Santa Clara River (between Structures 7 and 8). The closest concrete-lined flood control channel to the proposed project in this basin is the south fork of the Santa Clara River, north of Lyons Road and located approximately 1,800 feet east of the Newhall Substation, in the City of Santa Clarita.

Calleguas Creek Watershed

The Calleguas Creek Watershed is located almost entirely within southeastern Ventura County and drains an area of approximately 343 square miles (Calleguas Municipal Water District 2005). The northern boundary of the watershed is formed by the Santa Susana Mountains, South Mountain, and the Oak Ridge Mountains. The southern boundary of the watershed is formed by the Simi Hills and Santa Monica Mountains. The watershed has perennial and intermittent creeks, rivers, and drainages, as well as coastal wetlands. This includes Conejo Creek, Arroyo Santa Rosa, Arroyo Simi, Arroyo Las Posas, and Calleguas Creek, as well as Revolon Slough and Mugu Lagoon. Approximately 50 percent of the watershed is undeveloped open space; 25 percent is used for agriculture; and the remaining 25 percent is a mix of industrial, commercial, and residential land use typical of urban development (Calleguas Municipal Water District 2005). Historically, Calleguas Creek flowed seasonally from its headwaters near the City of Simi Valley; however, the creek is now primarily a perennial stream fed continuously by treated wastewater flows, with secondary surface flows originating from rising groundwater, agricultural and urban runoff, and periodic storm water flows (Calleguas Municipal Water District 2005).

The portion of Telecommunications Route #2 that would be located within the Calleguas Creek Watershed crosses over several drainages (see Figure F-2). The installation of telecommunications equipment at the Chatsworth Substation would also take place within the Calleguas Creek Watershed.

Regional Water Quality

Water quality in the region is primarily managed and regulated by the Los Angeles Regional Water Quality Control Board (LARWQCB). The main water quality issue in the Upper Santa Clara River Basin is~~are~~ related to erosion and runoff from increasing development within the floodplain (LARWQCB 1995). Water quality is generally poor in the Los Angeles River Basin as a result of urban runoff and discharge, illegal dumping, and wastewater effluent, among other causes (LARWQCB 1995).

The federal Clean Water Act (CWA) of 1972 (33 U.S.C. §1251 et seq.) requires states to maintain water quality standards within their jurisdictions. Waters that fail to meet water quality standards must be listed as impaired under Section 303(d) of the CWA (known as the 303[d] list). Table 4.9-1 shows the listed impaired waters in the portions of the Upper Santa Clara River Basin, Los Angeles River Basin, and Calleguas Creek Watershed, where the proposed project is situated. None of the four major tributaries within the Upper Santa Clara River Basin are listed as impaired on the 303(d) list. The 303(d) list of impaired waterbodies includes all reaches of the Los Angeles River, including Reach 6 within the San Fernando Valley, and the Aliso Canyon Creek and Bull Creek tributaries which discharge to Reach 6. Most surface waters within the Calleguas Creek Watershed have been identified as impaired, generally from nonpoint sources of toxic pollutants, nitrogen, sediment, and algae.

Table 4.9-1 Summary of Water Quality Impairments in the Study Area Watersheds

Watershed	Waterbody Name	Category[1]	Pollutant(s)
Upper Santa Clara River Basin	Santa Clara River Reach 5	5	• Chloride • Coliform Bacteria • Iron
	Santa Clara River Reach 6	5	• Chloride • Chlorpyrifos • Coliform Bacteria • Copper • Diazinon • Iron • Toxicity
	Santa Clara River Reach 7	5	• Coliform Bacteria
Los Angeles River Basin	Aliso Canyon Wash	5	• Copper • Fecal Coliform • Selenium
	Bull Creek	5	• Indicator Bacteria
	Los Angeles River Reach 5	5	• Ammonia • Copper • Lead • Nutrients (Algae) • Oil • Trash
	Los Angeles River Reach 6	5	• Coliform Bacteria • Selenium
Calleguas Creek Watershed	Calleguas Creek Reach 7	5	• Ammonia • Boron • Chloride • Chlorpyrifos • Diazinon • Indicator Bacteria • Organophosphorus Pesticides • Sedimentation/ Siltation • Sulfates • Total Dissolved Solids • Toxicity • Trash

Source: LARWQCB 2009
Note:
[1] Category 5 is defined as a water segment where standards are not met and a total maximum daily load (TMDL) is required, but not yet completed, for at least one of the pollutants being listed for this segment.

The proposed project would result in an increase in impervious surfaces, which may increase runoff frequency and intensity, as well as inhibit recharge to groundwater. Project components that would result in an increase in impervious surfaces are located within the Los Angeles River Basin and would include the proposed guardhouse and road widening, the Natural Substation, the Natural Substation access road, the proposed main office and crew-shift buildings, and the Central Compressor Station. The net number of poles and support structures that could be installed as part of the 66-kV subtransmission line reconductoring (78) ~~would~~ could be greater than the number of existing structures (64); however, the existing structures, largely lattice steel towers, are generally supported on two or more ~~poles~~ legs and~~/or concrete pads,~~ may be encased in concrete and the new, single-pole TSP structures would represent a net decrease in impervious area for this project component. The net number of poles and support structures that may be required for Telecom Routes #2, #3, and #4~~3~~ would not increase (i.e., structures would be replaced on a one-to-one basis), with the exception of one wood telecommunications pole that would be installed along the alignment for Telecommunications Route #4; thus, these project components would ~~also not~~ result in only a very minor ~~an~~ increase in impervious surfaces. Up to three new TSPs would be installed in the area of the Plant Power Line, which would result in a very minor increase in impervious surface in this area (less than 0.002 of an acre). Table 4.9-2 shows each of these components and the approximate area of additional impervious surface that would be created.

Table 4.9-2 Increase in Impervious Surface Areas Resulting from the Proposed Project

Project Component	Area (acres)
Proposed Central Compressor Station	1.4
Main Office and Crew-shift Buildings	1.3
Natural Substation Access Road	0.65
Proposed Guardhouse and Road Widening	0.2
Total	3.5

Source: SoCalGas ~~2011~~2012

4.9.1.2 Groundwater

Groundwater subbasins underlying the proposed project component areas include the Santa Clara River Valley East (DWR groundwater basin number 4-4.07) and the San Fernando Valley (DWR groundwater basin number 4-12) Subbasins. Both subbasins form part of the South Coast Hydrologic Region, one of ten hydrologic regions in California. The following sections describe each subbasin in detail.

Santa Clara River Valley East Groundwater Subbasin

The Santa Clara River Valley East Subbasin is bordered to the north by the Piru Mountains and to the south and east by the Santa Susana and San Gabriel Mountains. To the west, the subbasin ends at the impervious rock deposits of the Modelo and Saugus geological formations in the Santa Susana Mountains. Groundwater in the subbasin is encountered in alluvium, terrace deposits, and the underlying Saugus Formation. The alluvium and Saugus Formation represent the two principal aquifers of the subbasin. Alluvium generally underlies the Santa Clara River, with a maximum reported thickness of approximately 240 feet that thins as it spreads laterally from the river bed. The Saugus Formation underlies most of the subbasin and extends as deep as 8,500 feet. Terrace deposits, which are found on the low-lying flanks of area foothills and the upper reaches of tributaries to the Santa Clara River, generally lie above the water table and have limited ability to supply groundwater to wells (DWR 2006).

Groundwater in the alluvial aquifer is primarily recharged by infiltration of runoff waters from the Santa Clara River and its tributaries, followed by percolation of rainfall through the Santa Clara River Valley floor. The Saugus Formation aquifer is generally recharged directly by rainfall or by water that percolates from the alluvial aquifer. Annual average rainfall within the Santa Clara River Valley East Groundwater Basin is 14 to 16 inches per year; however, precipitation in the region is typically characterized by periods of above average rainfall followed by periods of below average rainfall (LACDPW n.d.).

Between 1970 and 2000, groundwater levels in both the alluvial and Saugus Formation aquifers remained relatively stable. During this period, depth to groundwater in the alluvial aquifer ranged from 13 to 37 feet in the western portion of the subbasin, 10 to 50 feet in the central portion of the subbasin, and 15 to 100 feet in the eastern portion of the subbasin (DWR 2006). Groundwater flow follows the course of the Santa Clara River, heading southward and westward.

Between 1990 and 2000, groundwater pumped from the alluvial aquifer averaged 35,000 acre feet per year (af/year), well within the operational yield for a normal year of 30,000 to 40,000 af/year. Between 1991 and 2000, an average of 8,500 af/year was pumped from the Saugus Formation aquifer, well within the operational yield for a normal year of between 7,500 to 15,000 af/year (DWR 2004). In 2001, approximately 68 percent of the groundwater pumped was used for municipal and industrial purposes, while the remaining 32 percent was used for agriculture and other uses.

Groundwater quality in the alluvial aquifer is characterized by calcium sulfate in the western portion of the subbasin and by calcium bicarbonate in the eastern portion of the subbasin. The Saugus Formation aquifer demonstrates groundwater with a calcium bicarbonate character in the southeastern portion of the subbasin, a calcium sulfate character in the central portion of the subbasin, and a sodium bicarbonate character in the western portion of the subbasin. Nitrate content in the subbasin has been measured at high levels (exceeding 45 milligrams per liter [mg/L] in some parts of the subbasin), but tends to be lower in the western portion of the subbasin, where levels of total dissolved solids have been measured at high levels (up to 1,000 mg/L). Ammonium perchlorate and trichloroethylene have been detected in some wells within the eastern portion of the subbasin (DWR 2006).

San Fernando Valley Groundwater Subbasin

The San Fernando Valley Groundwater Subbasin is bounded on the north and northwest by the Santa Susana Mountains, on the north and northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the south by the Santa Monica Mountains, and on the west by the Simi Hills. The principal aquifers in the subbasin include alluvium and the Saugus Formation. The alluvium aquifer is composed of Holocene and Pleistocene age deposits varying in thickness from 100 feet in the north, 400 feet in the east, and about 900 feet in the west near the City of Burbank (DWR 2004). The Saugus Formation is 2,000 to 3,000 feet thick along the eastern and western sides of the subbasin, with a maximum thickness of 6,400 feet in the central part of the subbasin. Groundwater movement within the subbasin is disturbed by various subsurface structures, including several faults, but generally flows from the edges toward the middle of the subbasin. Recharge of the aquifer occurs primarily through infiltration of imported water, runoff at various spreading grounds, and infiltration from period surface flow and rainfall.

The San Fernando Valley Groundwater Subbasin was adjudicated[2] in 1979 by a court decision that applied to the entire watershed. The decision limited the amount of water that may be extracted by owners of land overlying the subbasin. While water levels vary throughout the subbasin, actual groundwater levels remained relatively constant between 1979 and 2004. However, an area of significant drawdown was reported near La Crescenta (approximately 12 miles from the nearest proposed project component); at this location, the 1998 groundwater level was recorded 60 feet below the 1980 level (DWR 2004).

In 1998, total groundwater storage for the subbasin was calculated at 3,049,000 af, with an additional 621,000 af of storage available. A total of approximately 108,500 af of groundwater was extracted from the subbasin from 1997 to 1998 (DWR 2004).

Groundwater quality is primarily characterized as calcium bicarbonate in the eastern part of the subbasin and calcium sulfate-bicarbonate in the western part of the subbasin. Several investigations have determined that groundwater in the basin has been contaminated by volatile organic compounds, including trichloroethylene and perchloroethylene, as well as petroleum compounds, chloroform, nitrate, sulfate, and heavy metals (DWR 2004).

4.9.1.3 Wetlands

Figure 4.4-1 (see Section 4.4, “Biological Resources”) shows the location of wetland features near the proposed project component areas as mapped by the U.S. Fish and Wildlife National Wetlands Inventory

[2] An adjudicated basin is one in which the amount of water that can be extracted has been decided by a court.

(USFWS 2011). The proposed project's Wetland Characterization Report (Appendix E-5) identified five locations where drainages occur in proximity to project components. In addition to these five locations, the road widening at the location of the proposed guardhouse would take place adjacent to a riparian area and wetland. Section 4.4, "Biological Resources," discusses wetland resources in the project component areas.

4.9.1.4 Flood Zones

Two small sections of the current right-of-way (ROW) for the existing 66-kV subtransmission lines south of the Newhall Substation intersect a Federal Emergency Management Agency (FEMA)-designated Flood Hazard Zone (FEMA n.d.). The first segment is approximately 571 feet long and the second segment, located immediately south of the first segment, is approximately 372 feet long. Both segments intersect the same 100-year floodplain, which is associated with the South Fork of the Santa Clara River. This section of the existing subtransmission line, known as the MacNeil–Newhall–San Fernando 66-kV Subtransmission Line, is supported by lattice steel towers (LSTs), which will be replaced with tubular steel poles (TSPs) as part of the proposed project.

4.9.1.5 Water Supply and Usage for the Proposed Project

The Los Angeles Department of Water and Power (LADWP) is updating its 2005 Urban Water Management Plan (UWMP), the preparation of which is required under the California Urban Water Management Planning Act. The UWMP must be updated every five years and includes plans to identify short-term and long-term water resource management measures to meet growing water demands during normal, dry, and multiple-dry years.

The storage field currently purchases potable water from the ~~Los Angeles Department of Water and Power (~~LADWP~~)~~ for various purposes, including domestic water (e.g., showers, toilets, kitchen use, etc.), landscape irrigation, fire protection, foggers for the jet engines, thermal cooling, dust control, industrial cleaning, well drilling, and miscellaneous construction and maintenance activities. The foggers would be eliminated as a result of the proposed project. Water is supplied to the storage field via a metered 4-inch service line with a maximum capacity of 400 gallons per minute. Water is pumped to an onsite storage tank with a capacity of approximately 200,000 gallons. When the tank water level drops to a certain level, the pumps turn on and add additional water to the tank for use at the storage field. No local groundwater, surface water, or reclaimed water is used at the storage field. Currently, the storage field uses approximately 25,000 gallons/month (approximately 0.9 af/year) for operations.

The LADWP would provide water for construction of the proposed project, as well as for future operation.~~Water for construction of the proposed project will be supplied by the LADWP via the existing service line.~~ Approximately ~~11,700,000~~12,212,000 gallons (approximately ~~36~~38 af) of water would be needed for project construction, including 25,000 gallons per month for storage field operations during construction (~~550,000~~600,000 gallons over the ~~22~~24 month construction period), as shown in Table 2-7 (Chapter 2, "Project Description"). Portable restroom facilities would be used during project construction and additional water would be required for grading, dust suppression, and other construction activities.

4.9.2 Regulatory Setting

4.9.2.1 Federal

The Clean Water Act of 1972

The CWA regulates water quality in the United States. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. These waters include all navigable waters, tributaries, and adjacent wetlands. Wetlands and permanent and intermittent drainages, creeks, and streams are generally subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA. By USACE definition, all aquatic or riverine habitats between the "ordinary high water mark" of rivers, creeks, and streams are potentially considered "waters of the United States" and may fall under USACE jurisdiction. Any deposit of fill into waters of the United States, including wetlands, requires the acquisition of a permit from the USACE pursuant to Section 404 of the CWA. Additionally, discharge of pollutants to jurisdictional waters from any point source is unlawful without a National Pollutant Discharge Elimination System (NPDES) permit under Section 402 of the CWA. NPDES permitting is delegated to the LARWQCB. Construction projects may require approval under an NPDES Industrial Storm Water General Permit.

The State Water Resource Control Board (SWRCB) administers the statewide NPDES General Permit for Discharges of Storm Water Associated with Construction Activity (General Construction Activity NPDES Storm Water Permit, 2009-0009-DWQ and 2010-0014-DWQ) that covers a variety of construction activities that could result in wastewater discharges. Under this General Permit the state issues a project-level construction permit for projects that disturb more than one acre of land. The SWRCB General Construction Storm Water Permit process involves the notification of the construction activity by providing a Notice of Intent to the SWRCB, the development of a storm water pollution prevention plan (SWPPP), and the implementation of water quality monitoring activities as required.

Safe Drinking Water Act

The Safe Drinking Water Act (42 U.S.C. §300[f] et seq. [1974]) was originally passed by Congress in 1974 to protect public health by regulating the nation's public drinking water supply. The law was amended in 1986 and 1996 and requires many actions to protect drinking water and its sources, which includes rivers, lakes, reservoirs, springs, and groundwater wells. This act authorizes the U.S. Environmental Protection Agency (EPA) to set national health-based standards for drinking water to protect against both naturally occurring and human-caused contaminants that may be found in drinking water. The act also mandates a Groundwater/Wellhead Protection Program be developed by each state in order to protect groundwater resources that serve as a source for public drinking water.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is administered by FEMA, an agency within the Department of Homeland Security. The NFIP is a federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. Participation in the NFIP is based on an agreement between local communities and the federal government, which states that if a community adopts and enforces a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, the federal government will make flood insurance available within the community as a financial protection against flood losses.

In support of the NFIP, FEMA identifies flood hazard areas throughout the United States and its territories by producing Flood Hazard Boundary Maps, Flood Insurance Rate Maps, and Flood Boundary and Floodway Maps. Several areas of flood hazards are commonly identified on these maps. One of these areas is a Special Flood Hazard Area; this term designates any area with a one percent chance of being inundated by a flood in any given year (also referred to as the base flood).

4.9.2.2 State

State water quality standards allow water bodies to be managed by establishing goals based on (1) designated uses of the water, (2) criteria set to protect human and aquatic organism health, and (3) anti-degradation requirements to prevent current water quality from deteriorating. Waters listed as "impaired" do not fully support their designated uses. Section 305(b) of the CWA requires states to submit water quality reports to the EPA every two years that provide a statewide assessment of all waters. Section 303(d) requires states to provide a list of impaired waters only, identifying possible pollutants and prioritizing those waters for further pollution controls.

Porter–Cologne Water Quality Control Act (Porter–Cologne Act)

The Porter–Cologne Act (Cal. Water Code, Division 7), passed in 1969, regulates surface water and groundwater quality in the state and also assigns responsibility for implementing CWA Sections 401 (Water Quality Certification), 402 (NPDES), 303(d) (List of Impaired Water Bodies), and 305(b) (Report on the Quality of Waters in California) to the SWRCB, which has delegated the authority to the nine Regional Water Quality Control Boards (RWQCBs). The proposed project is within the jurisdiction of the LARWQCB. The SWRCB and RWQCBs have the responsibility of issuing permits for certain point source discharges and for regulating construction and storm water runoff.

The SWRCB and RWQCBs are responsible for developing and implementing regional basin plans to regulate all pollutants or nuisance discharges that may affect either surface water or groundwater. Basin plans are prepared by the RWQCBs to establish water quality standards for both surface and groundwater bodies within their respective jurisdictions. Basin plans designate beneficial uses for surface and groundwater, set narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses, and describe implementation programs to protect all waters in the region. Under Section 303(d) of the CWA, the RWQCB develops a list of impaired water bodies in which water quality is impeding the attainment of beneficial uses. The LARWQCB's Water Quality Control Plan represents the basin plan for the coastal watersheds of Ventura and Los Angeles Counties.

The RWQCBs regulate discharge~~s~~ to waters within their respective jurisdictions through administration of NPDES permits, waste discharge requirements, and CWA Section 401 water quality certifications. RWQCBs administer Section 401 water quality certifications to ensure that projects with federal 404 permits do not violate state water quality standards. The SWRCB has jurisdiction over depositing fill or dredging in "State Only Waters" and issues Waste Discharge Requirements for these projects. Construction projects may require RWQCB approval of a 401 water quality certification, as well as Waste Discharge Requirements and/or a Low Threat Discharge Permit covering construction activities related to discharges from hydrostatic pipeline testing and construction dewatering.

California Fish and Game Code Section 1601

The California Department of Fish and ~~Game~~Wildlife (~~CDFG~~CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To achieve these ends, Section 1601 of the California Fish and Game Code requires an entity to notify the ~~CDFG~~CDFW of any proposed activity that may substantially modify a river, stream, or lake, including ephemeral streams, desert washes, and watercourses with a subsurface flow. If the ~~CDFG~~CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement between the entity proposing the activity and the ~~CDFG~~CDFW is required.

4.9.2.3 Local

The following local regulations and policies addressing hydrology and water quality are applicable to the proposed project.

Los Angeles County Department of Public Works~~Water and Power~~

A grading permit is required by the ~~LACDWP~~LACDPW for proposed projects that would result in the excavation or fill of more than 50 cubic yards of soil, per Title 26, Chapter 33, of the Los Angeles County

Code. The county requires that the grading plan prepared for the permit include a provision that drainage or other protective structures that could be affected by construction be maintained in good condition and an inspection program be implemented. The ~~LACDWP~~LACDPW review process for the grading permit could require hydrologic evaluation and drainage designs (~~LACDWP~~LACDPW 2009b). If the Los Angeles County Flood Control District ROW is affected, all work is required to conform to the applicable flood control permit.

If grading authorized by the permit is anticipated to extend into or through the rainy season (November 1 to April 15 of the following year), separate updated Erosion Control Plans must also be submitted to the ~~LACDWP~~LACDPW prior to October 1, per Section 3319.3 of the County of Los Angeles Building Code. Per Title 62, Section 7010, of the Los Angeles County Code, the Erosion Control Plans must include SWPPP requirements.

~~LACDWP is updating its 2005 Urban Water Management Plan (UWMP), the preparation of which is required under the California Urban Water Management Planning Act. The UWMP must be updated every five years and include plans to identify short-term and long-term water resource management measures to meet growing water demands during normal, dry, and multiple-dry years. The LADWP currently supplies water to the existing storage field, and it is anticipated that the LADWP would provide water for construction of the proposed project, as well as for future operation.~~

4.9.3 Methodology and Significance Criteria

The significance criteria for assessing the impacts on hydrology and water quality come from the California Environmental Quality Act (CEQA) Guidelines Appendix G Environmental Checklist (CEQA Checklist). According to the CEQA Checklist, a project causes a potentially significant impact if it would:

a) Violate any water quality standards or waste discharge requirements;

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or a substantial increase in the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

e) Create or contribute to runoff water, which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;

f) Otherwise substantially degrade water quality;

g) Place within a 100-year flood hazard area structures which would impede or redirect flood flows;

h) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or

i) Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow.

The potential impacts on water quality and hydrology from the construction and operation of the proposed project were evaluated using the stated CEQA significance criteria and are presented in this section.

Appendix G of the CEQA Guidelines also includes the following checklist item:

- Place housing within a 100-year floodplain, as mapped on a Federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.

Housing is not included as part of the proposed project. Therefore, the project would have no impacts associated with the placement of housing within a 100-year floodplain, and this item is not applied as a criterion in the analysis of environmental impacts presented in the following section.

4.9.4 Environmental Impacts and Mitigation Measures

Project construction activities that would take place in the storage field area (including construction laydown and staging) would include site preparation activities such as grading and soil excavation, hydrostatic testing, and potentially construction dewatering. The proposed Central Compressor Station site is located on hillside terrain previously disturbed by development; approximately 100,000 cubic yards of soil and other materials would be excavated from this site during construction and hauled to the Excess Excavated Soils Area on the storage field site. Approximately 50,000 cubic yards of fill from the Excess Excavated Soil Area would be returned to the Central Compressor Station site to complete grading and compaction. Areas at the Natural Substation site would also be excavated; the maximum depth of this excavation would be 20 feet. All of the areas of the project components on the storage field site would be graded prior to construction. Grading at the Natural Substation site would incorporate spill prevention control and countermeasure (SPCC) plan requirements; these typically include curbs and berms designed and installed to contain spills.

For the SCE project elements, construction laydown areas may require some grading, and wire pull, splicing, and tensioning locations would generally be located on existing level areas and existing roads to minimize the need for grading and cleanup.

Existing and proposed discharge and suction pipelines at the storage field that are modified or constructed as part of the proposed project would be hydrostatically tested, using approximately 25,000 gallons of water to fill the pipelines with water to identify any leaks. After testing, the hydrostatic test water would be collected and used for dust control and irrigation or disposed of pursuant to the applicant's Water Quality Construction Best Management Practices Handbook (Sempra Energy Utilities 2002).

As discussed in Section 4.13, Public Services and Utilities, water and crude oil are removed from the withdrawal gas stream in various field separators and slug catchers at the storage field.~~, and w~~Water then flows to a water injection plant, where it flows through a wash tank and residual oil is removed. After flowing to the wash tank, the water flows into a surge tank to the injection pumps, where it is pumped into one of the six flood wells or two disposal wells at the storage field according to procedures approved by the EPA. The proposed project would not discharge concentrated wastewater or large volumes of wastewater to a wastewater treatment facility, exceeding treatment requirements set forth by the LARWQCB. Therefore, this existing storage field operational activity is not discussed below.

4.9.4.1 Applicant Proposed Measures

Per the requirements of the General Construction Activity NPDES Storm Water Permit, the applicant and SCE will prepare SWPPPs to address storm water drainage and water quality during project construction. In addition, because the volumes of oil within the electrical equipment operating within the proposed Natural Substation and the proposed Central Compressor Station is expected to be greater than 1,320 gallons, SPCC plans would be prepared for operation of the substation and the new compressors. Further, prior to project construction, the applicant will prepare updates of the existing SWPPP and SPCC plans developed for operation of the storage field, and will notify the LARWQCB of the updates. The project construction and operation SWPPPs would establish procedures and methods preventing and mitigating storm water runoff from impacting local water quality during construction. The SPCC plans would include spill prevention training of personnel and maintenance of spill cleanup equipment on hand, and would also contain a number of specific measures including secondary containment, physical storm water controls, and operational controls such as oil handling procedures and employee training, designed to prevent oil releases.

Plans that have been or will be prepared by the applicant and/or SCE that will include measures addressing hydrology and water quality in the proposed project area include the following:

- Compressor Maintenance Plan (operations);
- Hazardous Materials Business Plans (construction and operations);
- Grading and Drainage Plan (construction);
- Storm Water Pollution Prevention Plans (construction and operations);
- Spill Prevention Control and Countermeasure Plans (construction and operations); and
- ~~Hydrostatic Test Water Management Plan (construction)~~.

The applicant has also committed to the following applicant proposed measures (APMs) as part of the design of the proposed project. See Section 2.5, "Plans and Applicant Proposed Measures," Table 2-9~~8~~, for a full description of each APM.

Air Quality
- **APM AQ-3: Minimization of Disturbed Areas.**
- **APM AQ-4: Watering Prior to Grading and Excavation.**
- **APM AQ-6: Fugitive Dust from High Winds.**

Biological Resources
- **APM BR-3: Post-construction Restoration for Reconductoring.**

Geology, Soils, and Mineral Resources
- **APM GE-1: Geotechnical Studies.**
- ~~**APM GE-2: Seismic-resistant Design Measures.**~~
- **APM GE-2~~3~~: Erosion and Sediment Control.**

Hazards and Hazardous Materials
- **APM HZ-3: Hazardous Materials Spill and Release Prevention.**
- **APM HZ-4: Contaminated Soil Disposal.**
- **APM HZ-5: Hazardous Materials Use and Storage and Hazardous Waste.**

Public Services and Utilities
- **APM PS-1: Site Cleanup.**
- **APM PS-2: Nonhazardous Waste Management.**

4.9.4.2 Impacts Analysis

Impact HY-1: Violate water quality standards or waste discharge requirements.
LESS THAN SIGNIFICANT

In the proposed project area, storm water generally flows over relatively steep grades into canyon drainages and flood control channels, eventually discharging into the Los Angeles River to the south, the Santa Clara River to the north, or Calleguas Creek to the west. Though some drainages within the proposed project area are listed as impaired under Section 303(d) of the CWA, none are listed as impaired due to sediment.

Construction of the proposed project entails land disturbance and excavation that could result in the release of sediment into storm water runoff. Additionally, the construction machinery that would be used would require the storage and use of diesel fuel, lubrication oil, hydraulic fluids, and antifreeze. The potential discharge of these materials could adversely impact downstream water quality.

To comply with the CWA NPDES regulations, the applicant and SCE would apply for coverage under the General Construction Activity NPDES Storm Water Permit and other NPDES permits, as necessary, to address construction activities such as discharge and construction dewatering. The General Construction Activity NPDES Storm Water Permit requires the development and implementation of a SWPPP, which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting storm water with the intent of keeping all products of erosion from moving offsite into receiving waters. The SWPPPs for the project components would include site-specific BMPs, based on the applicant’s or SCE’s BMP Manual, to limit or eliminate sediment or other pollutant discharges from each construction activity location. The SWPPP for the SCE project components would address impacts related to road modifications and the establishment of staging areas.

The BMPs would take into account the existing drainage controls at the storage field and would include erosion and sediment control BMPs and as well as material management BMPs such as hazardous materials (including fuel) handling procedures. BMPs that could be employed ~~could~~ include:

- Temporary earth dikes and drainage swales to divert runoff water to desired locations;
- Velocity dissipation devices such as rock, grouted rip-rap or concrete rubble that prevent scour caused by concentrated storm water flows;
- Slope drain pipes used to intercept and direct surface runoff into a stabilized watercourse, trapping device or stabilized area;
- Silt fences, fiber rolls, sand bag or straw bale barriers, straw mulching, straw wattles, or fiber rolls that temporarily detain storm water particles;
- Gravel bag berms or check dams that temporarily detain storm water and filter sediment particles, using secondary containments for materials storage areas, and clearance of ditches of debris and drain boxes; and
- Clearance and management of vegetation on the site, and inlet and outlet protection.

The storage field is also currently covered under a NPDES Industrial Storm Water General Permit and has implemented the required SWPPP and monitoring plan. However, proposed storage field components included as part of the proposed project would need to be incorporated into these existing plans to address any potential for release of pollutants to storm water. Implementation of the SWPPP would minimize the potential for hazardous materials releases during Central Compressor Station operation that could affect water quality.

The applicant would also prepare and submit drainage plans to Los Angeles County for review and approval.

Implementation of construction permits and the project APMs listed above, as well as construction SWPPPs, SPCC plans, and BMPs would reduce potentially significant impacts associated with construction-related erosion, sedimentation, and introduction of hazardous materials or toxic substances. Therefore, impacts under this criterion would be less than significant.

Impact HY-2: Substantial depletion of groundwater supplies or substantial interference with groundwater recharge.
LESS THAN SIGNIFICANT

Construction and operational water would be supplied by LADWP, which imports surface water from northern California and other areas. Local groundwater would not be used for water supply purposes. Therefore, water demands related to the proposed project would not affect the local aquifer and any impact would be less than significant.

Shallow groundwater may be encountered during excavation and drilling activities in the proposed project area. Excavation for building foundations, drilling boreholes for the installation of TSPs along the reconductoring route, and excavation for the below grade section of the Plant Power Line may be required. During these activities, dewatering may be needed to remove water from the excavations. Because project components would disturb greater than one acre, the applicant and SCE would apply for coverage of construction activities under the General Construction Activity NPDES Storm Water Permit. As appropriate under this permit (which would cover dewatering activities), the applicant and SCE would discharge excavation dewatering volumes subject to a determination of suitable quality consistent with the testing requirements in the permit, and discharges to waterways would be conducted in compliance with all NPDES- and other LARWQCB-required approvals.

If water is encountered during drilling for TSP foundations, the applicant or SCE would evaluate the stability of the soil strata. If the strata are stable, the applicant or SCE would continue drilling, set a rebar cage, and fill the hole with concrete. If the applicant determines the strata are unstable, the applicant or SCE would use drilling mud, a mixture of clay (usually bentonite) and water, to fill the hole to above the water level. Any displaced water would be allowed to run off, provided no contaminants are found (consistent with the testing requirements in the NPDES permit). The applicant or SCE would vacuum the drilling mud into a vacuum truck from within the excavated hole and properly dispose of the mud. Any excavated 2-sack concrete slurry would be hauled away and disposed of properly.

It is expected that the construction techniques for the installation of the TSPs could require either minor dewatering for rebar and concrete placement or placement of these materials in the wet soil. If minor dewatering should occur, it would be for a short period of time and would not affect groundwater levels in the region. The quantity of groundwater that may be intercepted would be minimal. Any water removed during construction would be discharged in a manner consistent with applicable permits or collected and transferred to appropriate disposal facilities offsite.

The proposed project would add 3.5 acres of impervious surface area to the storage field, an area that is less than one percent of the total proposed area of the project components in the storage field. Based on storm water hydrology modeling curves included in the LACDPW Hydrology Manual, assuming an undeveloped area runoff coefficient for the storage field site of 0.7 and an overall increase in impervious surface area of up to 5 percent of the total area of these project components, the developed area runoff coefficient would be 0.71 [(0.9 x 0.05) + (1-0.05) x 0.7], or an increase in the runoff coefficient change of 0.01 resulting from the addition of impervious surface. This would be considered a very minor increase (LACDPW 2006); therefore, the proposed project would be highly unlikely to interfere with groundwater recharge to a degree sufficient to result in a net deficit in aquifer volume or a lowering of the groundwater table.

Impact HY-3: Substantial alteration of the existing drainage pattern of the site or area.
LESS THAN SIGNIFICANT

The pervious nature of a substance refers to the degree to which liquid may pass through it; impervious surfaces prevent infiltration of rainfall and groundwater recharge. Storm water flows across impervious surfaces without infiltrating or percolating into the ground, resulting in potential impacts related to erosion and increased downstream sedimentation.

The proposed project would permanently disturb approximately 23~~2~~ acres and, as shown in Table 4.9-2, would create approximately 3.5 acres of new impervious surfaces. All new impervious surfaces would be located in the Limekiln Canyon drainage, which has an area of approximately 1,061 acres (LACDPW 2008). The proposed project components would result in the disturbance of 0.5 percent of the total area of this drainage.

Construction of the proposed Central Compressor Station would result in the permanent disturbance of approximately 1.4 acres due to project grading and construction. Final construction design would include plans to ensure appropriate treatment and drainage of surface and subsurface water as well as measures to ensure the stability of the slopes after construction. Subsurface drains would be installed at the bottom of the existing canyon areas, with outlets at the downstream end of the Central Compressor Station site. Back drains could also be required on the north side of the Central Compressor Station site for use in conjunction with the subsurface drains. Underground drains could also be required around the turbine foundations to intercept groundwater. Drains would likely be designed to discharge to Limekiln Canyon Creek, adjacent to the Central Compressor Station site to the southwest.

The proposed Natural Substation would be located on a ridge in an area immediately adjacent to the existing 66-kV subtransmission line. The footprint in which the substation would be constructed has a relatively low slope; in addition, areas at higher elevation than the substation area are small, and volumes of water that would drain onto the substation area would likewise be minor. In addition, the substation area is not situated within an existing stream, river, or other surface water feature. Construction of the substation would require excavation and fill to construct a level pad and would disturb approximately one acre. Grading activities may alter the drainage pattern of the area of the Natural Substation's footprint. Overall drainage for the Limekiln Canyon drainage would not be affected, because the footprint for the Natural Substation is very small in relation to the overall area of the drainage, and because final construction design for the substation would include appropriate drainage features.

The proposed 66-kV subtransmission line modifications could~~would not~~ require extensive grading or surface alteration around the TSP sites or along public roads; however, ~~but,because~~ construction would occur within existing transmission routes and primarily within disturbed areas. It is anticipated that up to 78 TSPs would be installed, and each would require less than 0.10 acres of grading. Reengineering of the access road between 66-kV towers 27 and 28 (see Figure 2-12 in Chapter 2, "Project Description") would require the fill and insertion of a culvert in the bottom of an unnamed seasonal wash. However, this action would occur in an already disturbed area within an existing road way. While insertion of the culvert could still result in temporary construction-related impacts to the drainage pattern of the wash, the implementation of MM BR-5 (see Section 4.3, "Biological Resources") would minimize construction-related impacts to the drainage pattern of the wash. Potential impacts arising from erosion and sedimentation would be reduced to a less-than-significant level with implementation of the project SWPPPs and APM AQ-3, APM BR-3, and APM GE-~~3~~2.

The proposed Telecommunications Routes #2, #3, and #4~~3~~ would ~~likewise~~ not require extensive grading or surface alteration. Some telecommunications support structures may be replaced during construction, but structures would be replaced at a ratio of 1:1, resulting in no net increase in impervious surfaces (with the exception of one additional wood telecommunications pole that would be installed along the alignment for Telecommunications Route #4, which would represent only a very minor increase in impervious surface). Potential impacts arising from erosion and sedimentation would be reduced to a less-than-significant level with implementation of the proposed project SWPPPs and APM AQ-3, APM BR-3, and APM GE-~~3~~2.

The LACDPW review process for the proposed project grading permit would include hydrologic evaluation and drainage designs adequate to address storm water runoff (LACDPW 2009b). The applicant would consult with the county to determine the type of storm water mitigation measures required to be incorporated into the design of the proposed project. The Development Planning for Stormwater Management – A Manual for the Standard Urban Stormwater Mitigation Plan, dated September 2002, prepared by the LACDPW, would be used as appropriate for the design of BMPs to meet these standards. The proposed project would also comply with existing regulations for storm water control as required by the County of Los Angeles Ordinance 22.52.2210 and the General Construction Activity NPDES Storm Water Permit. The NPDES permit would require the development of a SWPPP and implementation of BMPs that would avoid or minimize sediment erosion.

Implementation of the BMPs under the SWPPP, along with MM BR-5, APM AQ-3, and APM GE-~~3~~2 would reduce any potential impacts associated with substantial erosion or siltation to less than significant.

Impact HY-4: **Substantial alteration of the existing drainage pattern or rate or amount of surface runoff in a manner which would result in flooding.**
LESS THAN SIGNIFICANT

Impervious surfaces created by the proposed project would total less than 0.5 percent of the total area of the Limekiln Canyon drainage. In addition, project elements would be designed with appropriate features to direct and treat storm water flow. Accordingly, the proposed project would not substantially increase surface water runoff during rain events in this watershed and would not increase the potential for flooding, onsite or offsite. Additionally, none of the new impervious surfaces are located within FEMA flood zones. Therefore, the proposed project would not substantially alter the existing drainage patterns of the Limekiln Canyon drainage and any potential impacts associated with surface runoff and flood risk would be less than significant.

Impact HY-5: **Create or contribute to runoff water exceeding the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff.**
LESS THAN SIGNIFICANT

The proposed project would result in the addition of approximately 3.5 acres of impervious surface area. However, new impervious area would represent less than 0.5 percent of the drainage area of Limekiln Canyon and would not be located within a FEMA designated flood zone. The implementation of the SWPPP would support the avoidance or minimization of polluted runoff during construction, and the implementation of the SPCC plans would support the avoidance or minimization of polluted runoff during operation. Any impact would be less than significant.

Impact HY-6: Other substantial degradation of water quality.
LESS THAN SIGNIFICANT

During construction of the proposed project, potential pollutants that could be released would include oil, gasoline and diesel motor fuel, industrial solvents, and other chemicals necessary for project construction. Operation of the proposed project could also result in the release of pollutants that could degrade water quality. For example, the transformers to be used in the proposed Natural Substation would contain up to 6,740 gallons of mineral oil that if spilled, would have the potential to severely degrade water quality. However, as discussed above, the applicant will implement a SWPPP that would include BMPs to help prevent any construction-related pollutants from discharging into storm water and degrading water quality. In addition, the applicant will implement a SPCC plan that would include measures to address any potential release of pollutants associated with project operations. Implementation of the SWPPP and the SPCC plans would reduce the potential for impacts on water quality associated with both project construction and operations to a less-than-significant level.

Impact HY-7: Project structures would impede or redirect flood flows within a 100-year flood hazard area.
LESS THAN SIGNIFICANT

The only component of the proposed project located within a FEMA designated 100-year floodplain is an approximate 2,000 foot segment of the existing 66-kV subtransmission lines south of the Newhall Substation. The existing 66-kV subtransmission lines are supported by towers, which are to be replaced with engineered TSPs. The lines would also be reconductored. The existing LSTs have four legs with connecting cross beams located at the base of each tower, while TSPs are single steel poles. LSTs are more likely to catch and retain debris during a flood event than TSPs, resulting in an impediment to or redirection of flood flows. Replacement of the LSTs with TSPs would reduce the potential for an impediment to or redirection of flood flows, and any potential impacts would be less than significant.

Impact HY-8: Risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow.
LESS THAN SIGNIFICANT

A seiche is a standing wave of water on a river, lake, pond, gulf, or bay caused by an earthquake. Similarly, a tsunami, or tidal wave is a wave of water on the ocean caused by an undersea earthquake. The proposed project is not located downstream of any water body that could generate a seiche in the event of an earthquake. In addition, the proposed project is located approximately 14 miles north of the Pacific Ocean, and the elevation of project components ranges from approximately 1,050 to more than 1,800 feet above mean sea level. These locations are reasonably beyond the impact of a tsunami. Accordingly, the proposed project would not expose people or structures to a significant risk of loss, injury, or death by seiche or tsunami.

A mudflow is a downhill movement of soft, wet earth and debris caused by a rapid and heavy accumulation of rain or snowmelt in areas subject to potential for landslides. <u>Ground disturbing activities could change natural runoff patterns, thereby affecting volume and flow of surface and subsurface waters which could result in a mudflow.</u>~~As discussed in Section 4.6, "Geology, Soils, and Mineral Resources," the proposed project is located within areas with earthquake-induced landslide potential.~~ The applicant would employ APM GE-1, which involves the completion of geotechnical studies, prior to construction of the proposed Natural Substation (geotechnical studies have been completed for the Central Compressor Station) and would employ measures recommended in the geotechnical studies during construction to address potential impacts related to geological instability. <u>APM GE-2 would require the applicant to</u>

implement erosion and sediment control measures, which would reduce the amount of soil disturbed by the proposed project. Additionally, the applicant would implement the project-specific SWPPP, which would further reduce the potential for mudflows in these areas by reducing impacts to natural runoff patterns. ~~In addition, the applicant would employ APM GE-2, ensuring that the final design of the proposed project, (including the proposed 66-kV subtransmission line modifications), would incorporate seismic-resistant design measures and be geotechnically appropriate for the setting of proposed project.~~ Project components would meet applicable state seismic safety standards, including special foundation design, additional bracing, and structure support. Therefore, any potential impacts would be less than significant.

Impact HY-~~10~~9: Risk of loss, injury or death involving flooding.
LESS THAN SIGNIFICANT

No levees, dams, or waterbodies are located upstream of the proposed project that would result in the risk of loss of structures or injury or death to people. A small portion of the existing 66-kV subtransmission line route located south of the Newhall Station is within a FEMA-designated 100-year flood hazard zone. The existing LSTs that currently support the transmission line in this area would be replaced with TSPs (see Figure 2-8 in Chapter 2, "Project Description"). TSPs have a smaller footprint than LSTs and are less likely to result in an accumulation of debris due to a flood event that could lead to a redirection of flood flows that may result in the potential to expose people or structures to a significant risk. Accordingly, any potential impact would be less than significant.

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4.10 Land Use and Planning

This section describes the environmental and regulatory settings and discusses potential impacts associated with the construction and operation of the proposed project with respect to land use and planning.

4.10.1 Environmental Setting

For the purposes of evaluating land use and planning impacts in the project component areas, the project will be referred to in this section by the project components as described in Chapter 2, "Project Description." In some cases, the following project components, located at the Aliso Canyon Natural Gas Storage Field (storage field), are also all treated here as one project area or element and are referred to as the "storage field" or "storage field components":

- The existing compressor station and office facilities;
- The site of the proposed Central Compressor Station and office relocation;
- The site of the proposed guardhouse relocation;
- Construction staging areas;
- Soil mixing area;
- Access roads; and
- The 12-kV Plant Power Line.

The proposed project components are generally located in the Santa Susana Mountains, Santa Clarita Valley, and San Fernando Valley regions of northern Los Angeles County and southeastern Ventura County. The proposed project would cross portions of unincorporated Los Angeles County (Santa Clarita Valley Planning Area), the City of Santa Clarita (community of Newhall), the City of Los Angeles (communities of Chatsworth, Porter Ranch, Granada Hills, Mission Hills, and Sylmar), the City of San Fernando, portions of unincorporated Ventura County, and the City of Simi Valley. The proposed project would cross a variety of land uses, including rural, agricultural, residential, commercial, landfill, open space, parkland, rail lines, and major roads and highways.

Open Space Preserves, Parks, and Significant Ecological Areas

Figure 4.10-1 shows open space areas, parks, and Significant Ecological Areas (SEAs) in the vicinity of the proposed project components. Per the Los Angeles County General Plan, an SEA designation is given to "ecologically important or fragile" land or water areas valuable as plant and animal communities in the County (Los Angeles County 1980). Portions of Segment C of the 66-kilovolt (kV) subtransmission line and Telecommunications Route #1 (Mile Post 5 to Mile Post 7) parallel the border between the City and County of Los Angeles. This border coincides with the boundary between Michael D. Antonovich Open Space and O'Melveny Park. The Michael D. Antonovich Open Space is an open space preserve that was dedicated in the Santa Clarita Woodlands Park by the Santa Monica Mountains Conservancy and the Mountains Recreation and Conservation Authority. These open space and park lands are located within a county-designated SEA, known as SEA 20, Santa Susana Mountains (Los Angeles County 2009~~a~~). This SEA has been identified as a biologically significant area for wildlife movement between the Santa Monica and San Gabriel Mountains. The 66-kV subtransmission line and Telecommunications Route #1 route would cross approximately 0.85 miles of this SEA.

A small portion of Segment C of the 66-kV subtransmission line and Telecommunications Route #1 is located within the Granada Hills–Knollwood Community Plan area in the City of Los Angeles and includes the eastern portion of the storage field site. Although this area is designated Open Space in the Community Plan, public access within the storage field is prohibited (City of Los Angeles 2007a). Section 4.4, “Biological Resources,” includes a discussion about sensitive habitats in the areas of the proposed project components, including the SEAs, and Section 4.14, “Recreation,” includes a discussion of parks in the areas of the proposed project components.

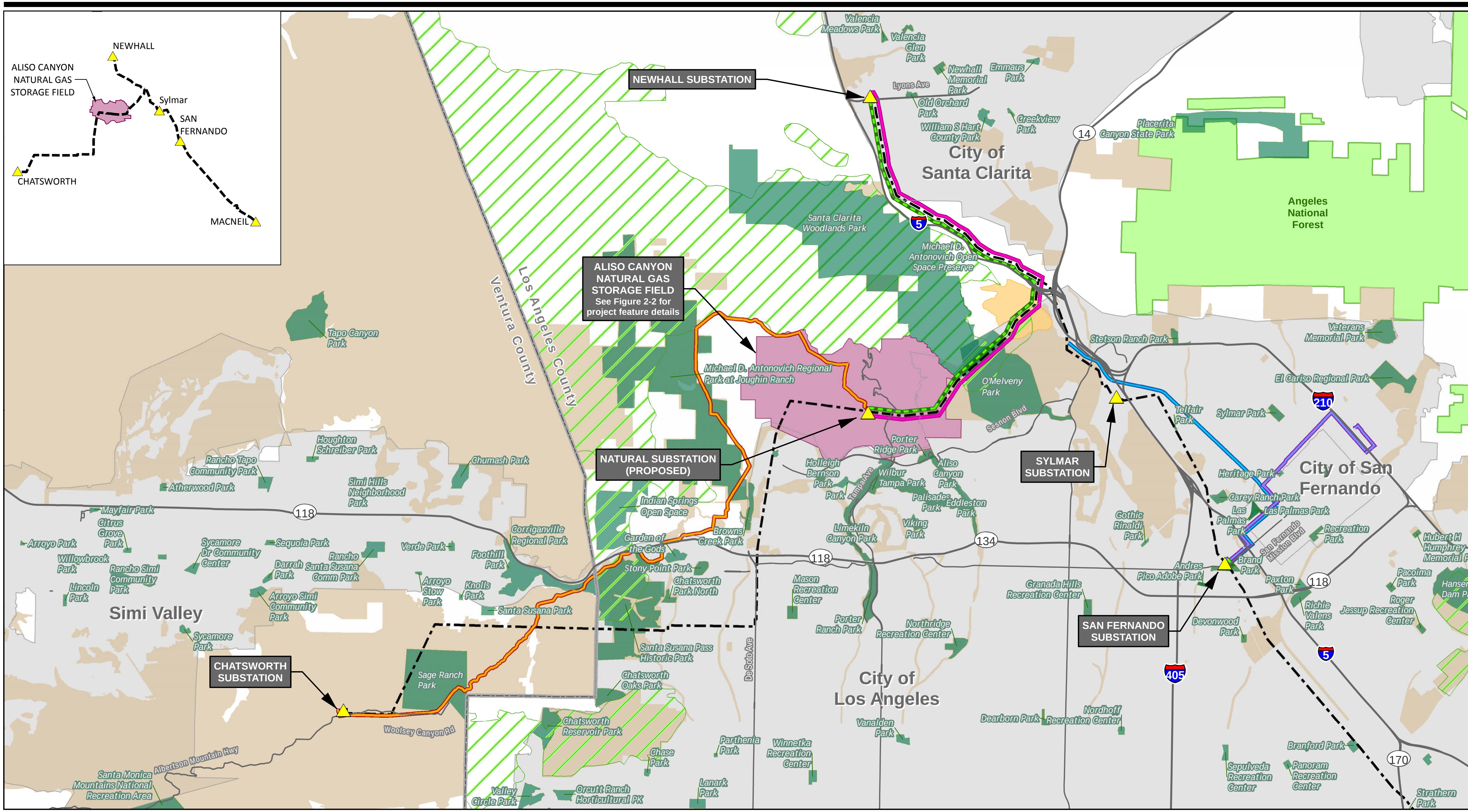
Telecommunications Route #2 would extend 15.3 miles from the Chatsworth Substation, northeast to the proposed Natural Substation. The fiber optic cable along this route would primarily be installed overhead on existing poles as well as within existing and new underground conduit. The telecommunications route crosses above or below several areas of open space and several parks, including Sage Ranch Park in unincorporated Ventura County; Corriganville Regional Park in the City of Simi Valley; Santa Susana State Historical Park and Brown’s Creek Park in the City of Los Angeles; and Michael D. Antonovich Regional Park at Joughin Ranch in unincorporated Los Angeles County. A portion of the City of Los Angeles, located contiguous with the Ventura County line and within Santa Susana State Historic Park, has been designated as SEA 21, Santa Susana Pass, by Los Angeles County (Los Angeles County 2009~~a~~). Telecommunications Route #2 would cross approximately 0.73 miles of this SEA.

Telecommunications Route #3 would be located near Brand Park, Carey Ranch Park, Layne Park, Las Palmas Park, Heritage Park, Glen Oaks Park, Pioneer Park, El Cariso Golf Course, and El Cariso Regional Park. Telecommunications Route #4 would be located near Brand Park, Carey Ranch Park, Layne Park, Las Palmas Park, and Telfair Park.

Sunshine Canyon Landfill

Segment C of the 66-kV subtransmission line and Telecommunication Route #1 would cross the Sunshine Canyon Landfill. The landfill is bisected by the border between the City of Los Angeles and unincorporated Los Angeles County. The southern half of the landfill is located in the community of Sylmar, within the City of Los Angeles, and is designated as Open Space in the City’s General Plan and zoned for Agricultural (A1) and Industrial Uses (M3). The county side of the landfill is designated for Public Facilities in the county’s General Plan and zoned for Heavy Agricultural Use (A-2).[1] An expansion of the landfill is planned to accommodate ongoing landfill operations in the area. An expansion of the Sunshine Canyon Landfill requires relocation of a section of SCE’s Chatsworth–MacNeil–Newhall–San Fernando 66-kV Subtransmission Line that crosses the Sunshine Canyon Landfill. The subtransmission line would be relocated from the current alignment within the landfill to a location that runs along the outer perimeter of the disturbed area of the landfill, within the County of Los Angeles. SCE has filed a “Permit to Construct” application (application number A.12-11-007) with the CPUC (which the CPUC is evaluating pursuant to CEQA separate from this EIR) for the relocation of all or a portion of the subtransmission line segment across the Sunshine Canyon Landfill. ~~Expansion will require relocation of the 66-kV subtransmission line, which may be analyzed in a separate “Permit to Construct” application that Southern California Edison (SCE) will submit to the California Public Utilities Commission (CPUC). The landfill expansion is not part of the proposed project.~~

[1] Under Case No. ZA 17804 (Zone Variance [ZV]) approved April 16, 1996, the site was granted a ZV to permit the continued operation of the landfill facilities based upon certain terms and conditions. Condition 14 of the ZV required that upon completion of the site’s operation as a landfill facility, the owners shall advise the City and County Recreation and Parks Department that the property is available for recreational purposes (City of Los Angeles 2007b).



SOURCES: City of Los Angeles 2001, 2011, City of San Fernando 2011, City of Santa Clarita 2011, ESRI 2011, Los Angeles County GIS 2012, Simi Valley 2007, SoCalGas 2009 to 2012, Ventura County 2011

- 66-kV Subtransmission Line Reconductoring Route (Proposed)
- Telecommunications Route #1
- Telecommunications Route #2
- Telecommunications Route #3
- Telecommunications Route #4
- Existing 66-kV Subtransmission Line Route
- Substation
- Aliso Canyon Storage Field Boundary
- Parks
- Sunshine Canyon Landfill
- Open Space
- Significant Ecological Areas
- National Forest

N

0 2 Miles

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

Figure 4.10-1

Significant Ecological Areas, Parks and Open Space

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Highways, Railroads, and Metrolink Lines

Segments A and B of the 66-kV subtransmission line and Telecommunication Route #1 would run parallel to the eastern side of Interstate 5 (I-5) south from the Newhall Substation to Tap Point A near the I-5/State Route (SR) 14 junction. Segment C of the 66-kV subtransmission line and Telecommunications Route #1 would cross I-5 from the Chatsworth Tap (Tap Point A) and proceed west across I-5 to the proposed Natural Substation in the center of the storage field.

Telecommunications Route #3 would cross the Martin A. Match Freeway (State Route 210 [SR-210]) in the City of Los Angeles, and travel west through the City of San Fernando before crossing back into the City of Los Angeles and crossing I-5 to reach the San Fernando Substation. Telecommunications Route #3 would cross the Antelope Valley Metrolink rail line approximately 0.5 miles south of the San Fernando/Sylmar station. The Antelope Valley Metrolink line provides commuter rail service to the San Fernando, Santa Clarita, and Antelope Valleys.

Telecommunications Route #4 would also cross SR-210 and travel west through the City of San Fernando. The route then traverses northwest along the Antelope Valley Metrolink rail line route for approximately 3 miles and parallels I-5 for one mile.

Telecommunications Route #2 would travel northeast from the Chatsworth Substation in unincorporated Ventura County, cross into the City of Simi Valley, travel parallel to the Ronald Reagan Freeway (SR-118) and eastward into the City of Los Angeles before crossing SR-118 northward into unincorporated Los Angeles County to the proposed Natural Substation. The route would also cross a railroad right-of-way (ROW) above a rail tunnel. This rail line supports Amtrak service as well as the Ventura County Metrolink line, which provides commuter rail service from Ventura County to Los Angeles.

Airports

Table 4.10-1 lists the airports in Los Angeles and Ventura Counties, their locations, their operating status, and their distance from the storage field and the closest project component. There are 13 public use and two military airport facilities in Los Angeles County (Los Angeles County ALUC 2004). The closest airport to the proposed project area is Whiteman Airport, located approximately 3 miles from the San Fernando Substation and approximately 8 miles from the storage field entrance. Excluding Palmdale Regional Airport/U.S. Air Force (USAF) Plant 42 and San Clemente Island Naval Auxiliary Landing Field, all airports in Los Angeles County are open for use by the public and with the exception of Catalina Airport-in-the-Sky and Aqua Dulce Skypark, are publicly owned. Palmdale Regional Airport/USAF Plant 42 was a joint military-commercial use facility; however, commercial airline service ended in 2008.

Four airports are located in Ventura County, including the publicly owned and operated Camarillo and Oxnard Airports, the privately owned but public use Santa Paula Airport, and the Navy Base Ventura County (Point Mugu Naval Air Station) (Ventura County ALUC 2000). All proposed project components would be located more than 20 miles away from these facilities.

Table 4.10-1 Airports in the Vicinity of the Proposed Project Components

Airport Name	Location	Private or Public	Distance from Proposed Project Site
Los Angeles County			
Agua Dulce Skypark (L70)	Agua Dulce, CA	Private (open to the public)	20 miles (storage field); 17 miles (66-kV subtransmission line reconductoring – Tap Point A)
Bob Hope Airport (BUR)	Burbank, CA	Public	14 miles (storage field); 8 miles (San Fernando Substation)
Brackett Field (POC)	La Verne, CA	Public	48 miles (storage field); 41 miles (San Fernando Substation)
Catalina Airport-in-the-Sky (AVX)	Catalina Island	Private (open to the public)	62 miles (storage facility); 60 miles (San Fernando Substation)
Compton/Woodley Airport (CPM)	Compton, CA	Public	34 miles (storage field); 30 miles (San Fernando Substation)
El Monte Airport (EMT)	El Monte, CA	Public	34 miles (storage field); 28 miles (San Fernando Substation)
General William J. Fox Airfield (WJF)	Lancaster, CA	Public	35 miles (storage field), 31 miles (Newhall Substation)
Hawthorne Municipal Airport (HHR)	Hawthorne, CA	Public	30 miles (storage field); 26 miles (San Fernando Substation)
Long Beach Municipal Airport/Daugherty Field (LGB)	Long Beach, CA	Public	42 miles (storage field); 37 miles (San Fernando Substation)
Los Angeles International Airport (LAX)	Los Angeles, CA	Public	27 miles (storage field); 23 miles (San Fernando Substation)
Naval Auxiliary Landing Field San Clemente Island	San Clemente Island	Military (closed to the public)	89 miles (storage field); 87 miles (Chatsworth Substation)
Palmdale Regional Airport/USAF Plant 42 (PMD)	Palmdale, CA	Military (open to the public with USAF authorization)	35 miles (storage field); 30 miles (San Fernando Substation)
Santa Monica Municipal Airport (SMO)	Santa Monica, CA	Public	21 miles (storage field); 18 miles (San Fernando Substation)
Zamperini Field Airport (TOA)	Torrance, CA	Public	37 miles (storage field); 33 miles (San Fernando Substation)
Van Nuys Airport (VNY)	Van Nuys, CA	Public	7 miles (storage field); 6 miles (San Fernando Substation)
Whiteman Airport (WHP)	Pacoima, CA	Public	8 miles (storage field); 3 miles (San Fernando Substation)
Ventura County			
Camarillo Airport (CMA)	Camarillo, CA	Public	30 miles (storage field); 22 miles (Chatsworth Substation)
Oxnard Airport (OXR)	Oxnard, CA	Public	37 miles (storage field); 28 miles (Chatsworth Substation)
Santa Paula Airport (SZP)	Santa Paula, CA	Private (open to the public)	29 miles (storage field); 21 miles (Chatsworth Substation)
Naval Base Ventura County (Point Mugu Naval Air Station)	Point Mugu, CA	Military (closed to the public)	34 miles (storage field); 24 miles (Chatsworth Substation)

Sources: Ventura County Airport ALUC 2000; Los Angeles County ALUC 2004
Key:
USAF = U.S. Air Force

Land Use in the Proposed Project Area

The following sections describe the existing land use within and adjacent to the proposed project component areas. Proposed project components include those facilities within the existing storage field as well as the 66-kV subtransmission line route and Telecommunications Routes #1, #2, and #3. Five segments (Segments A through E) of an existing 66-kV subtransmission line would be reconductored as part of the proposed project. Telecommunications Route #1 would run adjacent to Segments A, B, and C of the reconductored 66-kV subtransmission line. To integrate the line arrangement of the proposed Natural Substation into the grid, SCE would be required to perform certain work at the existing Newhall, San Fernando, and Chatsworth Substations. Work would include modification of the substations with new protective relay equipment, which involves only minor construction activities. Work at the San Fernando Substation would also include limited pole replacement.

The following sections describe each segment and the surrounding land use in greater detail. Applicable general plan land use and current zoning are also discussed. Figures 4.10-2a, 4.10-2b, and 4.10-2c show~~s~~ general plan land use and Figures 4.10-3a, 4.10-3b, and 4.10-3c show~~s~~ zoning in the proposed project component areas.

Aliso Canyon Storage Field

The address for the storage field is 12801 Tampa Avenue in the City of Los Angeles; however, the majority of the storage field is located in the Santa Clarita Valley Planning Area of unincorporated Los Angeles County. The existing guardhouse and part of the entry roadway are located within the City of Los Angeles, in the community of Porter Ranch (Chatsworth–Porter Ranch Planning Area). This area is both designated in the City's General Plan and zoned for Open Space. The storage field is located in an area designated as Non-Urban~~Rural~~ in the Los Angeles County General Plan and zoned Heavy Agriculture (A-2).

Table 4.10-2 identifies each of the proposed project components within the storage field, the jurisdiction in which they fall, the planned land use, existing land use, and zoning.

Table 4.10-2 Land Use Designations for Storage Field Components

Project Components	Jurisdiction (Community)	General Plan Land Use	Existing Land Use	Zoning
Central Compressor Station	Los Angeles County	~~Rural~~ Non-Urban	Eastern part of Storage Field	Heavy Agriculture (A-2)
Office and Crew-shift Buildings	Los Angeles County	~~Rural~~ Non-Urban	Eastern part of Storage Field	Heavy Agriculture (A-2)
Proposed Natural Substation	Los Angeles County	~~Rural~~ Non-Urban	Eastern part of Storage Field	Heavy Agriculture (A-2)
12-kV Plant Power Line	Los Angeles County	~~Rural~~ Non-Urban	Eastern part of Storage Field	Heavy Agriculture (A-2)
Guardhouse	Los Angeles County	~~Rural~~ Non-Urban	Main Entrance to Storage Field	Heavy Agriculture (A-2)
Existing Guardhouse and Road Widening at Main Entrance (Limekiln Canyon Road)	Los Angeles County; City of Los Angeles (Porter Ranch)	Rural, Open Space	Main Entrance to Storage Field	Heavy Agriculture (A-2), Open Space

Sources: County of Los Angeles ~~2011~~ 2010a, 2010b~~;~~ City of Los Angeles 2010, 2009a ~~2011~~

Segments A, B, and Telecommunications Route #1

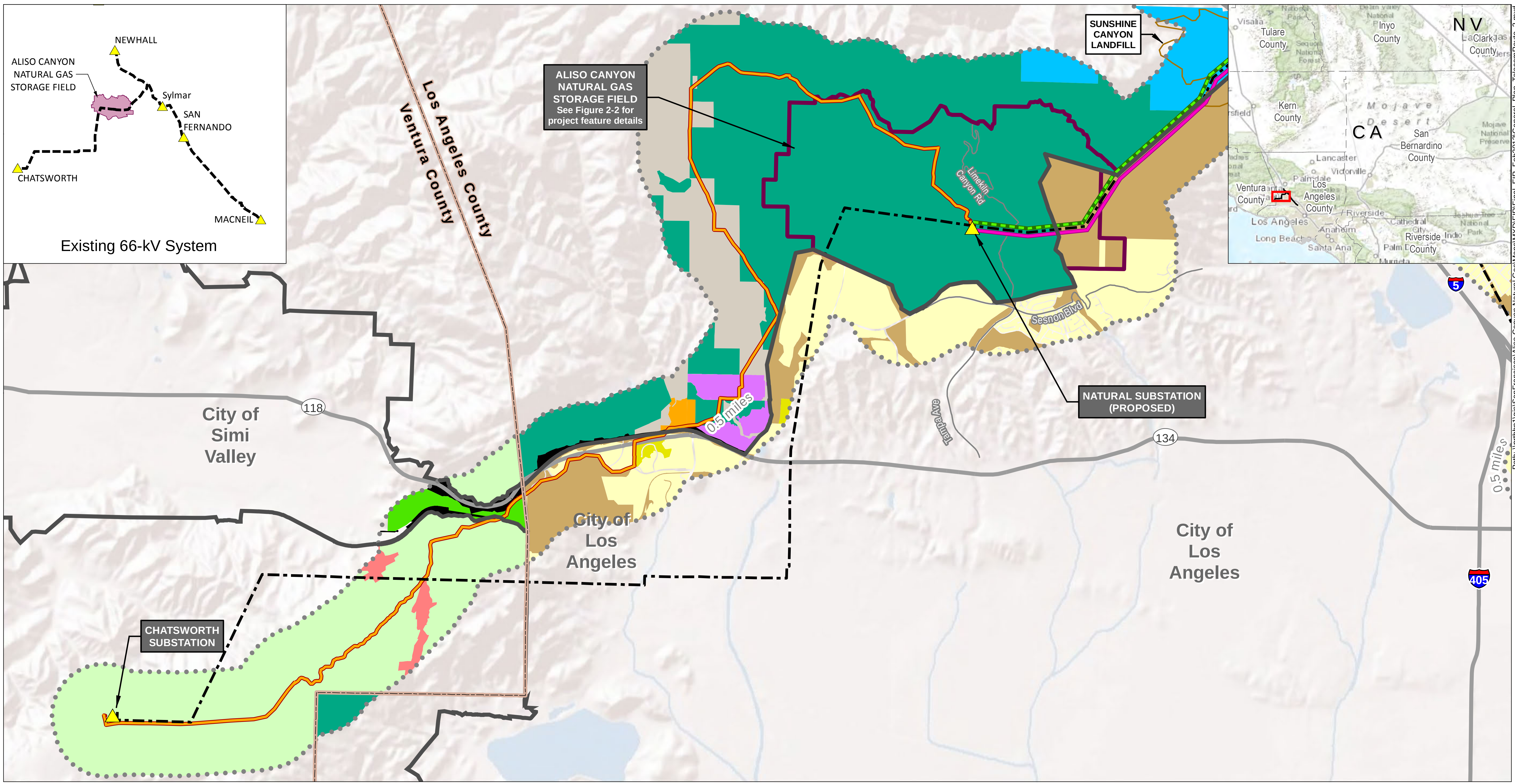
Both Telecommunications Route #1 and Segments A and B of reconductoring and pole replacement for the 66-kV subtransmission line would originate at the Newhall Substation, located at the intersection of Wiley Canyon Road and Lyons Avenue, in the community of Newhall in the City of Santa Clarita. Both alignments would be located within the existing ROW from the Newhall Substation south 4.2 miles, along the east side of I-5, before crossing into unincorporated Los Angeles County where they would meet the existing Tap Point A.

Within the City of Santa Clarita, land uses in the vicinity of the Segments A and B and Telecommunications Route #1 are primarily residential. The alignment passes through two areas of commercial use: one in the immediate vicinity of the Newhall Substation and one immediately before Mile Post 1, at Structure 12 (see Figure 2-1 of Chapter 2, "Project Description;" project alignment sheets depicting structure numbers are provided in Appendix D). At Structure 14, the alignment passes next to the South Fork of the Santa Clara River. Just south of Mile Post 2, near Structure 18, the alignment crosses into unincorporated Los Angeles County. This area is primarily undeveloped and consists of steep hills and ridgelines (Los Angeles County 2011). The main housing development in this area is a community of approximately 81 manufactured homes with a centrally located recreation area east of the I-5 overpass on the northern side of the Old Road. After crossing into unincorporated Los Angeles County, the alignment then proceeds for approximately 2.7 miles from Structure 18 to Tap Point A through an area zoned for agricultural uses but with no land use designation in the Los Angeles County General Plan. A service road runs between Structures 27 and 28; upgrades to this road that would take place as part of the proposed project would include installation of a culvert in a seasonal wash that intersects the roadway. Table 4.10-3 describes general plan land use designations, existing land use, and zoning for areas through which both the 66-kV subtransmission line and Telecommunications Route #1 pass.

Table 4.10-3 Land Use Designations for Segments A, B, and Telecommunications Route #1

Location	Jurisdiction (Community)	General Plan Land Use	Existing Land Use	Zoning
Newhall Substation (Lyons and Wiley Canyon Road)	City of Santa Clarita (Newhall)	Community Commercial	Existing Substation	Community Commercial (CC)
MP 1 (Structures 1–12)	City of Santa Clarita (Newhall)	Community Commercial, Residential Moderate, and Residential Suburban	Residential and Commercial Uses	Community Commercial (CC); Residential Moderate (RM); and Residential Suburban (RS)
MP 2 (Structures 12–23)	City of Santa Clarita (Newhall) and Los Angeles County	Community Commercial, Residential Very Low, and None	Residential and Commercial Uses	Community Commercial (CC); Residential Suburban (RS); Residential Low Density (RL); Residential Very Low Density (RVL); and Heavy Agriculture (A-2)
MP 3 (Structures 23–29)	Los Angeles County	None	Open Space and Residential Uses	Heavy Agriculture (A-2)
MP 4 (Structures 30–35)	Los Angeles County	None	Open Space	Heavy Agriculture (A-2)
Tap Point A (Structures 36 and 37)	Los Angeles County	None	Open Space	Heavy Agriculture (A-2)

Sources: City of Santa Clarita 2011, 2007; County of Los Angeles ~~2011~~ 2010a, 2010b
Key:
MP = Mile Post



SOURCES: City of Los Angeles GIS 2011, City of Simi Valley 2007, ESRI 2011, Los Angeles County GIS 2011, Ventura County GIS 2011, SoCalGas 2009–2012

66-kV Subtransmission Line Reconductoring Route (Proposed)

Telecommunications Route #1

Telecommunications Route #2

Existing 66-kV Subtransmission Line

General Plan Land Use (GPLU) within 0.5 miles

GPLU in Ventura County
- Existing Community
- Open Space

GPLU in City of LA
- Low Density Housing
- Medium Density Housing
- Open Space/Public and Quasi-Public Lands

GPLU in LA County
- Low Density Residential
- Open Space
- Public and Semi-Public Facilities
- Non-Urban
- Rural Communities
- Transportation Corridor

GPLU in Simi Valley
- Community Park
- Transportation

Jurisdictional Boundary

0.5 Mile Buffer of Study Area

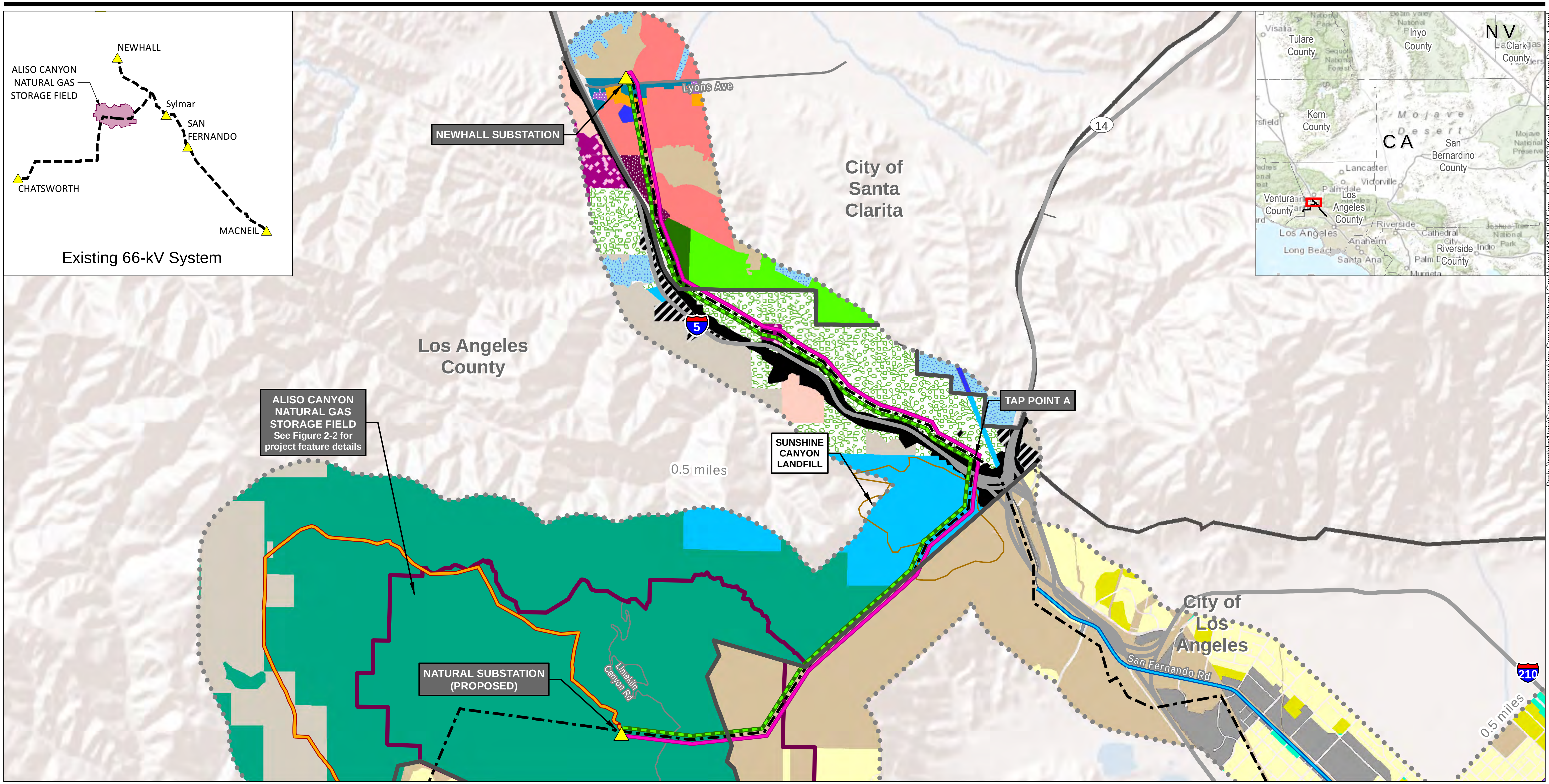
N

0 0.5 Miles

Figure 4.10-2a

General Plan Land Use in the Proposed Project Area: Storage Field and Telecommunications Route #2

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.



SOURCES: City of Los Angeles GIS 2011, City of Santa Clarita 2011, ESRI 2011, Los Angeles County GIS 2011, SoCalGas 2009–2012

- 66-kV Subtransmission Line Reconductoring Route (Proposed)
- Telecommunications Route #1
- Telecommunications Route #2
- Telecommunications Route #3
- Existing 66-kV Subtransmission Line
- Telecommunications Route #4

General Plan Land Use (GPLU) within 0.5 miles

GPLU in Santa Clarita
- Community Commercial
- Mixed Use
- Mixed Use Commercial
- Non-Urban (NU4) Rural Residential
- Non-Urban (NU5) Rural Residential
- Open Space
- Public/Institutional
- Urban Residential 1 (UR1)
- Urban Residential 2 (UR2)
- Urban Residential 3 (UR3)

GPLU in LA County
- Commercial
- Residential
- Industrial
- Open Space
- Public and Semi-Public Facilities
- Non-Urban
- Rural Land
- Transportation Corridor

GPLU in City of LA
- Light Industry
- Low Density Housing
- Medium Density Housing
- Neighborhood Commerce
- Open Space/Public and Quasi-Public Lands

- 0.5 Mile Buffer of Study Area
- Jurisdictional Boundary

0 0.5 Miles

N

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

Figure 4.10-2b

General Plan Land Use in the Proposed Project Area: Proposed 66-kV Subtransmission Line Route and Telecommunications Route #1

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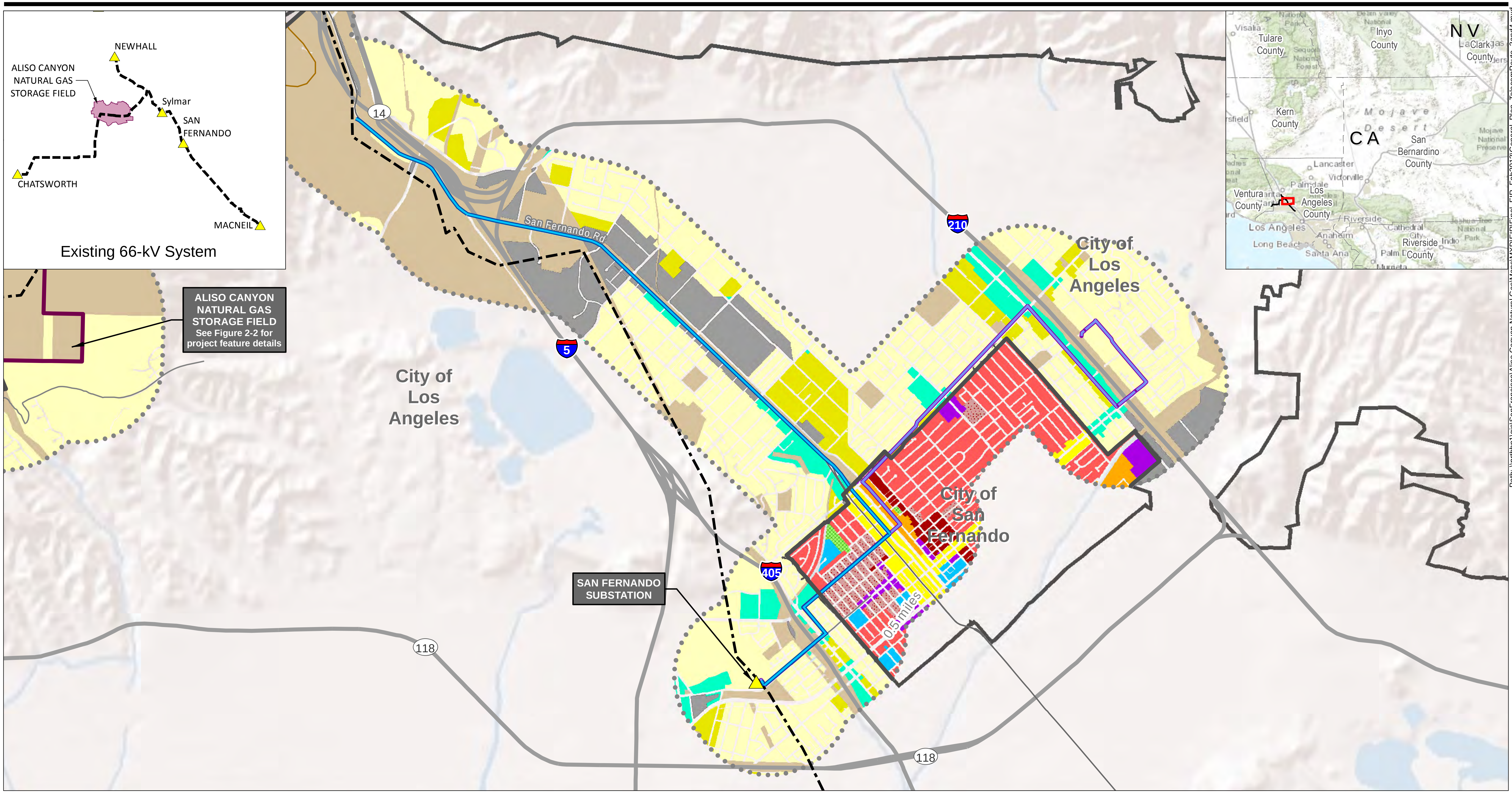

SOURCES: City of Los Angeles GIS 2011, City of San Fernando GIS 2011, ESRI 2011, SoCalGas 2009–2012

Existing 66-kV Subtransmission Line

Telecommunications Route #3

Telecommunications Route #4

General Plan Land Use (GPLU) within 0.5 miles

GPLU in City of LA

- Light Industry
- Low Density Housing
- Medium Density Housing
- Neighborhood Commerce
- Open Space/Public and Quasi-Public Lands

GPLU in San Fernando

- Commercial
- High Density Residential
- Industrial
- Low Density Residential
- Moderate Density Residential
- Park
- Public
- San Fernando Corridor Specific Plan

0.5 Mile Buffer of Study Area

Jurisdictional Boundary

0 0.5 Miles

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

Figure 4.10-2c

General Plan Land Use in the Proposed Project Area: Telecommunications Routes #3 and #4

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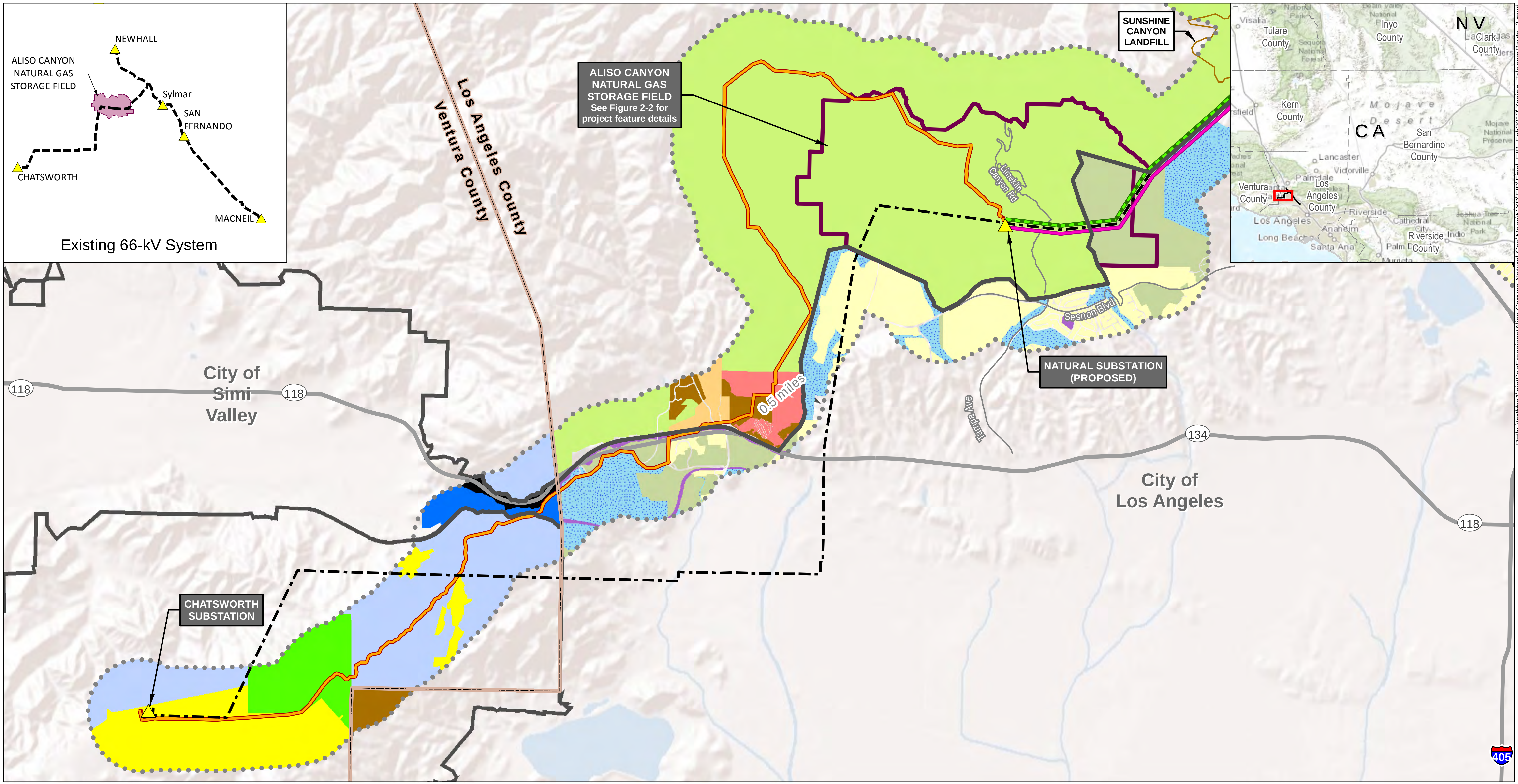

SOURCES: City of Los Angeles GIS 2011, City of Simi Valley 2007, ESRI 2011, Los Angeles County GIS 2011, Ventura County GIS 2011, SoCalGas 2009–2012

66-kV Subtransmission Line Reconductoring Route (Proposed)

Telecommunications Route #1

Telecommunications Route #2

Existing 66-kV Subtransmission Line

Telecommunications Route #4

Zoning Designations within 0.5 miles

Zoning in Simi Valley
- Freeway
- Open Space

Zoning in City of LA
- Agricultural
- Open Space
- Public Facilities
- Residential

Zoning in Ventura County
- Agriculture
- Open Space
- Residential

Zoning in LA County
- Heavy agriculture
- Light agriculture

Residential planned development

Single-family residence

Jurisdictional Boundary

0.5 Mile Buffer of Study Area

N

0 0.5 Miles

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

Figure 4.10-3a

Zoning Designations: Storage Field and Telecommunications Route #2

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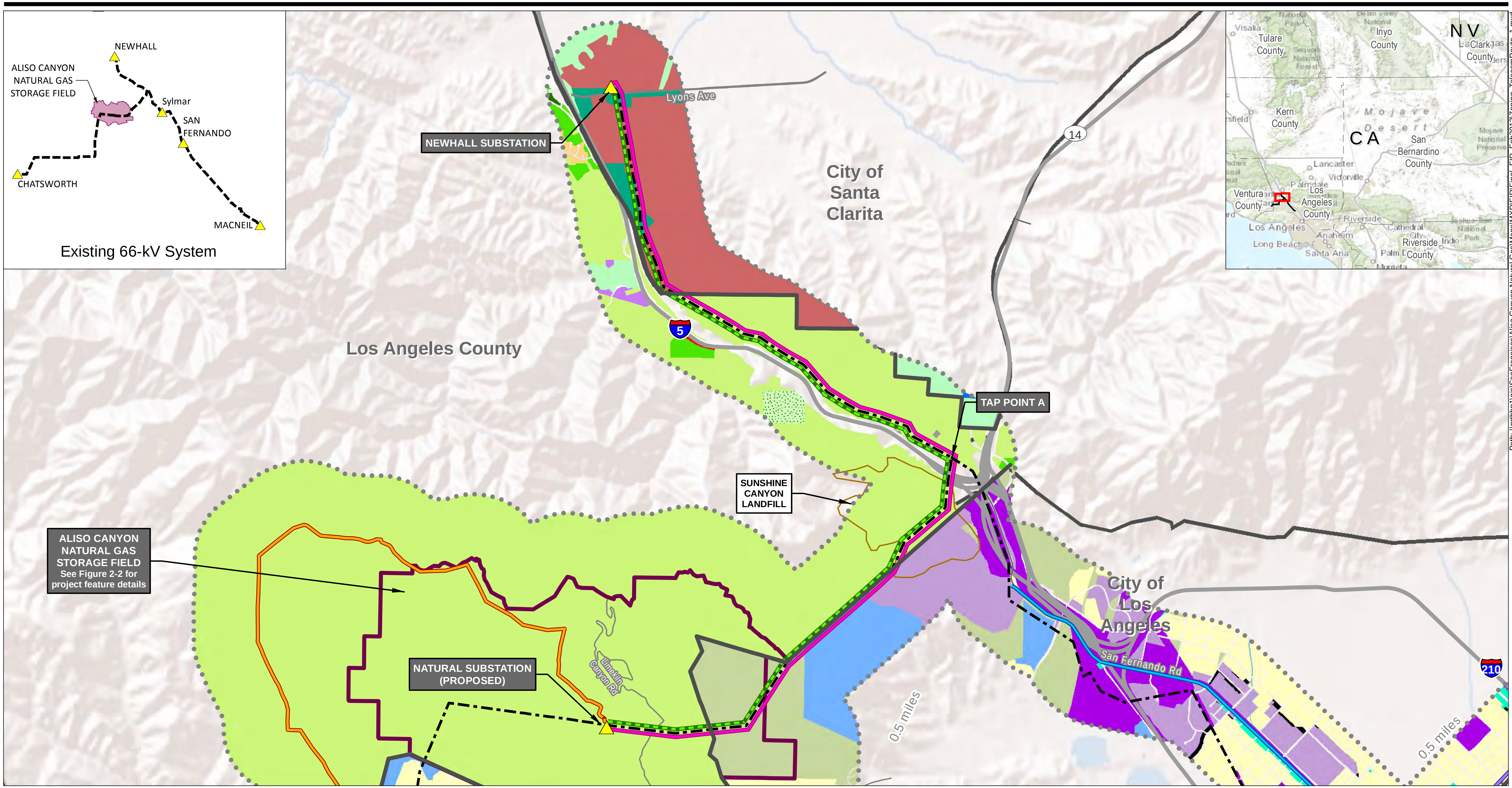

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SOURCES: City of Los Angeles GIS 2011, City of Santa Clarita 2011, ESRI 2011, Los Angeles County GIS 2011, SoCalGas 2009–2012

66-kV Subtransmission Line Reconductoring Route (Proposed)
Telecommunications Route #1
Telecommunications Route #2
Telecommunications Route #3
Existing 66-kV Subtransmission Line
Telecommunications Route #4

Zoning Designations within 0.5 miles

Zoning in City of LA
- Agricultural
- Commercial
- Industrial
- Open Space
- Transportation
- Public Facilities
- Residential

Zoning in Santa Clarita
- Commercial
- Industrial
- Residential
- Special Purpose

Zoning in LA County
- Commercial planned development
- Commercial recreation
- Heavy agriculture
- Light manufacturing
- Limited multiple residence
- Residential planned development
- Resort and recreation
- Unlimited commercial

0.5 Mile Buffer of Study Area
Jurisdictional Boundary

N

0 0.5 Miles

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

Figure 4.10-3b

Zoning Designations: Proposed 66-kV Subtransmission Line Route and Telecommunications Route #1

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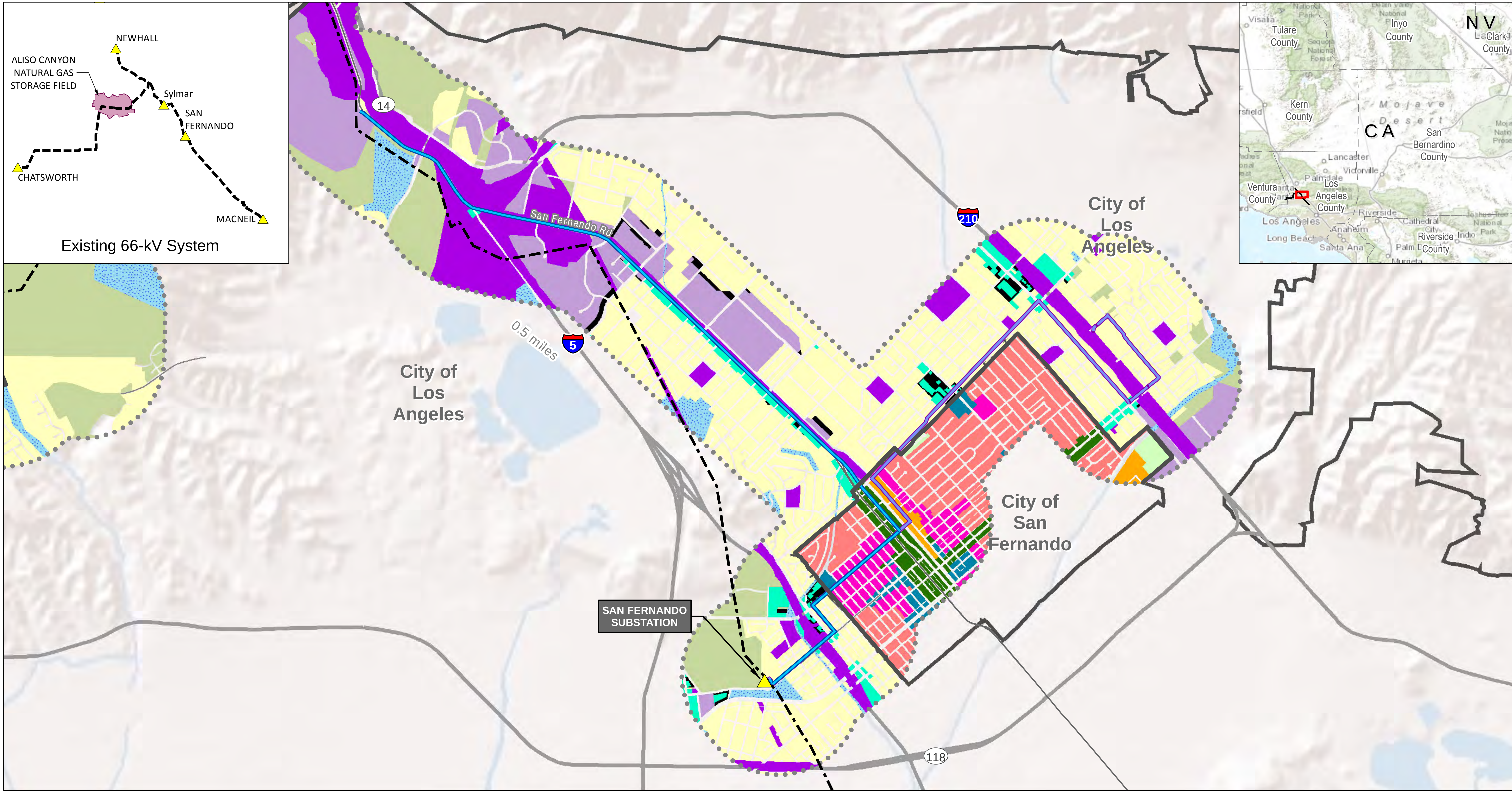

SOURCES: City of Los Angeles GIS 2011, City of San Fernando GIS 2011, ESRI 2011, SoCalGas 2009–2012

Existing 66-kV Subtransmission Line
Telecommunications Route #3
Telecommunications Route #4

Zoning Designations within 0.5 miles

Zoning in City of LA: Agricultural, Commercial, Industrial, Open Space, Transportation, Public Facilities, Residential

Zoning in San Fernando: General Commercial, Industrial, Multifamily Residential, Overlay Zones, Single-Family Residential, Specific Plan Area

0.5 Mile Buffer of Study Area
Jurisdictional Boundary

0 0.5 Miles

Figure 4.10-3c

Zoning Designations: Telecommunications Routes #3 and #4

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

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Segment C and Telecommunications Route #1

At Tap Point A, just north of the I-5/SR-14 junction, Segment C and Telecommunications Route #1 would cross I-5 and proceed to the top of a ridge before traversing the Sunshine Canyon Landfill in unincorporated Los Angeles County (Structures 42 to 44). The northern portion of the Sunshine Canyon Landfill, located in unincorporated Los Angeles County, is designated Public and Semi-public Facilities in the County's General Plan and zoned for Heavy Agriculture (A-2). The southern portion of the landfill, located in the City of Los Angeles, is both designated in the city's General Plan and zoned for Open Space. Relocation of the existing Chatsworth–MacNeil–Newhall–San Fernando Subtransmission Line to the perimeter of the disturbed area of the landfill property boundary is required to accommodate a planned landfill expansion. A separate permit application will be submitted by SCE to the CPUC for the subtransmission line relocation. Activities associated with the relocation are not part of the proposed project.

After crossing the Sunshine Canyon Landfill, Segment C and Telecommunications Route #1 would continue west from Structure 47 through the Oat Mountain area of the Santa Clarita Valley Planning Area of unincorporated Los Angeles County. The alignment generally corresponds with the boundary between the city and county of Los Angeles and separates the Michael D. Antonovich Open Space in unincorporated Los Angeles County and O'Melveny Park in the City of Los Angeles. As discussed above, the County of Los Angeles has designated the majority of the Michael D. Antonovich Open Space and the northwestern portion of the O'Melveny Park as SEA 20, Santa Susana Mountains. Both Segment C and Telecommunications Route #1 pass through the SEA for approximately 0.85 miles between Structures 48 and 53. Just past Mile Post 6, between Structure 53 and Potter Fire Road, the alignment crosses from unincorporated Los Angeles County into the Granada Hills community of the City of Los Angeles. This portion of the alignment falls within an area designated as Open Space in the City's General Plan and zoned Agriculture (A1). Before Structure 54, the alignment enters the storage field, continues southwest towards Structure 56, crosses back into unincorporated Los Angeles County and then west to the proposed Natural Substation. Table 4.10-4 describes specific general plan land use designations, existing land use, and zoning for areas within the alignment up to each Mile Post.

Table 4.10-4 Land Use Designations for 66-kV Subtransmission Line Segment C and Telecommunications Route #1

Location	Jurisdiction (Community)	General Plan Land Use	Existing Land Use	Zoning
Tap Point A	Unincorporated Los Angeles County	None	Open Space	Heavy Agriculture (A-2)
MP 5 (Structures 37–44)	Unincorporated Los Angeles County	Public and Semi-public Facilities	Sunshine Canyon Landfill	Heavy Agriculture (A-2)
MP 6 (Structures 44–50)	Unincorporated Los Angeles County	Public and Semi-public Facilities, Special Ecological Area	Sunshine Canyon Landfill, Michael D. Antonovich Open Space	Heavy Agriculture (A-2), Significant Ecological Area
MP 7 (Structures 50–56)	Unincorporated Los Angeles County, City of Los Angeles (Granada Hills)	Public and Semi-public Facilities, Non-urban, Significant Ecological Area	Michael D. Antonovich Open Space, Open Space, O'Melveny Park, Eastern area of storage field	Heavy Agriculture (A-2), Significant Ecological Area
MP 8 (Structures 56–60)	Unincorporated Los Angeles County	Public and Semi-public Facilities, Non-urban	Western area of storage field (CUP for gas storage)	Heavy Agriculture (A-2)

Sources: County of Los Angeles ~~2011~~ 2010a, 2010b, 2009; City of Los Angeles 2010, 2007a ~~2011~~
Key:
CUP = Conditional Use Permit
MP = Mile Post

Segments D and E

Segments D and E of the double-circuit 66-kV subtransmission line are located entirely within the community of Mission Hills in the City of Los Angeles and are each approximately 350 feet in length. Segment D runs northwest to southeast, beginning at Structure 61 on the grounds of Bishop Alemany High School, crossing a driveway and ending at the San Fernando Substation with connections to Structures 62 and 63. The City of Los Angeles's General Plan designates the parcel on which Bishop Alemany High School is located as Very Low Residential; this parcel is zoned for Heavy Agriculture (A-2). The parcel on which the San Fernando Substation is situated is designated for Low Density Residential and zoned for Suburban (RA) uses.

Segment E begins at Structure 64 in Brand Park, immediately southeast of the San Fernando Substation, across San Fernando Mission Boulevard. Brand Park is both designated in the City's General Plan and zoned for Open Space. Table 4.10-5 describes specific general plan land use designations, existing land use, and zoning for areas within the alignment around each tower.

Table 4.10-5 Land Use Designations for 66-kV Subtransmission Line (Bishop School to San Fernando Substation to Brand Park)

Location	Jurisdiction (Community)	General Plan Land Use	Existing Land Use	Zoning
Structure 61	City of Los Angeles (Mission Hills)	Very Low Residential	Bishop Alemany High School (15101 San Fernando Mission Blvd.)	Heavy Agriculture (A-2)
Structures 62 and 63	City of Los Angeles (Mission Hills)	Low Density Residential	San Fernando Substation	Suburban (RA)
Structure 64	City of Los Angeles (Mission Hills)	Open Space	Brand Park	Open Space (O-S)

Source: City of Los Angeles 2010, 2009b ~~2011~~

Telecommunications Route #2

Telecommunications Route #2 would extend 15.3 miles from the Chatsworth Substation to the proposed Natural Substation and consist of fiber optic cable that would be installed on existing and potentially new poles and within existing and new underground conduits. The proposed alignment would pass through unincorporated Ventura County, the Cities of Simi Valley and Los Angeles, and unincorporated Los Angeles County.

At the Chatsworth Substation, the alignment would travel west underground for 100 feet before emerging and ascending to an existing SCE pole. The alignment would then travel southeast towards F Street. From Mile Post 15, southeast of the Chatsworth Substation and adjacent to F Street, the alignment would travel due east on overhead poles for approximately one mile before transitioning into an existing underground conduit near Mile Post 14 at the corner of Facility Road and North American Cutoff Road. Once underground, Telecommunications Route #2 would travel in a northeasterly direction for approximately 10,000 feet before emerging near the corner of North American Cutoff and Box Canyon Road, just south of Mile Post 11.

Land uses immediately surrounding the Chatsworth Substation include the Santa Susana Field Laboratory (a rocket engine testing facility) and the former Energy Technology Engineering Center (ETEC). The lands on which these facilities are located are owned by the Boeing Company and the National Aeronautics and Space Administration. The ETEC was closed in 1988 and efforts to restore the site to open space are ongoing (DOE 2008). Scoping for an Environmental Impact Statement evaluating the impacts associated with the next phase of clean up at the ETEC ended on September 19, 2011 (NASA 2011). Near Mile Post 14, a portion of the alignment would cross over and beneath the southeastern corner of Sage Ranch Park. Sage Ranch Park is owned and maintained by the Santa Monica Mountains Conservancy, a state agency (SMMC 2011). Land uses above and adjacent to the alignment between Mile Post 14 and 11 are primarily open space with some agriculture.

From Mile Post 11, Telecommunications Route #2 would travel along SCE poles northeast for approximately 1,600 feet to an SCE pole located on the north side of Santa Susana Pass Road. The alignment would then cross into the City of Simi Valley and run along the north side of Santa Susana Pass Road to Mile Post 10, on the border between the City of Simi Valley and the City of Los Angeles. Land uses between Mile Post 10 and 11include some residential uses in unincorporated Ventura County, along the northern side of Santa Susanna Pass Road, with open space to the south. Once within the boundaries of the City of Simi Valley, the alignment would cross Corriganville Regional Park, as well as the ROW for the Simi Valley Metrolink commuter rail line. Corriganville Regional Park is owned by the City of Simi Valley and operated by the Rancho Simi Recreation and Park District (SMMC 2011).

At Mile Post 10, Telecommunications Route #2 would cross into the community of Chatsworth in the City of Los Angeles and travel east on existing SCE poles along the north side of Santa Susanna Pass Road to an existing SCE pole located just south of the SR-118. The alignment would then cross beneath SR-118 to Mile Post 8 in unincorporated Los Angeles County. Land uses in the area between Mile Post 9 and Mile Post 8 are predominantly open space and residential. The majority of this area is also identified by Los Angeles County as SEA 21, Santa Susana Pass (Los Angeles County 2009~~a~~). Telecommunications Route #2 would cross approximately 0.73 miles of this SEA. Santa Susana State Historic Park lies immediately to the south of the alignment across Santa Susana Pass Road. Shortly after Mile Post 9, near the northeastern corner of the park, the alignment turns north from Santa Susana Pass Road and travels due north, skirting the edge of a residential development. Just before reaching SR-118, the alignment heads east approximately 1,500 feet before crossing beneath the highway.

From Mile Post 8, Telecommunications Route #2 would travel east on existing poles for approximately 2,500 feet and then turn north and travel approximately 21,100 feet north through Browns Canyon, crossing Curaco Trail, Saugus Road, Browns Canyon Road, and Oat Mountain Way to Oat Mountain peak near Mile Post 3. Land use in this area is predominantly open space with some residential development near SR-118. Once past Saugus Road, the alignment crosses into the Michael D. Antonovich Regional Park at Joughin Ranch. The park is owned by the state and maintained by the Santa Monica Mountains Conservancy (SMMC 2011).

From Mile Post 3, Telecommunications Route #2 would continue southeast on existing poles onto the storage field. The alignment would then continue on overhead poles, transition to the applicant’s existing utility poles, then transition to new wood poles along the proposed paved road to the Natural Substation site. From the last new wood pole, the fiber optic cable would descend to new underground conduit into the Mechanical and Electrical Equipment Room at the proposed Natural Substation (Mile Post 0).

Table 4.10-6 describes specific general plan land use designations, existing land use, and zoning for areas within the alignment around each tower.

Table 4.10-6 Land Use Designations for Telecommunications Route #2

Location	Jurisdiction (Community)	General Plan Land Use	Existing Land Use	Zoning
Chatsworth Substation (Near Chatsworth Reservoir at Valley Circle Road and Plummer Street).	Unincorporated Ventura County	Open Space	Existing Substation	Rural Agriculture (RA)
MP 15–11	Unincorporated Ventura County	Open Space	Industrial/research and development, open space, park (Sage Ranch Park), agriculture	Rural Agriculture (RA), Open Space (OS), Residential Estate (RE)
MP 11–10	Unincorporated Ventura County, City of Simi Valley	Ventura County: Open Space City of Simi Valley: Transportation, Community Park	Ventura Country: Open Space, residential, transportation (Metrolink right-of-way) City of Simi Valley: Park (Corriganville Regional Park),	Ventura County: Residential Estate (RE), Open Space (OS) City of Simi Valley: Open Space (OS)
MP 10–8	City of Los Angeles (Chatsworth), unincorporated Los Angeles County	City of Los Angeles: Open Space, Public Facilities, Minimum Residential, Low Medium Residential Los Angeles County: Transportation Corridor, Low Density Residential	Residential, Park, Church, Transportation (SR-118)	City of Los Angeles: Open Space (OS), Agricultural Zone (A2), Restricted Density Multiple Dwelling Zone (RD4) Los Angeles County: Residential Planned Development (RPD)
MP 8–3	Unincorporated Los Angeles County	Low Density Residential, Low/Medium Density Residential, R-Non Urban, RC-Rural Communities, O-Open Space	Open Space, Park (Michael D. Antonovich Regional Park at Joughin Ranch)	Residential Planned Development (RPD), Light Agriculture (A-1), Single-Family Residence (R-1), Heavy Agriculture (A-2)
MP 3–0	Unincorporated Los Angeles County	Open Space	Central area of storage field (Natural Substation)	Heavy Agriculture (A-2)

Sources: Ventura County 2011c, 2011d ~~2011a and 2011b~~; City of Simi Valley 2007a, 2007b ~~2011~~; City of Los Angeles 2010, 2009a ~~2011~~

Telecommunications Route #3 and Telecommunications Route #4

Telecommunications Route #3 would extend approximately 5 miles from San Fernando Substation (Mile Post 0) to a fiber optic connection point (Mile Post 5) within the ROW of an existing SCE 220-kV subtransmission line corridor. The majority of the fiber optic cable would be installed overhead on existing SCE and Los Angeles Department of Water and Power wood poles. Approximately 1,200 feet of cable would be installed in new underground conduit at four locations along the alignment (see Figure 2-8 in Chapter 2, "Project Description"). This route would be located entirely within the public ROW, with the exception of approximately 100 feet within the footprint of the San Fernando Substation, and approximately 200 feet within SCE's existing 200-kV ROW in the community of Sylmar in the City of Los Angeles.

From Mile Post 5 in the Sylmar Community of the City of Los Angeles, Telecommunications Route #3 would travel for approximately 200 feet north to Gridley Street, before continuing northeast to Gladstone Avenue, where it would travel southward approximately 2,600 feet to Maclay Street. At Maclay Street, the alignment would travel southwest approximately 1,300 feet, crossing I-210, to the corner of Maclay Street and Foothill Boulevard. The alignment would then run northwest for approximately 4,500 feet along Foothill Boulevard, passing Mile Post 4, to Hubbard Street. At Hubbard Street, the alignment would continue to the southwest approximately 7,800 feet, passing Mile Post 3 to Mile Post 2 near First Street. Existing land use in this area is predominantly residential with neighborhood commercial uses clustered around intersections along Hubbard Street.

From Mile Post 2, near the intersection of First Street and Hubbard Street, Telecommunications Route #3 would cross into the City of San Fernando and continue southeast along the south side of First Street for approximately 1,900 feet to South Workman Street. The alignment would continue travelling southwest on South Workman Street for approximately 3,500 feet, crossing a Metrolink commuter rail line ROW and passing Mile Post 1, before crossing back into the City of Los Angeles. Existing uses along First Street are predominantly light industrial in nature, transitioning to multi-family residential use along South Workman Street.

After crossing back into the City of Los Angeles, the alignment would travel approximately 500 feet down South Workman Street to an alley parallel to Laurel Canyon Boulevard, and continue along the alley for approximately 1,100 feet. At San Fernando Mission Boulevard, the alignment would turn to the southwest and travel approximately 2,600 feet to the San Fernando Substation (Mile Post 0). Additional work that would be conducted at the San Fernando Substation would include construction of two loop-in sections, removal of up to four existing structures, and installation of four new tubular steel poles (TSPs) and less than 1,000 feet of new transmission line. The San Fernando Substation is located within the Mission Hills community of the City of Los Angeles. The immediate area forms a triangle bounded by I-5, I-405, and the Ronald Reagan Freeway (CA-118). The surrounding land uses include Bishop Alemany High School, Brand Park, and the historic San Fernando Mission.

Telecommunications Route #4 would extend northeast from San Fernando Substation along the same path as Telecommunications Route #3, but would be routed northwest at Truman Street in the City of San Fernando. Telecommunications Route #4 would follow Truman Street through the community of Sylmar to where it merges with San Fernando Road then continue northwest along San Fernando Road to a fiber optic connection point located at the entrance to Sunshine Canyon Landfill. Telecommunications Route #4 would not be located within any open space areas, parks, and/or SEAs.

Table 4.10-7 describes specific general plan land use designations, existing land use, and zoning for areas within the alignment around each tower.

Table 4.10-7 Land Use Designations for Telecommunications Route #3 and Route #4

Location	Jurisdiction	General Plan Land Use	Existing Land Use	Zoning
MP 5–2	City of Los Angeles (Community of Sylmar)	Public Facilities, Very Low Residential, Low Residential, and Community Commercial	Residential, Transportation (I-5 corridor), gas station	Public Facilities Zone (PF), Suburban Zone (RA), Suburban Zone (RS), One-Family Zone (R1), Restricted Density Multiple Dwelling Zone (RD), Commercial Zone (C2), Commercial Zone (C4)

Table 4.10-7 Land Use Designations for Telecommunications Route #3 and Route #4

Location	Jurisdiction	General Plan Land Use	Existing Land Use	Zoning
MP 2–1	City of San Fernando	Industrial, Medium Density Residential, Central Business District, San Fernando Corridors Specific Plan Area, and Low Density Residential	Residential, Light Industrial, Transportation (Metrolink Rail Corridor), Commercial (La Rinda Plaza Shopping Center)	Single-Family Residential Zone (R1), Multiple-Family Residential Zone (R2), Limited Industrial Zone (M1), Specific Plan Zones (SP), Commercial Zone (C2)
MP 0–1	City of San Fernando, City of Los Angeles (Community of Mission Hills)	City of San Fernando: Low Density Residential City of Los Angeles: Commercial, Public Facilities, Open Space, and Low Residential	Commercial (La Rinda Plaza Shopping Center), Residential, Transportation (I-5 corridor) Park (Brand Park), Office	City of San Fernando: Commercial Zone (C-2) City of Los Angeles: Automobile Parking Zone (P), One-Family Zone (R1), Suburban Zone (RA), Agricultural Zone (A2)
LADWP San Fernando Substation (San Fernando Blvd.)	City of Los Angeles (Community of Mission Hills)	Low Residential	Existing Substation	Agricultural Zone (A2)
Telecommunications Route # 4 (from the point of divergence from Route #3)	City of San Fernando City of Los Angeles (Community of Sylmar)	City of San Fernando: Corridor Specific Plan City of Los Angeles: Low Density Housing, Open Space/Public and Quasi-Public Lands	Commercial, Residential, Transportation (I-5 corridor), Parks, Office	City of Los Angeles: Public Facilities Zone (PF), Agricultural Zone (A1), Heavy Industrial (M3); City of San Fernando: Specific Plan Zones (SP4)

Sources: City of San Fernando 2011a, 2011b; City of Los Angeles 2010, 2009a, 2007a ~~2011~~
Key:
LADWP = Los Angeles Department of Water and Power
MP = Mile Post

4.10.2 Regulatory Setting

4.10.2.1 Federal

The applicant and SCE would be required under Federal Aviation Administration (FAA) Part 77 to obtain a Hazard/No Hazard determination for any project structures taller than 200 feet that would be installed within 20,000 feet of a runway. This requirement is discussed in Section 4.8, “Hazards and Hazardous Materials.” No other federal laws or regulations governing land use are applicable to the proposed project components.

4.10.2.2 State

California Public Utilities Commission

The CPUC’s review of transmission line applications takes place under two concurrent and parallel processes:

1. Environmental review pursuant to the California Environmental Quality Act (CEQA); and

2. Review of project needs and costs pursuant to Public Utilities Code Sections 1001 et seq. and General Order 131-D.

CPUC General Order 131-D, *Rules relating to the planning and construction of electric generation, transmission/power/distribution line facilities and substations located in California*, states that no electric public utilities will begin construction in the State of California of any new electric generating plant, or of the modification, alteration, or addition to an existing electric generating plant, or of electric transmission/power/distribution line facilities, or of new, upgraded, or modified substations without first complying with the provisions of the General Order. For the purposes of the General Order, a transmission line is designated to operate at or above 200-kV. A power line is designated to operate between 50- and 200-kV. A distribution line is designated to operate under 50-kV.

Pursuant to Article XII of the Constitution of the State of California, the CPUC is charged with the regulation of investor-owned public utilities. Article XII, Section 8, of the California Constitution states, "[a] city, county, or other public body may not regulate matters over which the Legislature grants regulatory power to the [Public Utilities] Commission." The Public Utilities Code authorizes the CPUC to "do all things, whether specifically designated in this act or in addition thereto, which are necessary and convenient in the exercise of such power and jurisdiction" (California Public Utilities. Code §701). Other Public Utilities Code provisions generally authorize the CPUC to modify facilities, to secure adequate service or facilities, and to operate so as to promote health and safety.

In the context of electric utility projects, CPUC G.O. 131-D, Section XIV.B, states that "local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the Commission's jurisdiction. However in locating such projects, the public utilities shall consult with local agencies regarding land use matters." The applicant and SCE would be required to obtain all applicable ministerial building and encroachment permits from local jurisdictions for the proposed project (see Table 2-9 in Chapter 2, "Project Description"). The applicant and CPUC have conducted outreach and consultation with local planning and public works agencies in Los Angeles County, Ventura County, the City of Los Angeles, the City of Santa Clarita, the City of San Fernando, and the City of Simi Valley over the course of the preparation of this EIR.

4.10.2.3 Local Plans and Policies

The lands within the proposed project component areas are under the jurisdiction of the County of Los Angeles, City of Los Angeles, City of Santa Clarita, City of San Fernando, City of Simi Valley, and County of Ventura. The section below provides an overview of the plans, policies, and regulations that pertain to the proposed project component areas.

County of Los Angeles General Plan

The adopted 1980 County of Los Angeles General Plan Land Use Element includes the following land use policies applicable to the proposed project (Los Angeles County 1980):

> ***Land Use Policy Statement 4:*** *Protect prime industrial lands from encroachment of incompatible uses.*

> ***Land Use Policy Statement 7:*** *Assure that new development is compatible with the natural and manmade environment by implementing appropriate locational controls and high quality design standards.*

Land Use Policy Statement 11: *Promote planned industrial development in order to avoid land use conflicts with neighboring activities.*

Land Use Policy Statement 12: *Protect major landfill and solid waste disposal sites from encroachment of incompatible uses.*

Land Use Policy Statement 14: *Establish and implement regulatory controls that ensure the compatibility of development adjacent to or within major public open space and recreation areas including National Forests, the National Recreation Area, and State and regional parks.*

Land Use Policy Statement 21: *Protect identified Potential Agricultural Preserves by discouraging inappropriate land division and allowing only use types and intensities compatible with agriculture.*

Land Use Compatibility

According to the Land Use Element, compatible uses within the Open Space land use classification include a variety of agricultural, recreational, mineral extraction, and public and semi-public activities and services.

Compatible uses within non-urban hillside management areas (lands characterized by natural slopes of 25 percent or greater) include certain industrial, extractive, agricultural, and public uses that can be appropriately located in remote hillside areas.

The Land Use Element states that "utility installations, including communication, water and power facilities" may be an appropriate use within non-urban hillside management areas and that these uses are subject to review for compliance with applicable performance criteria. Performance review criteria fall under four headings: public safety, resource protection, suitability for development, and quality of design. Applicable criteria to the proposed project include:

- *All excavations, roads, utilities, structures, and other facilities shall be designed to compensate for problem soils and other subsurface conditions. Landslide hazard areas shall be avoided, except for linear systems for which there is no alternative alignment.*
- *For development occurring on brush-covered slopes, the county Forester and Fire Warden will require adequate fire protection capabilities.*
- *Development should be located at such distances from floodways as determined by the county as to not interfere with natural drainage.*
- *Resource protection includes drainage networks, biotic resources, cultural resources, and scenic resources.*
- *Undergrounding of all local utilities is desirable. The overhead major utility lines (e.g., power, telephone, or transmission lines) should follow the least visible route and cross ridgelines at the most visually unobtrusive locations.*

Significant ~~Special~~ Ecological Areas

The county of Los Angeles contains 60 SEAs. Areas designated as SEAs in the county have been identified as ecologically valuable for the perpetuation of plant and wildlife resources in the region. Some limited development is allowed within SEAs. For more information on SEAs and the SEATAC review process, see Section 4.4, "Biological Resources."

The proposed project traverses SEA 20 (Santa Susana Mountains) and SEA 21 (Santa Susana Pass) (see Figure 4.10-1). SEA compatible land uses include public and semi-public uses where no alternative site or alignment is feasible and the uses are essential to the maintenance of public health, safety, and welfare. Development within a designated SEA ~~will be~~is reviewed for compliance by the Significant Ecological Areas Technical Advisory Committee (SEATAC) with the following criteria:

- *The development is designed to be highly compatible with biotic resources present, including the setting aside of appropriate and sufficient undisturbed areas;*
- *The development is designed to maintain waterbodies, watercourses, and their tributaries in a natural state;*
- *The development is designed so that wildlife movement corridors (migratory paths) are left in a natural and undisturbed state;*
- *The development retains sufficient natural vegetative cover and/or open spaces to buffer critical resource areas from the proposed use;*
- *Where necessary, fences or walls are provided to buffer important habitat areas from development; and*
- *Roads and utilities serving the proposed development are located and designed so as to not conflict with critical resources, habitat areas, or migratory paths.*

If a project is located within the boundaries of an SEA, the Significant Ecological Areas Technical Advisory Committee (SEATAC) will review the project during the permitting process and make recommendations in order to reduce or avoid impacts (Los Angeles County 2009~~a~~).

Santa Clarita Valley Area Plan

The adopted 1990 Santa Clarita Valley Area Plan includes the following land use policies applicable to the proposed project (Los Angeles County 1990):

Land Use Element Policy 4.2: *Designate areas of excessive slope (exceeding 25 percent) as "Hillside Management Areas," with performance standards applied to development to minimize potential hazards such as landslides, erosion, excessive runoff and flooding.*

Land Use Element Policy 5.4: *Permit appropriate land uses that are compatible with the resource values present in identified Significant Ecological Areas.*

Housing Element Policy 3.2: *Require that all new power distribution networks, communication lines, and other service network facilities be located underground wherever practical. Transmission lines should be located underground where feasible.*

Environmental Resources Management Element Policy 2.1: *Protect identified resources in Significant Ecological Areas by appropriate measures including preservation, mitigation, and enhancement.*

Environmental Resources Management Element Policy 2.3: *Require site level analysis of proposed development projects within Significant Ecological Areas to insure that adverse impacts upon resources within identified Significant Ecological Areas are minimized.*

Environmental Resources Management Element Policy 6.4: *Encourage the use of public utility rights-of-way for trails when practical and compatible with the utility present, as shown on the Trails Plan.*

In addition, the Santa Clarita Valley Area Plan provides a description of SEA 20 (Santa Susana Mountains).

The Santa Clarita Valley Area Plan was recently updated and both the final plan and required Environmental Impact Report (EIR) were released for public review on September 14, 2011. On September 28, 2011, the regional planning commission voted to recommend to the County Board of Supervisors that the plan update be approved. As of the time of preparation of this Draft EIR, the County Board of Supervisors have not yet taken action on the plan (County of Los Angeles 2009b).

City of Santa Clarita General Plan

The City of Santa Clarita General Plan was updated and adopted in June 2011. The following policies are applicable to the proposed project route that traverses the City of Santa Clarita:

> ***Policy LU 4.4.4:*** *Protect and enhance public utility facilities as necessary to maintain the safety, reliability, integrity, and security of essential public service systems for all valley residents.*
>
> ***Policy LU 6.3.4:*** *Require undergrounding of utility lines for new development where feasible, and plan for undergrounding of existing utility lines in conjunction with street improvement projects where economically feasible.*
>
> ***Policy LU 7.8.2:*** *Protect all designated Significant Ecological Areas (SEA's) from incompatible development.*
>
> ***Policy LU 9.1.3:*** *Protect major utility transmission corridors, pumping stations, reservoirs, booster stations, and other similar facilities from encroachment by incompatible uses, while allowing non-intrusive uses such as plant nurseries, greenbelts, and recreational trails.*
>
> ***Policy LU 9.1.4:*** *Develop and apply compatible standards within City and County areas for design and maintenance of utility infrastructure, in consideration of the character of each community.*
>
> ***Policy CO 2.2.5:*** *Promote the use of adequate erosion control measures for all development in hillside areas, including single family homes and infrastructure improvements, both during and after construction.*

City of Los Angeles General Plan Framework

The City of Los Angeles General Plan Framework provides a strategy for long-term growth and guides the updates of the community plans and citywide elements (City of Los Angeles 2001). The following policies are applicable to the proposed project route that lies within the City of Los Angeles boundary:

> ***Policy 3.3.1:*** *Accommodate projected population and employment growth in accordance with the Long-Range Land Use Diagram and forecasts in Table 2-2 (see Chapter 2: Growth and Capacity), using these in the formulation of the community plans and as the basis for the planning for and implementation of infrastructure improvements and public services.*
>
> ***Policy 3.4.2:*** *Encourage new industrial development in areas traditionally planned for such purposes generally in accordance with the Framework Long-Range Land Use Diagram (Figure 3-2) and as specifically shown on the community plans.*

City of Los Angeles Community Plans

The Land Use Element of the City of Los Angeles General Plan consists of 35 community plans that guide future development within the city (City of Los Angeles 2001). The proposed project components traverse the following four community plan areas: Granada Hills–Knollwood, Chatsworth–Porter Ranch, Mission Hills–Panorama City–North Hills, and Sylmar. The community plan criteria applicable to the proposed project are provided below.

Granada Hills–Knollwood Community Plan

Land Use Hillside Development Criteria 1: *Ridgelines shall be protected, preserved, and retained in their natural state to the greatest extent possible. Ridgelines are characterized as being prominent backdrops where development should not occur. Ridgelines located north of Sesnon Boulevard have irreplaceable scenic value. To assure that the design and placement of buildings and other improvements preserve, complement, and enhance views from other areas, in reviewing subdivisions located north of Sesnon Boulevard, the Advisory Agency shall establish lot elevations so that buildings and structural heights will be 50 feet below adjacent ridgelines. Additionally, to protect ridges, environmentally sensitive areas, and to prevent erosion associated with development, grading, and density shall be limited to prevent visual interruption of the ridge profile.*

Land Use Hillside Development Criteria: *Fire, flood, erosion, or other hazards to public safety shall not be created or increased.*

Land Use Open Space Criteria: *The Open Space designation for publicly and privately owned land is to protect and preserve natural resources and natural features of the environment.*

Other Public Facilities: *New power lines and other utilities and services should be placed underground wherever feasible, and a program for the undergrounding of existing power lines and other utilities and services should be developed.*

Chatsworth–Porter Ranch Community Plan

Underground Utilities: *Where feasible, powerlines in new development should be placed underground. The Department of Water and Power should accelerate the program for placing existing powerlines underground.*

Sylmar Community Plan

Coordination Opportunities for Public Agencies: *Utilities should be installed underground through assessment districts or other funding, when feasible.*

Mission Hills Community Plan

Policy 14-2.1: *Encourage the safe utilization of easements and/or rights-of-way along flood control channels, public utilities, railroad rights-of-way and streets wherever feasible for the use of bicycles and/or pedestrians.*

Urban Design Policy 9 – Commercial: *Providing, where feasible, the undergrounding of new utility service.*

City of Simi Valley General Plan

The current City of Simi Valley General Plan was adopted in 1988. A General Plan update is underway and the Draft General Plan and required EIR were released to the public for review and comment on September 9, 2011. The public comment period ended on October 24, 2011. The following policies applicable to the proposed project are from the current 1988 General Plan:

Policy 111-1.2.2: *Structures and developments which are in highly visible locations shall be designed to minimize their impact on natural vistas.*

Policy 111-1.3.4: *Utilities which cannot be feasibly placed underground should be located and designed to produce the least visual and environmental impact on the community.*

Ventura County General Plan

The Public Facilities and Services Chapter of the Ventura County General Plan identifies goals, policies, and programs applicable to public facilities and services throughout the county (Ventura County 2011a). The following goals and policies are applicable to the proposed project route that traverses the County of Ventura:

> ***Goal 4.5.1:*** *Promote the efficient distribution of public utility facilities and transmission lines to assure that public utilities are adequate to service existing and projected land uses, avoid hazards, and are compatible with the natural and human resources.*

> ***Policy 4.5.2 (1):*** *New gas, electric, cable television and telephone utility transmission lines shall use or parallel existing utility rights-of-way where feasible and avoid scenic areas when not in conflict with the rules and regulations of the California Public Utilities Commission. When such areas cannot be avoided, transmission lines should be designed and located in a manner to minimize their visual impact.*

> ***Policy 4.5.2 (2):*** *All transmission lines should be located and constructed in a manner which minimizes disruption of natural vegetation and agricultural activities and avoids unnecessary grading of slopes when not in conflict with the rules and regulations of the California Public Utilities Commission.*

> ***Policy 4.5.2 (3):*** *Discretionary development shall be conditioned to place utility service lines underground wherever feasible.*

Ridgeline and Hillside Ordinances

Ridgelines and hillsides are recognized as an important resource in the Santa Clarita Valley. The City of Santa Clarita, the City of Los Angeles, and the County of Los Angeles have adopted regulations to guide development on steep slopes and ridgelines. Three ridgelines within the City of Santa Clarita are located in proximity to the 66-kV MacNeil–Newhall–San Fernando Subtransmission Line (City of Santa Clarita 2006).

Additional ridgelines are located in proximity to the 66-kV subtransmission lines and the storage field in the County of Los Angeles. In addition, the majority of the of the proposed project area is located within the County Hillside Management Zone, which indicates substantial portions of the proposed project areas are located on slopes of 25 percent or greater. Visual impacts associated with transmission poles on hillsides and ridgelines are addressed in Section 4.1, "Aesthetics."

Regulations that are applicable to the proposed project include:

City of Santa Clarita Ridgeline Preservation Overlay Zone (Chapter 17.16.055)

The ridgeline preservation (RP) overlay zone applies to areas identified on the adopted ridgeline map on file in the City of Santa Clarita Planning Division. Planned development including grading permits, building permits and land use entitlements, indicated on the ridgeline map and located within the upper two-thirds of the overall height of the ridgeline from its base and/or within 1,000 feet of the ridgeline is subject to a ridgeline alteration permit. No engineered slopes, structures, streets, utilities or other manmade features shall be permitted within the upper two-thirds of a ridgeline as measured from its base unless a ridgeline alteration permit is obtained (City of Santa Clarita 2010).

City of Santa Clarita Hillside Development Ordinance (Chapter 17.80)

The City of Santa Clarita Hillside Development Ordinance regulations apply to all projects requiring grading permits on parcels of land with average slopes of 10 percent or more (City of Santa Clarita 2010).

Los Angeles County Municipal Code, Ordinance 22.56.215

Ordinance 22.56.215 of the Los Angeles Municipal Code provides regulations for hillside management and SEAs, to guide development on steep slopes and protect resources. Hillside management areas are defined as areas with a natural slope of 25 percent or more. A conditional use permit is required in hillside management areas when the property contains any area with a natural slope of 25 percent or more in a nonurban hillside management area proposed to be developed, with residential uses at a density exceeding the low-density threshold established for such property pursuant to subsection E (Los Angeles County 2010).

In addition, the County's Hillside Design Guidelines provide guidance for hillside development. The guidelines apply to residential, commercial, and industrial projects within Hillside Management Areas (Los Angeles County 1979).

Ventura County Zoning Ordinance

Section 8175-5.17.11

Section 8175-5.17.11 of the Ventura County Zoning Ordinance requires that the Soil Conservation Service (U.S. Department of Agriculture Natural Resources Conservation Service) and California Department of Fish and Game be consulted for grading of hillsides and brush clearance in excess of 0.5 acres, and requires that best management practices be used in these cases (Ventura County 2011b).

4.10.3 Methodology and Significance Criteria

General Plans, ordinances, and land use and zoning maps were reviewed in order to determine whether the proposed project would be consistent with regional and locally adopted land use plans, goals, and policies.

Potential impacts on existing and planned land uses were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the CEQA Guidelines. The proposed project would cause a significant impact on land uses if it would:

a) Physically divide an established community;

b) Conflict with an applicable environmental plan, policy, or regulation of an agency with jurisdiction over the proposed project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or

c) Conflict with any applicable habitat conservation plan or natural community conservation plan.

4.10.4 Environmental Impacts and Mitigation Measures

Applicant Proposed Measures

There are no applicant proposed measures associated with land use and planning.

Impact LU-1: Physical division of an established community.
LESS THAN SIGNIFICANT

The proposed storage field project components would be situated in an area with similar or identical existing uses. Furthermore, the storage field is located in a relatively isolated, rural environment, generally surrounded by areas of open space and parkland. The closest residential land use is located at least 250 feet from the location of the proposed guardhouse and entry road widening in the community of Porter Ranch in the City of Los Angeles. This residential area is separated from these project components by a hillside and ravine and would generally not be visible to the surrounding community.

Segments A through C of the 66-kV subtransmission line and Telecommunications Routes #1, #2, ~~and~~ #3, and #4 would be implemented in existing SCE ROWs currently used for similar or identical uses. Segments A, B, and part of Telecommunications Route #1 would require replacement of existing lattice steel towers (LSTs) with TSPs throughout the entire course of the alignment. These structures would be placed largely in the same location as the existing LSTs, which would be removed as part of the proposed project. These facilities would not create a new physical barrier, nor would they create an obstacle that would be considered a physical barrier to the surrounding community.

Telecommunications Route #2 traverses areas of open space and parkland and, like Telecommunications Route #3, passes alongside areas of residential land use; however, both alignments would be implemented in an already established corridor, using existing poles or poles that, if they are replaced, would be replaced in kind. Neither Telecommunications Route #2, ~~nor~~ Telecommunications Route #3, nor Telecommunications Route #4 would represent an actual physical or perceived physical barrier dividing an established community. Therefore, any impacts would be less than significant under this criterion.

Impact LU-2: Conflict with applicable plans, policies, or regulations.
LESS THAN SIGNIFICANT

The proposed project components located within the storage field would be situated within an area not subject to any applicable environmental plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Planning jurisdictions in the proposed project component areas address development concerns such as aesthetics (especially with regards to development on ridgelines and hillsides); plant, wildlife, and wetland resources; wildlife corridors and movement; fire safety; soils and erosion; and the safety, reliability, integrity, and security of public services such as electric utilities. Sections 4.1, “Aesthetics;” 4.4, “Biological Resources;” 4.8, “Hazards and Hazardous Materials;” 4.9, “Hydrology and Water Quality;” and 4.13, “Public Services and Utilities” address these concerns and include mitigation as required to reduce impacts to less than significant.

Segment C of the 66-kV subtransmission line reconductoring and part of Telecommunications Route #1 would pass through SEA 21 (Santa Susana Mountains) between Structures 48 and 53, for approximately 0.85 miles. Similarly, Telecommunications Route #2 would cross approximately 0.73 miles of SEA 21 (Santa Susana Pass) immediately after crossing the Ventura County line. As discussed in Section 4.4, “Biological Resources,” the proposed project would represent a reduction in land disturbance within the area of the SEA; thus, it is unlikely that the proposed project would conflict with the requirements of the county’s SEA program. Any impacts would therefore be less than significant under this criterion.

Impact LU-3: Conflict with habitat conservation or natural community conservation plans.
~~LESS THAN SIGNIFICANT~~NO IMPACT

~~Portions of the 66-kV subtransmission line route and Telecommunications Route #1, and Telecommunications Route #2 would pass through areas designated as SEAs by Los Angeles County. As discussed under Impact LU-2 and in Section 4.4, "Biological Resources," the proposed project would represent a reduction in land disturbance within the area of the SEA; thus, it is unlikely that the proposed project would conflict with the requirements of the county's SEA program.~~

~~No other~~No Habitat Conservation Plans or Natural Communities Conservation Plans have been adopted for the areas in which the proposed project would be located ~~have been adopted~~ by local jurisdictions or wildlife management agencies (e.g., the U.S. Fish and Wildlife Service and California Department of Fish and Game) (~~CDFG n.d~~CDFW n.d). Therefore, no impact would result from construction and operation of the proposed project components ~~would result in a less than significant impact~~ under this criterion, and no mitigation would be required. See Section 4.4, "Biological Resources," for additional information about open space preserves and wildlife corridors that the proposed project would traverse.

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4.11 Noise

This section describes the environmental and regulatory settings and discusses potential impacts associated with the construction and operation of the proposed project with respect to noise conditions.

4.11.1 Environmental Setting

The proposed project would be primarily located in regions of northern Los Angeles County and the southwestern area of Ventura County. Table 4.11-1 shows jurisdictions in which each of the proposed project components would be constructed, and the communities nearest to these components. The overall project area is characterized by canyons, hills, and mountain ranges within the Santa Susana Mountains, Santa Clarita Valley, and San Fernando Valley regions. Existing land uses within the proposed project area include residential, commercial, solid waste disposal (landfill), open space preserve areas and parkland, agricultural, public transportation railroad lines, and major roads and highways.

Table 4.11-1 Proposed Project Components and Applicable Jurisdictions

Project Component	Jurisdiction	Communities
Aliso Canyon Plant Site: • Central Compressor Station • Office Facilities and Guardhouse • 12-kV Plant Power Line Route	County of Los Angeles (unincorporated)	Oat Mountain Porter Ranch
Natural Substation	County of Los Angeles (unincorporated)	Oat Mountain
66-kV Reconductoring Route - Segments A, B and C	City of Santa Clarita City of Los Angeles County of Los Angeles	Newhall Sylmar/Granada Hills Johan Ranch/Oat Mountain
66-kV Reconductoring Route - Segments D and E	City of Los Angeles	Mission Hills
Substation Equipment Installations (Newhall Substation)	City of Santa Clarita	Newhall
Substation Equipment Installations (Pardee Substation)	City of Santa Clarita	Valencia
Substation Equipment Installations (San Fernando Substation)	City of Los Angeles	Mission Hills
Substation Equipment Installations (Chatsworth Substation)	County of Ventura (unincorporated)	Unincorporated area
Telecommunications Route #1: Newhall Substation to Natural Substation	City of Santa Clarita City of Los Angeles County of Los Angeles	Newhall Sylmar/Granada Hills Johan Ranch/Oat Mountain
Telecommunications Route #2: Chatsworth Substation to Natural Substation	City of Simi Valley County of Ventura (unincorporated) County of Los Angeles City of Los Angeles	City of Simi Valley Simi Hills Oat Mountain Chatsworth/Porter Ranch
Telecommunications Routes #3 and #4: San Fernando Substation to Fiber Optic Connection Point	Los Angeles County City of Los Angeles	Sylmar Mission Hills

The Aliso Canyon Natural Gas Storage Field (storage field) has been in operation since the 1970s. Existing operational noise sources include the turbine-driven compressor station, vehicles accessing the storage field, and equipment use. The existing storage field site is situated on elevated terrain in the Santa Susana Mountains.

The existing 66-kilovolt (kV) subtransmission lines and the proposed locations for Telecommunications Routes #1, #2, ~~and~~ #3, and #4 are located along open space, urban areas, and in the vicinity of major roadways (Interstate 5 [I-5] and I-210). Existing noise levels along most urban areas in the Cities of Los Angeles, San Fernando, Santa Clarita, and Simi Valley and in the proximity of highways result predominantly from vehicular traffic. Existing noise levels measured by the applicant are summarized in Table 4.11-4.

The proposed project components would be located a minimum of 7 miles away from private and public airports in Los Angeles County. The closest three airports are Whiteman Airport, Van Nuys Airport, and Bob Hope Airport. Distances to these airports from the closest proposed project components are provided in Section 4.10, "Land Use," Table 4.10-1. All project components would be located a minimum of 20 miles from airports in Ventura County.

Noise and Vibration Fundamentals

Sound is a pressure wave transmitted through the air and is measured by decibels (dB), frequency of pitch, and duration. Because the human ear can detect a large range of intensities, the dB scale is based on multiples of 10, according to the logarithmic scale. Each interval of 10 dB indicates a sound energy 10 times greater than the previous level and is perceived by the human ear as being roughly twice as loud. It is widely accepted that the average human ear can perceive changes of 3 dBA, and a change of 5 dBA is readily perceptible. Noise is defined as objectionable or unwanted sound.

To account for the fact that human hearing does not process all frequencies equally, an A-weighted (dBA) scale was developed. The dBA scale deviates from the "linear" dB weighting curve appropriately for specific frequency values. Therefore, the "A-weighted" noise scale is used for measurements and standards involving the human perception of noise. Table 4.11-2 shows the relationship of various noise levels to commonly experienced noise events.

Table 4.11-2 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock band
Jet fly-over at 1,000 feet (300 meters)	100	
Gas lawn mower at 3 feet (1 meter)	90	
Diesel truck at 50 feet, at 50 mph (80 km/h)	80	Food blender at 3 feet
Noisy urban area, daytime gas lawn mower at 100 feet	70	Vacuum cleaner at 10 feet
Commercial area heavy traffic at 300 feet	60	Normal speech at 3 feet
Quiet urban daytime	50	Large business office dishwasher in next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime	30	Library
Quiet rural nighttime	20	Bedroom at night, concert hall (background)
	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 2009
Key:
dBA = A-weighted decibels
km/h = kilometers per hour
mph = miles per hour;

Noise level descriptors are commonly used to characterize the average ambient noise environment in a given area. The Sound Equivalent Level, or L_{eq}, is generally used to characterize the average sound energy that occurs during a relatively short period of time, such as an hour. Two other descriptors, the Day-Night Level (L_{dn}) and Community Noise Equivalent Level (CNEL), are used for an entire 24-hour period. The value of the L_{dn} and CNEL are generally within 1 dB of each other and therefore are often used interchangeably in noise analysis. Both the L_{dn} and CNEL noise level descriptors are used to place a stronger emphasis on noise that occurs during nighttime hours (10 p.m. to 7 a.m.) by applying a 10-dB "penalty" to those hours, but the CNEL also applies a 5-dB "penalty" to the evening hours of 7 p.m. to 10 p.m.

Sound from a small localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates or drops off at a rate of 6 dBA for each doubling of the distance. Natural terrain features such as hills and dense woods, as well as fabricated features such as buildings and walls, can alter noise levels. Wind, temperature, and other atmospheric effects could also alter the path of sound.

Vibration

Another community annoyance related to noise is vibration. As with noise, vibration can be described by both its amplitude and frequency. Vibration can be felt outdoors, but the perceived intensity of vibration impacts are much greater indoors, due to the shaking of structures. Factors that influence levels of ground-borne vibration and noise are the vibration source; soil conditions (type, rock layers, soil layering, and depth of water table); and factors related to the vibration receiver (foundation type, building construction, and acoustical absorption). Human response to vibration is difficult to quantify because vibration can be perceived at levels below those required to produce any damage to structures. Table 4.11-3 shows common human and structural response to vibration levels.

Table 4.11-3 Human and Structural Response to Typical Levels of Vibration

Human/Structural Response	Vibration Velocity Level (VdB)[a]	Typical Sources
Threshold, minor cosmetic damage to fragile buildings	100	Blasting from construction projects
Difficulty with tasks (e.g., reading a screen)	90	Bulldozers and other heavy tracked construction equipment
Residential annoyance, transient events	80	Commuter rail, upper range
Residential annoyance, continuous events	70	Rapid transit, typical
Human threshold of perception and limit for vibration sensitive equipment	65	Bus or truck, typical
No human response	50	Typical background vibration

Source: FTA 2006
Key:
VdB = decibels of vibration velocity
Notes:
[a] Root-mean square vibration velocity level in VdB is equivalent to 10^{-6} inches per second.

Vibration is an oscillatory motion that can be described in terms of displacement, velocity, or acceleration. Vibratory motion is commonly described by identifying peak particle velocity (PPV), which is generally accepted as the most appropriate descriptor for evaluating building damage. However, human response to vibration is usually assessed using amplitude indicators (root-mean square) or vibration velocity levels measured in inches per second or in decibels (VdB). The background velocity level in residential areas is usually 50 VdB, and the human threshold of perception is 65 VdB. Special care should be also taken when vibration occurs close to historically important structures and very sensitive manufacturing or research equipment. Historical structures usually require lower vibration limits. High-resolution electronic equipment is also typically sensitive to vibration (FTA 2006).

Existing Noise Levels

The applicant conducted background noise measurements at several locations of the proposed project components, including the Newhall Substation site, five locations along the existing 66-kV subtransmission route east of I-5, and one location south of the proposed Central Compressor Station site. A summary of the noise measurements is provided in Table 4.11-4. The L_{eq} indicates the cumulative exposure during a specified duration, which accounts for all of the sound level fluctuations from different sources during the measurement period. Maximum sound level (L_{max}) and minimum sound level (L_{min}) refer to single noise events that represent the maximum and minimum sound levels recorded during the same time frame.

Table 4.11-4 Applicant's Noise Surveys Results

Site ID	Location	Start Time	Duration (Minutes)	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)	Noise Sources
1	North of Newhall Substation on small hill overlooking substation, 100 feet west of Wiley Canyon Road and 260 feet north of	8:57 a.m.	15	57	68	52	Traffic on Wiley Canyon Road and Lyon Avenue, aircraft over-flights, pedestrians, birds
2	Wiley Canyon Elementary School, 55 feet west of Wiley Canyon Road	9:41 a.m.	20	60	71	48	Traffic on Wiley Canyon Road, children playing, aircraft over-flights, pedestrians, birds
3	Cheryl Kelton Place	10:19 a.m.	15	48	57	44	Traffic on I-5 and Wiley Canyon Road, aircraft over-flights, pedestrians, birds
4	Wiley Canyon Road	11:07 a.m.	15	63	75	50	Traffic on I-5 and Wiley Canyon Road, aircraft over-flights, pedestrians, birds
5	Crescent Valley Mobile Home Park	11:39 a.m.	15	61	73	53	Traffic on I-5 and The Old Road, aircraft over-flights, pedestrians, birds
6	Newhall Church of the Nazarene	12:12 p.m.	10	66	76	59	Traffic on I-5 and The Old Road, pedestrians, birds
7	Community Recreation Common Area	1:02 p.m.	30	67	95	39	Traffic on Sesnon Boulevard, aircraft over-flights, dogs barking, pedestrians, parking lot noise

Source: SoCalGas 2009
Note: All measurements were taken on Wednesday, April 15, 2009.
Key:
dBA = A-weighted decibels
I-5 = Interstate 5
ID = identification
L_{eq} = Sound equivalent
L_{max} = maximum sound level
L_{min} = minimum sound level

According to measurements taken by the applicant, noise levels within 50 feet of the existing compressor station can reach as high as 85 dBA during peak use (SoCalGas 2009). The closest community to the compressor station (Site ID #7 on Table 4.11-4) is located approximately 3,000 feet from the station boundary, with a registered hourly equivalent sound level of 67 L_{eq} (h).

Noise Sensitive Receptors

Human response to noise varies depending on the receptor, the setting, and the activity in which a person is involved while exposed to unwanted sound. Noise-sensitive receptors can be defined as locations where people reside or where the presence of unwanted sound or vibration could adversely affect the designated land uses. Sensitive receptors in the project area are primarily schools, places of worship, parks, hospitals, and residences located within half a mile of one of the project components. The closest noise-sensitive receptors identified within a 1-mile radius from the proposed project components are outlined in Table 4.11-5. For the purposes of this analysis, distances to the closest receptors at urban areas have been identified by determining the shortest distances to residential structures, schools, hospitals, and other receptors observed on recent aerial imagery (i.e., Table 4-11.5 is not intended to provide a full inventory of sensitive receptors, but rather show the worst case scenario in terms of proximity to sensitive areas for each project component).

Table 4.11-5 Closest Noise Sensitive Receptors to Proposed Project Components

Project component	Closest Noise Sensitive Receptor	Jurisdiction	Land Use Designation	Distance (feet)
Aliso Canyon Plant Site				
Central Compressor Station	Residence on Kilfinan Street	City of Los Angeles	Low II Residential	3,876
• Office Facilities • Guardhouse and Entry Road Widening	Residence to proposed road widening (Tampa Avenue)	City of Los Angeles	Low I Residential	340
12-kV Plant Power Line	Residence on Tampa Avenue	City of Los Angeles	Low I Residential	477
Natural Substation	Residence on Kilfinan Street	City of Los Angeles	Low II Residential	3,493
66-kV Subtransmission Reconductoring: Segments A, B, C	Residence on Vista Ridge Drive	City of Santa Clarita	Low Residential	88
	Residence on Wiley Canyon Road (Near Pole #5)	City of Santa Clarita	Residential Suburban	48
	Residence on Wiley Canyon Road (Near Pole #11)	City of Santa Clarita	Residential Suburban	30
	Residence located between Towers #25 and #26	County of Los Angeles	Unclassified	23
66-kV Subtransmission Reconductoring: Segments D and E	Bishop Allemany High School (Pole #61)	City of Los Angeles	Low Residential	495
	Seminary of Our Lady Queen of Angels	City of Los Angeles	Low Residential	330
Substation Equipment Installation: Newhall	Residence on Vista Ridge Drive	City of Santa Clarita	Residential Low	100
	Valencia Surgical Center	City of Santa Clarita	Community Commercial	509
	Valley Community Church	City of Santa Clarita	Community Commercial	124
	Living Hope Evangelical	City of Santa Clarita	Residential Suburban	234
	Wiley Canyon Elementary School	City of Santa Clarita	Residential Suburban	537
	Santa Clarita Pre-School	City of Santa Clarita	Residential Suburban	1,113

Table 4.11-5 Closest Noise Sensitive Receptors to Proposed Project Components

Project component	Closest Noise Sensitive Receptor	Jurisdiction	Land Use Designation	Distance (feet)
Substation Equipment Installation: Chatsworth	Boeing Santa Susana Field Laboratories (Simi Valley)	County of Ventura	Open Space	761
Substation Equipment Installation: San Fernando	Seminary of Our Lady Queen of Angels	City of Los Angeles	Low Residential	330
	Bishop Allemany High School	City of Los Angeles	Low Residential	500
	Residence on San Fernando Mission Boulevard	City of Los Angeles	Low Residential	500
	San Fernando Mission	City of Los Angeles	Low Residential	700
	Providence Holy Cross Cancer Center	City of Los Angeles	Low Residential	1,976
	Healthcare Partners	City of Los Angeles	Low Residential	1,162
	~~Seventh Day Adventist Church~~	~~City of Los Angeles~~	~~Low Residential~~	~~1,826~~
	~~Mission Hills Foursquare Church~~	~~City of Los Angeles~~	~~Low Residential~~	~~2,628~~
Telecommunications Route #1: Newhall Substation to Natural Substation	Residence on Vista Ridge Drive	City of Santa Clarita	Low Residential	88
	Residence on Wiley Canyon Road (Near Pole #5)	City of Santa Clarita	Residential Suburban	48
	Residence on Wiley Canyon Road (Near Pole #11)	City of Santa Clarita	Residential Suburban	30
	Residence located between Towers #25 and #26	County of Los Angeles	Unclassified	23
	Residence on Vista Ridge Drive	City of Santa Clarita	Low Residential	100
	Valencia Surgical Center	City of Santa Clarita	Community Commercial	508
	Valley Community Church	City of Santa Clarita	Community Commercial	124
	Living Hope Evangelical	City of Santa Clarita	Residential Suburban	234
	Wiley Canyon Elementary School	City of Santa Clarita	Residential Suburban	537
	Santa Clarita Pre-School	City of Santa Clarita	Residential Suburban	1,112
Telecommunications Route #2: Chatsworth Substation to Natural Substation	Residence on North American Cutoff	Ventura County	Open Space	625
	Residence Box Canyon Road	Ventura County	Open Space	441
	Residence on Santa Susana Pass Road	Ventura County	Open Space	15
	Residence on W Santa Susana Road	City of Los Angeles	Low Medium Residential	34
	Residence on W Santa Susana Road	City of Los Angeles	Low Medium Residential	28
	Residence near Poema Pl	Los Angeles County	Low/Medium Residential	109
Telecommunications Route #3: San Fernando Substation to Fiber Optic Connection Point	Healthcare Partners	City of Los Angeles	Community Commercial	1,162
	San Fernando Mission	City of Los Angeles	Very Low Residential	700
	Community Charter Middle	City of San Fernando	SP-4	529
	Bishop Allemany High School	City of Los Angeles	Low Residential	482
	Nueva Esperanza School	City of San Fernando	SP-4	443
	Seminary of Our Lady Queen of Angels	City of Los Angeles	Low Residential	330

Table 4.11-5 Closest Noise Sensitive Receptors to Proposed Project Components

Project component	Closest Noise Sensitive Receptor	Jurisdiction	Land Use Designation	Distance (feet)
	Residence on San Fernando Mission Boulevard	City of Los Angeles	Low Residential	218
	KinderCare Learning Center	City of San Fernando	COM	121
	Residences on Gridley Street	City of Los Angeles	Very Low I Residential	85
	Residences on Foothill Boulevard	City of Los Angeles	Highway Oriented Commercial	62
	Residences on Gladstone Avenue	City of Los Angeles	Low Residential	48
	Residences on West San Fernando Boulevard	City of Los Angeles	Low Residential	40
	Residence on Maclay Street	City of Los Angeles	Low Residential	38
	Residences near Kalisher Street	City of Los Angeles	Low Residential	26
	Residences on Hubbard Street	City of Los Angeles	Low Residential	22
	Residences on South Workman Street	City of San Fernando	MDR	17
	Gridley Street Elementary	City of Los Angeles	Low Residential	9
	Residences on N Hubbard Avenue	City of San Fernando	LDR	35
	Ancient Church of the East	City of Los Angeles	Low Medium II Residential	108
	Santa Rosa Catholic Church	City of Los Angeles	MDR	116
	Santa Rosa de Lima Elementary	City of San Fernando	MDR	435
	La Trinidad Church	City of San Fernando	LDR	775
	Harding Street Elementary	City of Los Angeles	Low Residential	784
	San Fernando First Baptist Church	City of Los Angeles	Low Residential	1,126
Telecommunications Route #4: San Fernando Substation to Sylmar Substation*	Residences on South Workman Street	City of San Fernando	MDR	8
	Santa Rosa Catholic Church	City of Los Angeles	MDR	116
	Residences near Kalisher Street	City of Los Angeles	Low Residential	26
	Residence on San Fernando Mission Boulevard	City of Los Angeles	Low Residential	218
	Northeast Valley Health Corp		Specific Plan 4	330
	KinderCare Learning Center	City of San Fernando	COM	121
	Residences on San Fernando Road	City of Los Angeles	Neighborhood Commerce	62
	Residences on Frank Modugno Drive	City of Los Angeles	MDH	185
	Residences on San Fernando Road	City of Los Angeles	Neighborhood Commerce	48
	Residences on San Fernando Road	City of Los Angeles	LDH	300
	Residences on San Fernando Road	City Los Angeles	MDH	210
	Residences on San Fernando Road	City Los Angeles	LDH	290
	El Dorado Avenue Elementary School	City Los Angeles	Public	700
	Residences on San Fernando Road	City Los Angeles	Neighborhood Commerce	35
	Residences on San Fernando Road	City Los Angeles	LDH	260

Table 4.11-5 Closest Noise Sensitive Receptors to Proposed Project Components

Project component	Closest Noise Sensitive Receptor	Jurisdiction	Land Use Designation	Distance (feet)
	Residences on Avenue 5	City Los Angeles	Light Industrial	185
	Residences on San Fernando Road	City Los Angeles	LDH	234
	Businesses on San Fernando Road	City Los Angeles	Light Industrial	26
	Residences near Pala Avenue	City Los Angeles	Light Industrial	450
	Los Angeles County Public Defender Sylmar Juvenile Courthouse	City Los Angeles	Open Space	660
	Barry J. Nidors Juvenile Hall	City Los Angeles	Open Space	660
	Residence San Fernando Road	City Los Angeles	Open Space	108
	Apostolic Faith Tabernacle	City Los Angeles	LDR	1162
	Telfair Park	City Los Angeles	Park	1162

Source: Google Earth 2011, 2013
*Sensitive receptors were identified up to 1,500 feet from the proposed project components except in the event where there were no sensitive receptors within 1,500 feet. In these cases, the nearest sensitive receptor is identified.
Key:
COM = Commercial
LDR = low density residential
LDH = low density housing
MDH = medium density housing
MDR = medium density residential
SP-4 = San Fernando Corridors Specific Plan Zone

The closest noise sensitive receptors to the proposed Aliso Canyon Plant site include residences located south of the gas storage field area in the community of Porter Ranch, on Tampa Avenue, Kifilnan Street, and Sesnon Boulevard. Receptors associated with the proposed 66-kV reconductoring routes include residences, churches, and schools located to the east and west of Wiley Canyon Road, north of the Newhall Substation, east and west of the San Fernando Substation, and residences south of the proposed Central Compressor Station site along Sesnon Boulevard. As shown in Table 4.11-5, major concentrations of receptors are located along the proposed 66-kV reconductoring and telecommunication routes, especially at segments located in urban and suburban areas.

4.11.2 Regulatory Setting

Federal

There are no federal noise standards that directly regulate environmental or community noise. Regulating noise is generally a responsibility of local governments. However, several federal agencies have developed community noise guidelines.

The U.S. Environmental Protection Agency (EPA) published guidelines on recommended maximum noise levels to protect public health and welfare with adequate margins of safety. A noise level of 70 dBA equivalent sound level over a 24-hour period was identified as the level of environmental noise that could lead to hearing loss over a 40-year period (EPA 1978). In addition, noise levels of 55 dBA L_{dn} outdoors and 45 dBA indoors were identified as noise thresholds that would prevent activity interference or annoyance (FTA 2006). Workers' exposure to noise is regulated by the federal occupational noise regulations established by the Occupational Safety and Health Administration in 29 Code of Federal Regulations (CFR) 1910.95.

In regard to groundborne vibration and groundborne noise, agencies such as the Federal Transportation Administration (FTA) and the U.S. Bureau of Mines have extensively studied the effects of ground vibration and damage on structures. The FTA has established construction vibration damage criteria of 0.12 inches per second (PPV) or 90 VdB for buildings extremely susceptible to vibration damage.

State

There are no statewide regulations that address noise impacts; however, the state requires local governments to perform noise surveys and implement a noise element as part of its General Plan (OPR 2003), as established in the California Government Code Section 65302(f). In addition, the state recommends interior and exterior noise standards by land use category and standards for the compatibility of various land uses and noise levels.

City and County

As described in Table 4.11-1, the proposed project components are located within multiple jurisdictions. Community noise applicable plans and regulations addressed by each of these local governments are described in the following sections.

Los Angeles County

Los Angeles County Code Section 12.08 sets limits for the operation and construction of a project. This ordinance prohibits the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or during Sundays and holidays if the noise can be heard across a residential or commercial property line. Work approved by a health-related variance or for emergency public service utilities is exempted.

The ordinance also requires all mobile or stationary internal-combustion-engine-powered equipment to have working suitable exhaust and air-intake silencers. To decrease vibration, the ordinance prohibits operating any device that creates vibration that can be felt beyond the property boundary of the source (if on private property) or 150 feet away from the source (if on a public space or public right-of-way). The perception threshold is a motion velocity of 0.01 inches per second over the range of 1 to 100 hertz. Tables 4.11-6 and 4.11-7 summarize the construction and operation noise limits listed in the County Code.

City of Los Angeles

Section 40.41 (a) of the Los Angeles Municipal Code states that construction is not permitted between the hours of 9:00 p.m. and 7:00 a.m. Section 40.41 (c) states that construction is not permitted within 500 feet of residential land before 8:00 a.m. or after 6:00 p.m. on Saturdays or during a national holiday. Construction is never allowed on Sundays. Additionally, the operation, repair, or servicing of construction equipment and the delivering of construction materials to the job site is prohibited on Saturdays and Sundays during the hours specified. The City of Los Angeles does not mention requirements related to vibration in its noise ordinance. Tables 4.11-8 to 4.11-10 summarize the accepted noise levels for construction and operations, as well as the corrections to these established noise limits, as described in Section 112.05 of the Municipal Code.

Table 4.11-6 Los Angeles County Construction Noise Limits

Noise Source	Sound Level (dB)			Time
Business structures mobile equipment	85			All hours (including Sunday and legal holidays)
Residential structures[1]	Single-family Residential	Multi-family Residential	Semi-residential/ Commercial	
Mobile equipment[2]	75	80	85	7:00 a.m. to 8:00 p.m. (except Sundays and legal holidays)
	60	64	70	8:00 p.m. to 7:00 a.m. (including Sunday and legal holidays)
Stationary equipment[3]	60	65	70	7:00 a.m. to 8:00 p.m. (except Sundays and legal holidays)
	50	55	60	8:00 p.m. to 7:00 a.m. (including Sunday and legal holidays)

Source: Los Angeles County 2011, Section 12.08.440
Key:
dB = decibels
Notes:
1 Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days)
2 Maximum noise level for repetitively scheduled and relatively long-term operation (periods of 10 days or more)
3 Maximum noise levels for nonscheduled, intermittent, short-term operation

Table 4.11-7 Los Angeles County Operational Noise Limits

Zone	Sound Level (dB)	Time
Noise-sensitive area	45	Any time
Residential properties	45	10:00 pm to 7:00 am
	50	7:00 am to 10:00 pm
Commercial properties	55	10:00 pm to 7:00 am
	60	7:00 am to 10:00 pm
Industrial properties	70	Any time

Source: Los Angeles County 2011, Section 12.08.390
Key:
dB = decibels

Table 4.11-8 City of Los Angeles Maximum Noise Levels of Powered Equipment

Zone	Sound Level (dBA)	Time
500 feet from a residential zone	75 dBA for construction, industrial, and agricultural machinery, including crawler-tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, motor graders, paving machines, off-highway trucks, ditchers, trenchers, compactors, scrapers, wagons, pavement breakers, compressors, and pneumatic or other powered equipment;	Between 7:00 a.m. and 10:00 p.m.
500 feet from a residential zone	75d BA for powered equipment of 20 horsepower or less intended for infrequent use in residential areas, including chain saws, log chippers and powered hand tools	Between 7:00 a.m. and 10:00 p.m.
500 feet from a residential zone	65 dBA for powered equipment intended for repetitive use in residential areas, including lawn mowers, backpack blowers, small lawn and garden tools and riding tractors;	Between 7:00 a.m. and 10:00 p.m.

Source: City of Los Angeles 2011, Section 112.05
Key:
dBA = A-weighted decibel

Table 4.11-9 City of Los Angeles Minimum Ambient Noise Levels

Zone	Sound Level (dBA)	Time
A1, A2, RA, RE, RS, RD, RW1, RW2, R1, R2, R3, R4, and R5	50 40	Day Night
P, PB, CR, C1, C1.5, C2, C4, C5, and CM	60 55	Day Night
M1, MR1, and MR2	60 55	Day Night
M2 and M3	65 65	Day Night

Source: City of Los Angeles 2011, Section 111.3
dBA = A-weighted decibel

Table 4.11-10 City of Los Angeles Corrections to Noise Limits

Noise Condition	Correction (dBA)	Time
Except for noise emanating from any electrical transformer or gas metering and pressure control equipment existing and installed prior to the effective date of the ordinance enacting this chapter, any steady tone with audible fundamental frequency or overtones have 200 Hz	+5	Any time
Repeated impulsive noise	+5	Any time
Noise occurring more than 5 but less than 15 minutes in any period of 60 consecutive minutes	-5	Between the hours of 7:00 a.m. and 10:00 p.m. of any day
Noise occurring five minutes or less in any period of 60 consecutive minutes	-5	Between the hours of 7:00 a.m. and 10:00 p.m. of any day

Source: City of Los Angeles2011, Section 111.02
Key:
dBA = decibel
Hz = hertz

The Community of Sylmar, where a section of Telecommunication Route #3 is proposed, is part of the City of Los Angeles.

City of Santa Clarita

The City of Santa Clarita discusses noise impacts in section 11.44 of the Santa Clarita Municipal Code (2010) and in Chapter 5 (Noise Element) of the City of Santa Clarita General Plan (2000). As part of the General Plan policies, it is required that "those responsible for construction activities develop techniques to mitigate or minimize the noise impacts on residences, and adopt standards which regulate or minimize the noise impacts on residences, and adopt standards which regulate noise from noise construction activities which may occur in or near residential neighborhoods."

Section 11.44.080 of the noise ordinance states that construction requiring a building permit is not permitted within 300 feet of a residentially zoned property except between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. to 6 p.m. on Saturday. The policy also stipulates that no work shall be performed on Sundays or on the following public holidays: New Year's Day, Independence Day, Thanksgiving, Christmas, Memorial Day, and Labor Day. The Department of Community Development may issue a permit for work to be done "after hours" if construction noises are contained. The City of Santa Clarita does not mention requirements related to vibration in its noise ordinance. Tables 4.11-11 and 4.11-12 summarize the noise limits and corrections to noise limits listed in section 11.44.040 of the Santa Clarita Municipal Code.

Table 4.11-11 City of Santa Clarita Operational Noise Limits

Zone	Sound Level (dB)	Time
Residential zone	65	Day
Residential zone	55	Night
Commercial and manufacturing	80	Day
Commercial and manufacturing	70	Night

Source: City Santa Clarita 2010, Section 11.44.040
Key:
dB = decibel

Table 4.11-12 City of Santa Clarita Corrections to Noise Limits

Noise Condition	Correction (dB)	Time
Repetitive impulsive noise	-5	Day and Night
Steady whine, screech or hum	-5	Day and Night
Noise occurring more than 5 but less than 15 minutes per hour	+5	Day
Noise occurring more than 1 but less than 5 minutes per hour	+10	Day
Noise occurring less than 1 minutes per hour	+20	Day

Source: City of Santa Clarita 2011, Section 11.44.040
Key:
dB = decibel

Ventura County

Ventura County discusses noise impacts in Chapter 2.16 (Hazards Appendix) of the Ventura County General Plan (2010) and Chapter 2, Section 6 of the Ventura County Ordinance Code (1996). The General Plan restricts operation of industrial facilities during common sleeping hours for nearby residential areas. The General Plan also requires noise-sensitive projects located within the CNEL 60 or 65 contour of any roadway, railroad, airport, or industrial use to conduct an acoustical site analysis and noise control specification. The Noise Ordinance limits “loud or raucous noise” 50 feet from the property line in residential areas from 9 p.m. to 7 a.m. ~~This Noise Ordinance does not mention requirements related to construction noise or vibration.~~ Construction noise thresholds for daytime, evening, and nighttime construction are included in the Ventura County Construction Noise Threshold Criteria and Control Plan (Control Plan) (2010). Table 4.11-13 presents the daytime noise threshold criteria (NTC). Daytime is defined in the Control Plan as 7:00 a.m. to 7:00 p.m. Monday through Friday, and from 9:00 a.m. to 7:00 p.m. Saturday, Sunday and local holidays. Under the Control Plan, construction noise shall be evaluated and, if necessary, mitigated in accordance with the plan.

Table 4.11-13 Daytime Construction Activity Noise Threshold Criteria

Construction Duration Affecting Noise-sensitive Receptors	Noise Threshold Criteria shall be the greater of these noise levels at the nearest receptor area or 10 feet from the nearest noise-sensitive building	
	Fixed Leq(h), dBA	Hourly Equivalent Noise Level (Leq), dBA[1,2]
0 to 3 days	75	Ambient Leq(h) + 3dB
4 to 7 days	70	Ambient Leq(h) + 3dB
1 to 2 weeks	65	Ambient Leq(h) + 3dB
2 to 8 weeks	60	Ambient Leq(h) + 3dB
Longer than 8 weeks	55	Ambient Leq(h) + 3dB

1 The instantaneous Lmax shall not exceed the NTC by 20 dBA more than 8 times per daytime hour.
2 Local ambient Leq measurements shall be made on any mid-week day prior to project work.

Community of Simi Valley

The Simi Valley Noise Ordinance, Title 5, Chapter 16 governs noise from non-transportation sources in the City. The ordinance does not specify maximum noise levels, but instead identifies various noise generators such as construction equipment, engines, and mechanical devices and provides certain restrictions on these generators (Table 4.11-~~13~~14).

Table 4.11-~~13~~14 City of Simi Valley Noise Restrictions

Noise Condition	Time of Use
Pile drivers, hammers, and the like	7:00 a.m. to 7:00 p.m.
Construction and repair of buildings	7:00 a.m. to 7:00 p.m.
Engines, motors, and mechanical devices within 50 feet or within 10 feet. of any residence	Prohibited 10:00 p.m. to 7:00 a.m. Sunday through Thursday
	Prohibited 11:00 p.m. to 7:00 a.m. Friday or Saturday

Source: City of Simi Valley 2011, Noise Ordinance, Title 5, Chapter 16

City of San Fernando

The City of San Fernando's Municipal Code (2011), Chapter 34, Article II determines the city's noise code. Permitted ambient noise limits (not to be exceeded for more than ten minutes per hour) and construction restrictions established for the City of San Fernando (Sections 34-27 and 34-28) are summarized in Tables 4.11-~~14~~15 and 4.11-~~15~~16. Section 34-31 of the City of San Fernando Municipal Code establishes that "activities of the federal, state or local government and its duly franchised utilities" and "activities necessary to continue to provide public utility services to the general public, whether this service is installing additional facilities" are exempt from the provisions of Article II.

Table 4.11-~~14~~15 City of San Fernando Maximum Permissible Ambient Noise Level

Zone	Sound Level (dB)	Time
Residential, including mixed use exterior	50	10:00 p.m. to 7:00 a.m.
	55	7:00 a.m. to 10:00 p.m.
Residential including mixed use Interior	40	10:00 p.m. to 7:00 a.m.
	50	7:00 a.m. to 10:00 p.m.
Commercial properties	60	10:00 p.m. to 7:00 a.m.
	65	7:00 a.m. to 10:00 p.m.
Industrial properties	70	Any time

Source: City of San Fernando 2011, Section 34-27
Key:
dB = decibel

Table 4.11-~~15~~16 City of San Fernando Construction Restrictions

Noise Condition	Time of Use
Excavation, demolition, alteration, or repair of any building	Prohibited Sundays and federal holidays
Construction and repair of buildings that do not impact public health and safety, permit required from building official	6:00 p.m. to 7:00 a.m. weekdays
	6:00 p.m. to 8:00 a.m. Saturdays
Construction and repair of buildings	7:00 a.m. to 6:00 p.m. weekdays
	8:00 a.m. to 6:00 p.m. Saturdays

Source: City of San Fernando 2011, Section 34-28

Other Plans and Regulations

The closest three airports to the proposed project area are Whiteman Airport, Van Nuys Airport, and Bob Hope Airport. During construction, helicopter fueling would occur at staging areas at the Pardee Substation or at Whiteman Airport (approximately 2.75 miles southeast of the San Fernando Substation), Van Nuys Airport (approximately 5.5 miles south of San Fernando Substation), or Bob Hope Airport in Burbank (approximately 8 miles southeast of the San Fernando Substation), using the helicopter contractor's fuel truck.

Whiteman Airport is located in the community of Pacoima, approximately 2.75 miles from the San Fernando substation, and does not have a noise management plan. Van Nuys Airport is located in the community of Van Nuys, approximately 5.41 miles from the San Fernando substation. The Van Nuys Airport Plan is an element of the Los Angeles City General Plan, adopted in January 2006. The Airport Plan policies include conducting Federal Aviation Regulations Part 161 studies "with the goal of eliminating all jet and helicopter operations between 10 p.m. and 7 a.m. the next day."

Bob Hope Airport completed a Federal Aviation Regulations Part 161 noise study in early 2009, seeking to implement a mandatory curfew on flights, eliminating operations between 10:00 p.m. and 7:00 a.m. In November 2009, the Federal Aviation Administration issued a finding that the Part 161 noise study did not justify the implementation of a mandatory curfew. However, the curfew is currently in effect as a voluntary measure.

4.11.3 Methodology and Significance Criteria

Evaluation of noise and vibration impacts from the proposed project's construction, operation, and maintenance included the review of relevant city and county noise standards, the existing noise environment along the proposed project area, and the estimation of projected noise levels from equipment, vehicles, and activities. County and project maps and satellite images were reviewed to determine the proximity of the proposed project to closest sensitive receptors and airports. In addition, land use plans and topographic and noise contours maps were researched for relevant information on the existing noise and vibration levels. Based on the distance from each of the proposed project components to the identified sensitive receptors and the composite noise levels modeled by the applicant, predicted noise levels—as perceived by closest receptors—were estimated and compared with applicable standards, guidelines, and the criteria above in order to determine the significance of potential noise impacts.

Potential impacts on noise were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the CEQA Guidelines. The proposed project would cause a significant impact on visual resources if it would:

- Expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Expose persons to, or generate, excessive groundborne vibration or groundborne noise levels.
- Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels that would exist without the project.
- Cause a substantial temporary increase in ambient noise levels in the project vicinity above levels that would exist without the project.

Appendix G of the CEQA Guidelines also includes the following checklist items:

- Expose people residing near or working on the project to excessive noise levels, for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport; and
- Expose people residing near or working on the project to excessive noise levels, for a project within the vicinity of a private airstrip.

The proposed project component areas, however, are not located within areas subject to an airport land use plans, nor are any of the project components located within 2 miles of any public or public use airports, or private airstrips. The closest airport in Los Angeles County is located approximately 7 miles away from the proposed project and the closest airports in Ventura County are located more than 20 miles away. Therefore, these items are not applied as criteria in the analysis of environmental impacts presented in the following section.

4.11.4 Environmental Impacts and Mitigation Measures

4.11.4.1 Applicant Proposed Measures

The applicant has committed to the following applicant proposed measures (APMs) as part of the design of the proposed project. See Section 2.5, "Plans and Applicant Proposed Measures," Table 2.8 for a full description of each APM.

- **APM NS-1: Construction Hours**
- **APM NS-2: Construction Noise Control Plan.**
- **APM NS-3: Notification Procedures.**

4.11.4.2 Construction Noise and Vibration

Construction of the proposed project components is anticipated to take ~~22~~24 months, with some of the construction activities occurring simultaneously. Site preparation and installation of the Aliso Canyon Plant Station (Plant Station) components, 12-kV Plant Power Line, guardhouse, Natural Substation, 66-kV subtransmission reconductoring and improvements to telecommunications infrastructure could take place concurrently. As indicated in APM NS-1, construction would typically occur during daylight hours Monday through Friday. If different hours or days are required, the applicant and/or Southern California Edison (SCE) would contact the jurisdiction within which the work would take place to determine any local requirements regarding temporary construction noise.

Major noise sources during the proposed project construction activities would be associated with the use of heavy-duty equipment, vehicles, and helicopters for the 66-kV line wire stringing operations (when required). Operation of the existing gas turbine–driven compressors, piping equipment, and emergency safety valves at the Plant Station would also contribute to composite noise levels during construction. Construction activities at the proposed Natural Substation site and 66-kV reconductoring routes would require a higher number of heavy-duty vehicles and take place over a shorter time than the Plant Station. Typical noise levels for the loudest pieces of equipment proposed to be used for each project component are presented in Table 4.11-~~16~~17. Predicted maximum construction noise levels from the loudest pieces of equipment are presented per project component in Table 4.11-~~17~~18 (modeled as L_{eq}). The applicant has anticipated that noise levels from substation equipment replacement activities would be minimal, since no heavy duty equipment would be required and tasks would mainly occur inside existing operational control rooms.

Table 4.11-~~16~~17 Typical Noise Levels from Proposed Construction Equipment

Proposed Construction Equipment	Noise Reference Levels at 50 feet from source (dBA)
Pickup truck, tool truck, crewcab truck	75
Hydraulic crane	81
Boom crane (20-ton Manitex)	85
Hauler	85
6-Ton truck, dump truck, water truck	84
Boom truck, bucket truck	84
Concrete truck	89
Batch plant	83
Forklifts	85
Backhoe	80
Bobcat	85
Front-end loader; skid steer loader	80
Grader	85
Dozer	85
Man lift	85
Scraper	85
Sheep's foot vibrator compactor	83
Drum type compactor	83
Excavator	85
Drill rig	84
Tractor	84
Compressor	80
Generator (>25 KVA)	82
Tamper	85
Paver	85
Vibrating roller	85
Asphalt curb machine	85
Helicopter (Hughes 369 or 500 type)	75 (at 500 feet)

Sources: FHWA 2006; Nelson 1987
Key:
dBA = A-weighted decibels
kVA = kilovolt amperes

Table 4.11-~~17~~18 Predicted Construction Noise Levels from Working Areas

Proposed Construction Working Areas	Noise Level at 50 feet
Aliso Canyon Plant Site Construction: Central Compressor Station	84 dBA L_{eq}
Natural Substation Construction	84 dBA L_{eq}
66-kV subtransmission reconductoring: Pole/Tower Removal	83 dBA L_{eq}
66-kV subtransmission reconductoring: Pole Installation/Replacement	82 dBA L_{eq}

Source: SoCalGas 2009
Note: Modeling conducted by the applicant included loudest pieces of equipment, surface type, elevation, slope, cut depth, and barrier height. In addition, the worst case scenario used in this model assumed a 100% load factor.
Key:
dBA = A-weighted decibels
kV = kilovolt
L_{eq} = Sound level equivalent

The loudest equipment used during construction would contribute to a composite average or equivalent site noise level. During a typical day, construction equipment would not be operated continuously at peak levels (L_{max}). Assuming scenarios where multiple pieces of the loudest equipment are used, the applicant estimates that equivalent composite noise levels are anticipated to be between 82 and 84 dBA L_{eq} at 50 feet from the proposed construction areas (see Table 4.11-14). These composite noise levels would decrease by distance, at a rate of 6 dBA per each doubling of the distance, with additional acoustic reduction due to ground effects, topography, building, and other existing barriers located within the sources and receptors. Exposure to noise from construction activities would be temporary for all project components and would be transient in nature for the 12-kV Plant Power Line construction, 66-kV subtransmission reconductoring (tower replacement would take up to one week at any location), and telecommunication fiber optic cable installation. Table 4.11-~~18~~19 presents a summary of the estimated noise levels at identified sensitive receptors, as detailed in Tables 4.11-5 and 4.11-6. More details about major noise sources per project component are discussed in the following sections.

Central Compressor Station

The proposed Central Compressor Station would be constructed within the footprint of the existing Plant Station site. Construction of the Central Compressor Station would last up to ~~22~~24 months, and major activities would include clearing and grading; construction of building and equipment foundations; ground surface preparation at access points within the equipment area; erection of structures; installation of equipment and piping; and cleaning and restoration of the site. Major pieces of equipment that mainly contribute to the estimated composite noise level are graders, dozers, excavators, hydraulic cranes, and trucks. These pieces of equipment would be in operation for 6 to 12 months, and trucks would operate during the overall ~~22~~24-month construction period.

Given the estimated numbers of the loudest pieces of equipment, and the duration of its anticipated operation, the applicant expects that construction of the Central Compressor Station would be the major source of composite noise during construction taking place on the Plant Station site. In addition, construction activities would occur while the existing turbine-driven compressors are in operation, adding an equivalent noise source (estimated as 85 dBA at 50 feet, as reported by the Washington Group (2007). The closest sensitive receptors to the proposed Central Compressor Station are located south of the storage field on Kilfinan Street and Tampa Avenue, with an average distance above 3,000 feet from the construction site, in the proximity of the Plant Station construction site.

Gas-Turbine Compressor Decommissioning

The existing gas turbine–driven compressors would be decommissioned after one cycle of tested reliable service using the new electric-driven variable-speed compressor trains. The compressors would be decommissioned in accordance with California Public Utilities Commission retirement processes, and it is anticipated that this activity would only involve removal of the existing equipment and demolition of the structure to the existing site grade. It is not expected that impacts from decommissioning would be greater than those related to construction of the proposed Central Compressor Station. The sensitive receptors closest to the decommissioning site are located at the same distance as those identified for the Central Compressor Station (over 3,000 feet).

Table 4.11-~~18~~19 Estimated Maximum Noise Levels at Closest Receptors and Comparison with Local Standards

Project component	Closest Noise Sensitive Receptor	Type	Jurisdiction	Zoning	Distance (feet)	Composite Noise Level at 50 feet (dBA, Lmax)	Composite Noise Level at Closest Receptor (dBA)	Daytime Noise Standard	Exceeds Daytime Standard?
Aliso Canyon Plant Site									
Central Compressor Station	Residence on Kilfinan Street	Residence	City of Los Angeles	Residential	3876	84	46.2	75	No
Office Facilities	Residence to proposed road widening (Tampa Avenue)	Residence	City of Los Angeles	Residential	340	84	67.3	75	No
12-kV Plant Power Line	Residence on Tampa Avenue	Residence	City of Los Angeles	Residential	477	84	64.4	75	No
Natural Substation	Residence on Kilfinan Street	Residence	City of Los Angeles	Residential	3493	84	47.1	75	No
66-kV Segments A, B, C	Residence on Vista Ridge Dr.	Residence	City of Santa Clarita	Residential	88	83	78.1	65	Yes
	Residence on Wiley Canyon Road (Near Pole #5)	Residence	City of Santa Clarita	Residential	48	83	83.4	65	Yes
	Residence on Wiley Canyon Road (Near Pole #11)	Residence	City of Santa Clarita	Residential	30	83	87.4	65	Yes
	Residence located between Towers #25 and #26	Residence	County of Los Angeles	Unclassified	23	83	89.7	75	Yes
	Bishop Allemany High School (Pole #61)	School	City of Los Angeles	Residential	495	83	63.1	75	No
	Seminary of Our Lady Queen of Angels	School	City of Los Angeles	Residential	330	83	66.6	75	No
Telecommunications Route #1: Newhall to Natural	Residence on Vista Ridge Dr.	Residence	City of Santa Clarita	Residential	88	83	78.1	65	Yes
	Residence on Wiley Canyon Road (Near Pole #5)	Residence	City of Santa Clarita	Residential	48	72 ~~83~~	67.1 ~~83.4~~	65	Yes
	Residence on Wiley Canyon Road (Near Pole #11)	Residence	City of Santa Clarita	Residential	30	72 ~~83~~	72.4 ~~87.4~~	65	Yes
	Residence located between Towers #25 and #26	Residence	County of Los Angeles	Unclassified	23	72 ~~83~~	76.4 ~~89.7~~	75	Yes
	Valencia Surgical Center	Hospital	City of Santa Clarita	Commercial	508	72 ~~83~~	78.7 ~~62.9~~	80	No

Table 4.11-~~18~~19 Estimated Maximum Noise Levels at Closest Receptors and Comparison with Local Standards

Project component	Closest Noise Sensitive Receptor	Type	Jurisdiction	Zoning	Distance (feet)	Composite Noise Level at 50 feet (dBA, Lmax)	Composite Noise Level at Closest Receptor (dBA)	Daytime Noise Standard	Exceeds Daytime Standard?
Telecommunications Route #1: Newhall to Natural	Valley Community Church	Place of Worship	City of Santa Clarita	Commercial	124	72 ~~83~~	51.9 ~~75.1~~	80	No
	Living Hope Evangelical	Place of Worship	City of Santa Clarita	Residential	234	72 ~~83~~	64.1 ~~69.6~~	65	No ~~Yes~~
	Wiley Canyon Elementary School	School	City of Santa Clarita	Residential	537	72 ~~83~~	58.6 ~~62.4~~	65	No
	Santa Clarita Pre-School	School	City of Santa Clarita	Residential	1112	72 ~~83~~	51.4 ~~62.4~~	65	No
Telecommunications Route #2: Chatsworth to Natural	Residence on North American Cutoff	Residence	Ventura County	Open Space	625	72 ~~83~~	45.1 ~~61.1~~	65	No
	Residence Box Canyon Road	Residence	Ventura County	Open Space	441	72 ~~83~~	50.1 ~~64.1~~	65	No
	Residence on Santa Susana Pass Road	Residence	Ventura County	Open Space	15	72 ~~83~~	53.1 ~~93.5~~	65	Yes
	Residence on Santa Susana Pass Road	Residence	Ventura County	Open Space	134	72 ~~83~~	82.5 ~~74.4~~	65	No ~~Yes~~
	Residence on Santa Susana Pass Rd	Residence	Ventura County	Open Space	185	72 ~~83~~	63.4 ~~71.6~~	65	No ~~Yes~~
	Residence on W Santa Susana Road	Residence	City of Los Angeles	Residential	323	72 ~~83~~	60.6 ~~66.8~~	75	No
	Residence on W Santa Susana Road	Residence	City of Los Angeles	Residential	34	72 ~~83~~	55.8 ~~86.3~~	75	No ~~Yes~~
	Residence on W Santa Susana Road	Residence	City of Los Angeles	Residential	28	72 ~~83~~	75.3 ~~88.0~~	75	Yes
	Residence near Poema Place	Residence	County of Los Angeles	Residential	109	72 ~~83~~	77.0 ~~76.2~~	75	No ~~Yes~~
Telecommunications Route #3: San Fernando to Connection Point	Healthcare Partners	Hospital	City of Los Angeles	Commercial	1162	72 ~~83~~	65.2 ~~55.7~~	75	No
	San Fernando Mission	Historic Place	City of Los Angeles	Residential	700	72 ~~83~~	44.7 ~~60.1~~	75	No
	Community Charter Middle	Place of Worship	City of San Fernando	Residential	529	72 ~~83~~	49.1 ~~62.5~~	70	Exempt
	Bishop Allemany High School	School	City of Los Angeles	Residential	482	72 ~~83~~	51.5 ~~63.3~~	75	No

Table 4.11-~~18~~19 Estimated Maximum Noise Levels at Closest Receptors and Comparison with Local Standards

Project component	Closest Noise Sensitive Receptor	Type	Jurisdiction	Zoning	Distance (feet)	Composite Noise Level at 50 feet (dBA, Lmax)	Composite Noise Level at Closest Receptor (dBA)	Daytime Noise Standard	Exceeds Daytime Standard?
Telecommunications Route #3: San Fernando to Connection Point	Nueva Esperanza School	School	City of San Fernando	Special Corridor	443	72 ~~83~~	52.3 ~~64.1~~	70	Exempt
	Seminary of Our Lady Queen of Angels	School	City of Los Angeles	Residential	330	72 ~~83~~	53.1 ~~66.6~~	75	No
	Residence on San Fernando Mission Boulevard	Residence	City of Los Angeles	Residential	218	72 ~~83~~	55.6 ~~70.2~~	75	No
	KinderCare Learning Center	School	City of San Fernando	Commercial	121	72 ~~83~~	59.2 ~~75.3~~	70	Exempt
	Residences on Gridley Street	Residence	City of Los Angeles	Residential	85	72 ~~83~~	64.3 ~~78.4~~	75	No ~~Yes~~
	Residences on Foothill Blvd.	Residence	City of Los Angeles	Commercial	62	72 ~~83~~	67.4 ~~81.1~~	75	No ~~Yes~~
	Residences on Gladstone Ave.	Residence	City of Los Angeles	Residential	48	72 ~~83~~	70.1 ~~83.4~~	75	No ~~Yes~~
	Residences on West San Fernando Boulevard	Residence	City of Los Angeles	Residential	40	72 ~~83~~	72.4 ~~84.9~~	75	No ~~Yes~~
	Residence on Maclay Street	Residence	City of Los Angeles	Residential	38	72 ~~83~~	73.9 ~~85.4~~	75	No ~~Yes~~
	Residences near Kalisher Street	Residence	City of Los Angeles	Residential	26	72 ~~83~~	74.4 ~~88.7~~	75	Yes
	Residences on Hubbard Street	Residence	City of Los Angeles	Residential	22	72 ~~83~~	77.7 ~~90.1~~	75	Yes
	Residences on South Workman Street	Residence	City of San Fernando	Residential	9 ~~17~~	72 ~~83~~	79.1 ~~92.4~~	75 ~~70~~	Exempt ~~Yes~~
	Gridley Street Elementary	School	City of Los Angeles	Residential	50 ~~94~~	72 ~~83~~	86.9 ~~97.9~~	70 ~~75~~	No ~~Yes~~
	Residences on N Hubbard Avenue	Residence	City of San Fernando	Residential	35	72 ~~83~~	52.9 ~~86.1~~	70	Exempt
	Ancient Church of the East	Place of Worship	City of Los Angeles	Residential	108	72 ~~83~~	75.1 ~~76.3~~	75	No ~~Yes~~
	Santa Rosa Catholic Church	Place of Worship	City of San Fernando	Residential	116	72 ~~83~~	65.3 ~~75.7~~	70	Exempt
	Santa Rosa de Lima Elementary	School	City of San Fernando	Residential	435	72 ~~83~~	64.7 ~~64.2~~	70	Exempt
	La Trinidad Church	Place of Worship	City of San Fernando	Residential	775	72 ~~83~~	53.2	70	Exempt
	Harding Street Elementary	School	City of Los Angeles	Residential	784	72 ~~83~~	48.2	75	No
	San Fernando First Baptist Church	Place of Worship	City of Los Angeles	Residential	1126	72 ~~83~~	48.1	75	No

Table 4.11-~~18~~19 Estimated Maximum Noise Levels at Closest Receptors and Comparison with Local Standards

Project component	Closest Noise Sensitive Receptor	Type	Jurisdiction	Zoning	Distance (feet)	Composite Noise Level at 50 feet (dBA, Lmax)	Composite Noise Level at Closest Receptor (dBA)	Daytime Noise Standard	Exceeds Daytime Standard?
Telecommunications Route #4: San Fernando Substation to Sylmar Substation	Residences on South Workman Street	Residence	City of San Fernando	MDR	9	72	86.9	72	Yes
	Santa Rosa Catholic Church	Place of Worship	City of Los Angeles	MDR	116	72	64.7	72	Exempt
	Residences near Kalisher Street	Residence	City of Los Angeles	Low Residential	26	72	77.7	72	Yes
	Residence on San Fernando Mission Boulevard	Residence	City of Los Angeles	Low Residential	218	72	59.2	72	No
	Northeast Valley Health Corp	Care Center	City of Los Angeles	Specific Plan 4	330	72	55.6	72	No
	KinderCare Learning Center	School	City of San Fernando	COM	121	72	64.3	72	Exempt
	Residences on San Fernando Road	Residence	City of Los Angeles	Neighborhood Commerce	62	72	70.1	72	No
	Residences on Frank Modugno Drive	Residence	City of Los Angeles	MDH	185	72	60.6	72	No
	Residences on San Fernando Road	Residence	City of Los Angeles	Neighborhood Commerce	48	72	72.4	72	No
	Residences on San Fernando Road	Residence	City of Los Angeles	LDH	300	72	56.4	72	No
	Residences on San Fernando Road	Residence	City of Los Angeles	MDH	210	72	59.5	72	No
	Residences on San Fernando Road	Residence	City of Los Angeles	LDH	290	72	56.7	72	No
	El Dorado Avenue Elementary School	School	City of Los Angeles	Public	700	72	49.1	72	No
	Residences on San Fernando Road	Residence	City of Los Angeles	Neighborhood Commerce	35	72	75.1	72	No

Table 4.11-~~18~~19 Estimated Maximum Noise Levels at Closest Receptors and Comparison with Local Standards

Project component	Closest Noise Sensitive Receptor	Type	Jurisdiction	Zoning	Distance (feet)	Composite Noise Level at 50 feet (dBA, Lmax)	Composite Noise Level at Closest Receptor (dBA)	Daytime Noise Standard	Exceeds Daytime Standard?
Telecommunications Route #4: San Fernando Substation to Sylmar Substation (cont'd)	Residences on San Fernando Road	Residence	City of Los Angeles	LDH	260	72	57.7	72	No
	Residences on Avenue 5	Residence	City of Los Angeles	Light Industrial	185	72	60.6	72	No
	Residences on San Fernando Road	Residence	City of Los Angeles	LDH	234	72	58.6	72	No
	Businesses on San Fernando Road	Business	City of Los Angeles	Light Industrial	26	72	77.7	72	No
	Residences near Pala Avenue	Residence	City of Los Angeles	Light Industrial	450	72	52.9	72	No
	Los Angeles County Public Defender Sylmar Juvenile Courthouse	Government Building	City of Los Angeles	Open Space/ Public Facilities	660	72	49.6	72	No
	Barry J. Nidors Juvenile Hall	Government Building	City of Los Angeles	Open Space/ Public Facilities	660	72	49.6	72	No
	Residence San Fernando Road	Residence	City of Los Angeles	Open Space/ Public Facilities	108	72	65.3	72	No
	Apostolic Faith Tabernacle	Place of Worship	City of Los Angeles	LDR	1162	72	44.7	72	No
	Telfair Park	Park	City of Los Angeles	Park	1162	72	44.7	72	No

Sources: Noise level estimation based on FTA (2005) methodology. Receptors identification based on Google Earth 2011 (v. 5.2.1.1588).
Key:
dBA = A-weighted decibels
kV = kilovolt
L_{max} = maximum sound level

Office Facilities and Guardhouse

The proposed office facilities would be constructed within the northern part of the Plant Station site, during a period of two months. The existing office structures (modular trailer facilities) would be removed from service once the new facilities are operational. Major construction activities that involve the loudest pieces of equipment and vibration sources include site preparation (backhoe, loader); soil compaction (sheep's foot vibrator compactor); grading (graders, dozers); and road widening (loader, backhoe, and paver/sealer). Road widening activities would take place along a ~~500~~300-foot segment between the existing and proposed new guardhouse. The minimum distance between the proposed road widening work area and closest sensitive receptors on Tampa Avenue is 350 feet.

12-kV Plant Power Line

The proposed 12-kV Plant Power Line would be constructed on the proposed project site to provide electrical service from the proposed Natural Substation to the proposed Central Compressor Station. It would consist of three tubular steel poles: one at the proposed Natural Substation, one at the proposed Central Compressor Station, and one at the mid-point between the substation and compressor station. Construction of this line would be completed in 90 days and would mainly involve the use of equipment for ground level and overhead construction, such as backhoes, drill rigs, loaders, hauler, bucket truck, a concrete batch plant, and a vibrating roller. The sensitive receptors closest to the 12-kV Plant Power Line are residences located at 3,000 to 3,200 feet from the proposed construction areas.

Natural Substation

The proposed Natural Substation would be located approximately 1,800 feet west of the proposed Central Compressor Station site on elevated terrain. Construction would take approximately 9 to 15 months, and major activities at the proposed substation site would include site clearing, grading, and below-grade and above-grade facilities installation. The loudest pieces of equipment during the proposed substation construction are those required for grading, civil, and electrical construction, such as backhoes, graders, dozers, loaders, excavators, and a 15-ton crane. The estimated composite noise level at 50 feet is 84 dBA. The closest residential receptor is located approximately at 3,320 feet from the proposed substation construction site.

66-kV Subtransmission Line Reconductoring and Structure Replacement

The 66-kV reconductoring activities would take up to 15 months, depending on weather conditions, and would involve transient activities along the 8.2 miles of total length. The loudest pieces of equipment involved during reconductoring include graders, loaders, drum type compactors, compressors, cranes, excavators, and trucks. Estimated composite noise levels for both reconductoring and structure replacement have been estimated by the applicant as 82 to 83 dBA. In addition, SCE anticipates that, at minimum, 42 helicopter flights would be required for 66-kV subtransmission line reconductoring and that 7 flights would be required for fiber optic cable installation. Hughes 369 or 500 or comparable helicopters would be used for stringing activities. Noise levels from this type of helicopters have been reported as 75 dBA at 500 feet (Nelson 1987). Receptors sensitive to reconductoring activities are located as close as 20 to 50 feet from existing pole locations at urban areas in the City of Santa Clarita and City of San Fernando.

SCE does not plan to execute construction activities during nighttime hours unless specifically allowed by federal, state, or local permits. It is possible, for example, that Caltrans may require nighttime work to reconductor the 66-kV subtransmission line across I-5 and install fiber optic cable beneath State Route-118 (Telecommunications Route #2). In addition, truck deliveries with oversized loads may be restricted to off-peak hours.

Substation Equipment Installations

Fiber optic cable and relay protection equipment would be installed in the mechanical and electrical equipment room within each of the substations comprised under the proposed project (Natural, Chatsworth, Newhall, and San Fernando). It is anticipated that no major heavy duty pieces of equipment would be required for this activity, and all work would be performed within an existing operational control or mechanical and electrical equipment room buildings. The few vehicles used during this activity would emit noise only when arriving and leaving the substations' boundaries, and it is anticipated that speed controls (and therefore noise associated with vehicle speed) would be in place within the substation facilities.

Telecommunication Routes

Telecommunication Route #1 would be constructed overhead from the Newhall Substation to the proposed Natural Substation. This route would also include the use of existing and newly installed underground conduit and structures from the 66-kV racks to the mechanical and electrical equipment rooms within the Newhall and Natural Substations. The receptors closest to this route are located in the City of Santa Clarita. Telecommunication Route #2 would extend 15.3 miles from the Chatsworth Substation northeast to the proposed Natural Substation. It would cross from unincorporated Ventura County into the City of Simi Valley, then into the City of Los Angeles, with sensitive receptors identified along Santa Susana Pass Road. Telecommunication Route #3 would extend 5.0 miles within the Cities of San Fernando and Los Angeles, with multiple residential receptors located along the proposed routes.

Installation of the telecommunication routes would commonly require less heavy duty equipment than subtransmission line construction (primarily bucket trucks, splicing vehicle units, and equipment required for underground conduit installation). It is also expected that groundbreaking activities such as those associated with trenching at proposed locations (1,300 feet) along Telecommunication Route #3 would involve the short-term operation of loud equipment, such as jackhammers (89 dBA Lmax at 50 feet) and concrete saws (90 dBA Lmax at 50 feet). However, noise from trenching activities would be restricted to the proximity of specific locations (most of them on highway crossings) and short time periods. This analysis assumes that the average noise level from installation of all the proposed telecommunication routes would be 73 dBA, ~~equivalent to~~ less than the reported levels for the reconductoring activities~~ (83 dBA)~~.

4.11.4.3 Operational Noise

Permanent noise sources associated with the proposed project operations and maintenance would center primarily on the Plant Station and Natural Substation areas; however, routine maintenance, inspection, and repair would also be required along the 66-kV subtransmission lines and telecommunication routes, involving the use of temporary noise sources. Major operational noise sources for the proposed project are described as follows.

Aliso Canyon Plant Station

Major noise sources associated with operations and maintenance at the Plant Station would relate to the Central Compressor Station, which would operate continuously, seven days a week. These sources include the three electric-driven variable-speed compressors, coolers, electrical equipment, the suction, discharge, *blowdown* (i.e., rapid depressurization events) headers, and the existing emergency shutdown system.

The applicant conducted acoustical modeling to assess the potential impact of replacing the existing compressor turbines at the storage field site. Modeling assumptions considered the use of gas-driven turbines at 100 percent full load capacity, which, for the purposes of this analysis, are considered a worst case scenario as compared to the use of electric-driven turbines. Two site layout options were modeled and evaluated using three- and four-turbine-driver compression trains. Modeling results showed similar emissions for both options, with projected noise levels of 23 dBA at the closest residences located south of the site. Modeling results were reported as contingent on the proper acoustical mitigation of major noise sources on site (Washington Group International 2007).

Pressure relief from compressor station piping would be necessary for the safe operation of the Plant Station site. Regular, routine blowdowns take place whenever a compressor unit shuts down, can produce an audible sound of over 120 dBA, and are routed through silencers for noise attenuation. Blowdowns could also occur during rare emergencies or infrequent maintenance, when large volumes of natural gas are vented from the pipeline. Immediate emergency depressurization takes place at the facility via pressure safety valves, activated only when pressure exceeds the safe operating parameters of piping or vessels. Under these circumstances, pressure is relieved directly to the atmosphere, rather than with a controlled release through a silencer. Consequently, these emergency blowdowns are extremely loud—up to170 dB for a few seconds (Fluid Kinetics 2010). Emergency blowdowns that would occur during operation of the new Central Compressor Station would be similar in nature and volume to emergency blowdowns that take place at the existing facility.

Additional noise sources associated with the Plant Station site would result from routine maintenance activities, which would include equipment testing, equipment monitoring, and repair three to four times per month.

Natural Substation

Transformers are the major source of noise associated with electric substations. Transformers emit a characteristic hum resulting from *magnetostrictive* forces (i.e., interactions that can convert magnetic energy into kinetic energy and vice versa) that cause the core to vibrate. In addition, transformer cooling fans produce noise when they operate. The applicant proposes to operate two 28-megavolt-ampere, 66/12-kV transformers within the proposed Natural Substation. The noise level of a substation power transformer is a function of the megavolt ampere and basic impulse level rating, with reported levels ranging between 60 to 80 dBA at 3 feet (McDonald 2007). In addition, space would be available to place up to two additional transformers if needed in the future. The noise associated with the addition of two identical transformers can be estimated as doubling the identical sound sources[1], resulting in an increase of 3 dBA. SCE substation designs typically include an 8-foot block wall constructed for safety and security. If the final design for the proposed Natural Substation includes an 8-foot block wall, it would provide noise attenuation of about 10 dBA (SoCalGas 2009). Assuming a 6-dB reduction per doubling the distance from the transformer pad areas, two identical transformers operating at 80 dBA at 3 feet, and a 10 foot buffer area (as indicated in the Natural Substation layout), the estimated noise level at the substation boundary would be approximately 60 dBA.

Circuit breaker noise would also occur occasionally and not during normal operations. Circuit breaker noise would occur to protect the grid in an unusual event, such as a lightning strike. A circuit breaker can generate maximum instantaneous noise levels (over approximately 6 milliseconds) on the order of 90 dBA L_{max} at 65 feet, which is approximately equivalent to 50 dBA L_{eq} at 50 feet (SoCalGas 2009).

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[1] The combination of two or more sound pressure levels at a single location involves the addition of logarithmic quantities. A doubling of identical sound sources results in a 3 dB increase.

66-kV Subtransmission Line

There are two potential sources of audible noise associated with the 66-kV subtransmission line's operation and maintenance: corona noise and vehicles and equipment used for routine maintenance. The corona effect is the ionization of air that occurs at the surface of the energized conductor and suspension hardware due to very high electric field strength at the surface of the metal during certain conditions. The noise is generally characterized as a crackling, hissing, or humming noise. The amount of corona produced by a transmission line is a function of the voltage of the line, the diameter of the conductor, the elevation of the line above sea level, the condition of the conductor and hardware, and the local weather conditions. The noise is most noticeable during wet conductor conditions such as rain or fog. SCE would install polymer (silicon rubber) insulators on the two lines proposed to be modified on the 66-kV subtransmission system. This material is hydrophobic (repels water) and minimizes the accumulation of surface contaminants such as soot and dirt, which in turn reduces the potential for corona noise to be generated at the insulators (SoCalGas 2009).

Maintenance activities are primarily inspection-related (e.g., annual inspection of the subtransmission line using helicopters or other vehicles). Other maintenance activities include washing of insulators to ensure proper function; these would be conducted on an as-needed basis.

Telecommunications and Substation Equipment

Operation and maintenance of the telecommunication routes and new substation equipment would involve fewer noise sources than the rest of the proposed project components. Noise sources would be primarily related to maintenance and inspection activities, mostly vehicles and special repairs equipment. Noise from maintenance activities would occur on a short-term basis at least twice a year. The subtransmission or fiber optic cables may occasionally require emergency repairs, which would be conducted by SCE personnel.

4.11.4.4 Impact Analysis

Impact NS-1: Noise levels in excess of standards established in the local general plan or noise ordinance.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction Noise

Construction of the proposed project components would result in noise, primarily from heavy duty vehicles and on- and off-road equipment needed at the construction sites. In addition, haul trucks would be required to transport materials to and from the Plant Station site and Natural Substation construction areas. Estimated peak noise levels from the construction equipment would range from 80 to 85 dBA at 50 feet from the source at the proposed construction sites. Construction of the project components would occur concurrently at separate locations, during an overall ~~22~~24-month period.

The Plant Station components and the proposed Natural Substation would be located within Los Angeles County, with an allowable construction noise limit of 85 dBA for business structures and mobile equipment (Table 4.11-6); therefore, estimated maximum noise levels—assuming construction equipment operating at full capacity—would not exceed the applicable local standard for construction noise (maximum levels estimated as 84 dBA at 50 feet). The receptors closest to the Plant Station site would be located south of the storage field area, within the City of Los Angeles jurisdiction, approximately 3,800 feet from the proposed Central Compressor station. Estimated construction noise levels from the Plant Station site at these receptors range between 46 and 66 dBA, below the 75 dBA daytime standard in the City of Los Angeles. Additionally, the proposed road widening activities and new guardhouse construction would occur approximately 340 feet from residences located on Tampa Avenue (also within the City of Los Angeles), resulting in potential noise levels of approximately 67 dBA, which is also below the applicable standard. As shown in Table 4.11-1~~8~~9, at all receptors identified in the proximity of the Plant Station site, estimated construction noise levels would not exceed the applicable residential standard in the City of Los Angeles (75 dBA, daytime).

Noise estimates prepared for the proposed project indicate that maximum construction noise levels would be audible at the closest receptors during peak construction activities. As shown in Table 4.11-1~~8~~9, the proposed 66-kV subtransmission line reconductoring and fiber optic installation activities could produce maximum noise levels above 80 dBA L_{eq} (h) at more than 20 residential structures and other sensitive receptors located in urban and suburban areas, with the potential to exceed the applicable daytime allowable noise standards in the City of Santa Clarita, City of Los Angeles, and Los Angeles County. In the City of San Fernando, activities from franchised utilities would be exempted from maximum permitted ambient noise levels. In Ventura County, no specific noise limits or standards were identified to compare with predicted noise levels at the closest receptors. However, it is anticipated that equipment and vehicles for both reconductoring and fiber optic installation would not be operated at peak levels, and activities would be short term at each location (e.g., tower replacement would take an average of three days at each location). Additionally, the applicant will implement APM NS-1to ensure construction of the proposed project would comply with all applicable noise regulations. Construction noise would be temporary and intermittent in terms of equipment usage.

To address potential impacts from construction noise, the applicant would implement a noise control plan (APM NS-2) to reduce noise levels at closest receptors, which includes the implementation of noise reduction features and adjusts the construction schedule such that noise-producing activities would be confined to daytime hours (except for potential nighttime construction work that could be required for crossing I-5). In addition, the applicant would implement notification procedures (APM NS-3) for all receptors located within 300 feet of construction activities. Implementation of the construction period APMs described above would reduce potential impacts from construction noise, but construction noise would still remain significant for construction sites located within 100 feet of the reconductoring and fiber optic installation sites. Implementation of Mitigation Measure (MM) NS-1, outlined below, is required for further noise reduction at closest sensitive receptors. In addition, implementation of MM NS-2 is required to ensure that residents in areas beyond the 300-foot notification radius specified in APM NS-3 are adequately notified of potential helicopter noise during SCE's wire-stringing activities.

MM NS-1: Noise Reduction and Control Practices. SCE will employ the following noise reduction and control practices during subtransmission line reconductoring and fiber optic installation activities that could produce noise levels above 80 dBA L_{eq} near sensitive receptors (within 100 feet):

- Construction equipment, stationary or mobile, will be equipped with properly operating and maintained mufflers on engine exhausts and compressor components.
- Construction equipment specifically designed for low noise emissions (i.e., equipment that is powered by electric or natural gas engines instead of diesel or gasoline reciprocating engines) will be used as much as feasible. Electric engines have been reported to have lower noise levels than internal combustion engines.
- Temporary enclosures or acoustic barriers (i.e., solid sound absorber composite materials) will be used around stationary pieces of equipment. Noise barriers or enclosures will be selected with a sound transmission class of 30 or greater, in accordance with American Society of Testing and Materials Test Method E90. Acoustical curtain enclosures can provide a sound transmission loss of 10 to 13 dBA, whereas portable solid barriers can achieve up to 33 dBA in noise reduction. Acoustic barriers will be used for all construction activities within 100 feet of closest receptors.

- Construction traffic will be routed away from residences and other sensitive receptors, as feasible.
- Noise from back-up alarms (alarms that signal vehicle travel in reverse) in construction vehicles and equipment will be reduced by providing a layout of construction sites that minimizes the need for back-up alarms and using flagmen to minimize time needed to back up vehicles. As feasible, and in compliance with the applicant's safety practices and public and worker safety provisions required in the Occupational Safety and Health Standards for the Construction Industry (29 CFR Part 1926), the applicant may also use self-adjusting, manually adjustable, or broadband back-up alarms to reduce construction noise.

MM NS-2: Helicopter Use Notification Procedures. SCE will perform broad-based public outreach, using methods such as a combination of direct mail and media press releases, to provide project background and specific information concerning project construction helicopter use, including construction schedule, hours, duration, and location. At a minimum, SCE will include the City of Santa Clarita in this outreach, and will assist City staff as needed by providing or facilitating links from SCE web-based project information to an appropriate location on the City's website.

Given the short duration of construction activity (less than a week) at any single location during reconductoring and fiber optic cable installation, this impact would be less than significant with the implementation of mitigation after compliance with the proposed policies of applicable General Plan Noise Elements for all jurisdictions, and implementation of the APM NS-1, APM NS-2, and APM NS-3.

Operational Noise

Potential sources of operational noise associated with the Plant Station activities include noise from compressor operations, blowdowns from the pressure relief system, and gas passing through the pipelines. In addition, operation of the 12-kV Plant Power Line, the 66-kV reconductored subtransmission line, and the Natural Substation would result in corona effect and transformer and circuit breakers noise. With the exception of the compressor operations, estimated noise levels from operational activities at the proposed project components would not exceed local noise standards for permanent or stationary sources, as indicated in Section 4.11-2. Routine maintenance activities would also produce additional temporary noise sources during operations.

Acoustical modeling results obtained for the turbine replacement indicated that, with proper acoustical mitigation of the major noise sources located onsite (turbines, compressors, and coolers), operational noise levels from the Central Compression Station would not exceed the most stringent nighttime noise limits at closest residential receptors (Washington International Group 2007); however, this analysis assumed gas-driven turbines, not the proposed electric-driven turbines, and was also contingent on the application of proper acoustical mitigation. Electric-driven compressors with specifications comparable to those required for the proposed project (rated at 22,000 horsepower each) are likely to be quieter than gas-driven compressors: electric motors would not generate the air intake and exhaust noises associated with combustion engines. However, noise data for electric-driven compressors of this size are limited because most natural gas compression facilities use gas-driven compressors (CH2M Hill 2008).

While it is possible that the three proposed electric-driven compressors would generate less noise than three gas turbine–driven compressors, the actual noise level that would result from operation of the compressors is uncertain, and the noise from the compressors could exceed existing noise thresholds. Implementation of MM NS-3~~2~~ will ensure that operational noise levels do not exceed 45 dBA at the closest receptor in the City of Los Angeles.

MM NS-3~~2~~: Operational Noise Control. After construction of the Central Compressor Station is completed, the applicant will take measures as necessary to ensure that the operational noise levels from the Central Compressor Station do not exceed 45 dBA at the closest receptor in the City of Los Angeles. Measures that may be implemented to achieve this level during the operational phase for turbines, compressors, and cooling equipment proposed to be installed at the Central Compressor Station could include:

- Turbines will be placed within an acoustical enclosure;
- Compressor noise will be mitigated by placing an acoustical blanket over the compressor itself or enclosing the compressor within an appropriately rated acoustical building;
- Noise emitted from gas process coolers will be mitigated by installing acoustic barriers without gaps around the equipment casing and with a continuous minimum surface density of 10 kilograms per square meter in order to minimize the transmission of sound.

<u>In order to ensure that operational noise levels from the Central Compressor Station do not exceed 45 dBA at the closest receptor in the City of Los Angeles, the applicant will conduct noise surveys to measure noise levels at the location of the closest receptor in the City of Los Angeles (or a public location near this receptor and between the receptor and the storage facility site) during conditions when operations at the Central Compressor Station produce the highest noise levels (i.e., during time periods when gas injection and withdrawal are taking place at the maximum rate). Noise surveys will be conducted during initial start-up and testing of the Central Compressor Station, and as needed to confirm that plant operations and any required mitigation reduce operational noise to less than 45 dBA at the closest receptor in the City of Los Angeles.</u>

The operational noise levels that would result after implementation of this mitigation measure would be acceptable under the City of Los Angeles Operational Accepted Noise Levels, and therefore no impact would result with regards to project operational noise.

Impact NS-2: **Excessive groundborne vibration or groundborne noise levels.**
LESS THAN SIGNIFICANT

Construction vibration would occur mainly from heavy duty construction equipment, e.g., trucks, backhoes, excavators, loaders, and cranes. Groundborne vibration generated from operation of the project would be minimal and would result primarily from maintenance vehicles.

The level of groundborne vibration from construction activities that could reach sensitive receptors depends on the distance to the receptor, the type of equipment creating vibration, and the soil conditions surrounding the construction site. Ground vibration from construction equipment, such as the tamping of ground surfaces, the passing of heavy trucks on uneven surfaces, and the excavation of trenches, could create perceptible vibration in the immediate vicinity of the activity.

Activities associated with construction of the Plant Station site and the Natural Substation would have the greatest potential to cause groundborne vibration. However, the closest sensitive receptors for these proposed project components are located over 3,000 feet away from these proposed facilities, with no anticipated perceived vibration effect due to project activities. Groundborne vibration from equipment used at the reconductoring and fiber optic installation areas could also create perceptible vibration within approximately 100 feet of the activity; however, the reconductoring and telecommunication activities would be transient and take place over a short period of time (estimated as less than one week at each tower/structure location).

Noise and vibration from construction activities may be intermittent or continuous with a short duration. Additionally, both groundborne vibration and noise would be temporary and would occur during daytime hours. Therefore, construction and operation of the project would result in a less than significant impact under this criterion.

Impact NS-3: **Permanent increase in ambient noise levels in the project vicinity.**
LESS THAN SIGNIFICANT

Construction noise from the proposed project activities would not contribute to a permanent increase in ambient noise levels in the vicinity. The longest construction period would occur at the Plant Station site, which is located over 3,000 feet from the closest residential and other sensitive receptors located south of the gas storage area. Short-term noise surveys conducted by the applicant indicated a daytime average ambient noise level of approximately 40 dBA (L_{eq}) in the vicinity of Sesnon Boulevard (Table 4.11-3), while peak noise levels during construction in the same area were estimated as 37 dBA. In addition, operation of the proposed Central Compressor Station and the proposed 66-kV reconductored subtransmission line are not anticipated to result in permanent noise levels above existing conditions. Noise surveys conducted by the applicant showed existing noise levels along Wiley Canyon Road in the vicinity of the Newhall Substation and the proposed 66-kV subtransmission line Segment C, ranging from 50 to 60 dBA (L_{eq}) during the daytime. It is estimated that corona noise from a 66-kV line would be inaudible or well below the existing noise levels because SCE has agreed to install polymer (silicon rubber) insulators on the two lines proposed to be modified on the 66-kV subtransmission system. The implementation of MM NS-4 would ensure that polymer insulators are used on these lines. Therefore, impacts related to corona noise would be less than significant under this criterion.

MM NS-4: Install Polymer Insulators on 66-kV Subtransmission Line. SCE will install polymer (silicon rubber) insulators on the two lines proposed to be modified on the 66-kV subtransmission system.

To address potential operational noise impacts from operations after construction of the proposed project components, the applicant would implement MM NS-~~2~~3 during Central Compressor Station operations. With implementation of this noise control measure, it is anticipated that noise levels would not cause a substantial permanent increase over the existing ambient noise levels at the Plant Station site. Reconductoring would involve the replacement of an existing electrical distribution line, would not result in noise-generating activities after the construction period, and would not result in an increase in ambient noise levels in the area. Thus, noise impacts from operations would be less than significant under this criterion.

Impact NS-4: **Substantial temporary or periodic increase in ambient noise levels in the project vicinity.**
LESS THAN SIGNIFICANT WITH MITIGATION (CONSTRUCTION)
LESS THAN SIGNIFICANT (OPERATIONS)

Construction Noise

Noise from construction equipment and vehicles associated with the proposed project would result in temporary contributions to the ambient noise levels in the vicinity of multiple work areas during the construction period. As shown in Tables 4.11-13 to 4.11-~~15~~16, peak construction noise levels would range from 80 to 90 dBA (L_{max}) at 50 feet from the source and from 55 to 98 dBA at the closest sensitive receptors. In several cases, these predicted noise levels at the closest receptors would be a substantial temporary increase of 10 to 15 dB over existing ambient noise levels.

Cumulative noise exposure criteria published by the FTA and the EPA establish that a 2-percent increment over existing outdoor noise levels is the minimum measurable change in community reaction, and therefore this is considered to be a threshold for community noise impacts (FTA 2006). Based on general community reactions to noise at varying levels, the FTA has published a cumulative noise level curve (Figure 4.11-1), which shows that for ambient noise levels such as those existing at the suburban locations (40 dBA L_{dn}), a noise exposure increase of more than 15 dB would result in a severe impact.

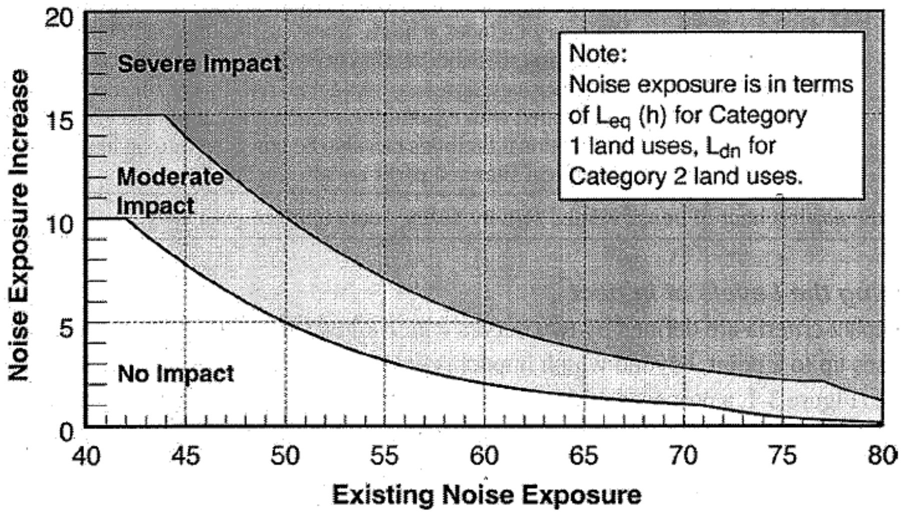

Figure 4.11-1 Increase in Cumulative Noise Levels Allowed by Criteria (dBA)

(Source: FTA 2006)

To address potential impacts from temporary increase of ambient noise levels during construction, the applicant would implement APM NS-1, APM NS-2, ~~and~~ APM NS-3, and MM NS-2, adjusting the construction schedule, implementing a noise control plan, and notifying all receptors located 300 feet (and beyond 300 feet in the event of helicopter use during construction) prior to construction activities. In addition, implementation of MM NS-1 would mitigate the effects of a temporary increase of ambient noise levels within the vicinity of the Plant Station site, Natural Substation, and reconductoring and fiber optic installation sites, resulting in a less than significant impact (after mitigation) related to construction noise under this criterion.

Operational Noise

Operational noise from the proposed Central Compressor Station would produce a composite noise level of 75 dBA at the property line, which would, with the implementation of MM NS-~~2~~3, attenuate over distance to less than 45 dBA at the closest sensitive receptors. This contribution to the ambient noise level would not be expected to fluctuate during operation. Noise from sudden, impulsive, unsilenced pressure releases would create a higher level of annoyance than the steady background noise associated with operations; however, these events would take place for safety purposes only and on an infrequent basis, and would be similar in nature to those occurring during existing operations.

With the applicant's implementation of MM NS-~~2~~3 during operation of the Central Compressor Station, it is anticipated that noise levels would not cause a substantial permanent increase over the existing ambient noise levels at the Plant Station site. Reconductoring would involve the replacement of an existing electrical subtransmission line and fiber optic installations on existing overhead transmission lines or underground conduits; it is anticipated that these activities would not result in noise-generating sources after the construction period and would not result in an increase in ambient noise levels in the area after the implementation of MM NS-3. Thus, noise impacts from operations would be less than significant under this criterion.

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4.12 Population and Housing

This section describes the environmental and regulatory setting and discusses potential impacts associated with the construction and operation of the proposed project with respect to population and housing resources.

4.12.1 Environmental Setting

The proposed project components are primarily located in Los Angeles County (including unincorporated areas of the county) and in the Cities of Los Angeles, Santa Clarita, and San Fernando. Parts of the proposed project component are also located in unincorporated Ventura County and the City of Simi Valley. The Aliso Canyon Natural Gas Storage Field (storage field) is located in unincorporated Los Angeles County and is bordered by City of Los Angeles residential development (the communities of Granada Hills and Porter Ranch) to the south. The project components included within the storage field, such as the guardhouse, Natural Substation, Central Compressor Station, main office and crew-shift buildings, and the 12-kV Plant Power Line, lie within a mile of these residential areas. The homes directly south of the storage field are located approximately 300 feet from the location of the proposed new guardhouse and road widening. These houses are also approximately 0.8 miles from the location of the new Central Compressor Station and main office facilities and crew-shift buildings, and 0.6 miles from the proposed location for the Natural Substation.

The Chatsworth Substation, located in unincorporated Ventura County south of the City of Simi Valley, is in a sparsely populated area with a few industrial buildings dispersed throughout mountainous terrain. The nearest housing development is the Bell Canyon community, located approximately 1.5 miles southeast of the substation. The Newhall substation is located in a densely populated area of Santa Clarita near residential and commercial buildings. The closest residences are approximately 100 feet from the substation, on Vista Ridge Drive. The San Fernando Substation, located in the City of Los Angeles, is in a residential area next to Bishop Alemany High School and across the street from Brand Park. The closest residences are approximately 500 feet from the substation on West San Fernando Mission Boulevard.

The northern portion of the Segments A and B of the 66-kV Subtransmission Line follows Wiley Canyon Road within the City of Santa Clarita. Areas of residential development are located along both sides of Wiley Canyon Road, and Segments A and B pass within approximately 25 feet of these residences.

The ~~three~~ four telecommunications routes would cross through residential areas in the City of Santa Clarita, unincorporated Los Angeles County, the City of Los Angeles, the City of San Fernando, unincorporated Ventura County, and the City of Simi Valley. Telecommunications Route #1 follows the same alignment as Segments A and B of the 66-kV Subtransmission Line and passes within 25 feet of residences on Wiley Canyon Road (Figure 2-1). Telecommunications Route #3 travels east from the San Fernando Substation in the Mission Hills neighborhood in the City of Los Angeles, through the City of San Fernando, and into the community of Sylmar in the City of Los Angeles. The area through which this route passes is densely populated and residential, with homes located ~~approximately~~ as close as 10 ~~20–45~~ feet from the route.

Telecommunications Route #4 would travel along the same route at Telecommunications Route #3 east of San Fernando Substation for approximately 1.4 miles and then northwest through the communities of Sylmar and Granada Hills (Figure 2-8). Some areas through which the route would pass are densely populated and residential, with homes located as close as 8 feet from the route. Telecommunications Route #4 would also pass through business and industrial areas.

Telecommunications Route #2 travels northeast from the Chatsworth Substation in the Simi Hills area of unincorporated Ventura County to the City of Simi Valley, where the alignment follows State Route (SR)-118 into the Chatsworth Community in the City of Los Angeles. The route then crosses SR-118 into unincorporated Los Angeles and heads north, then east to the proposed Natural Substation (Figure 2-7). Telecommunications Route #2 generally traverses areas designated for agriculture, open space, and parks; however, the alignment also passes through areas of residential development in Chatsworth, south of SR-118. The alignment passes within approximately 15–35 feet of residences along the route.

Table 4.12-1 shows the various project components and their distance from the nearest residences.

Table 4.12-1 Proposed Project Components and Applicable Jurisdictions

Project Component	Jurisdiction	Approximate Distance to Nearest Residence
Central Compressor Station/Main Office Facilities and Crew-shift Buildings	Unincorporated Los Angeles County	0.8 miles from Porter Ranch housing development
New Guardhouse	Unincorporated Los Angeles County	300 feet from Porter Ranch housing development
12-kV Plant Power Line Route	Unincorporated Los Angeles County	0.6 miles from Porter Ranch housing development
Natural Substation	Unincorporated Los Angeles County	0.6 miles from Porter Ranch housing development
66-kV Segments A, B and C Reconductoring Route	City of Santa Clarita, City of Los Angeles, Unincorporated Los Angeles County	25 feet from residences on Wiley Canyon Road
66-kV Segments D and E Reconductoring Route	City of Los Angeles	500 feet from residences on West San Fernando Mission Boulevard
Modifications to Newhall Substation	City of Santa Clarita	100 feet from residences on Vista Ridge Drive
Modifications to Chatsworth Substation	Unincorporated Ventura County	No residences within 1 mile
Modifications to San Fernando Substation	Los Angeles County	500 feet from residences on West San Fernando Mission Boulevard
Telecommunications Route #1 (Newhall Substation to Natural Substation)	City of Santa Clarita, Los Angeles County	25 feet from residences on Wiley Canyon Road
Telecommunications Route #2 (Chatsworth Substation to Natural Substation)	Ventura County, City of Simi Valley, County of Los Angeles, City of Los Angeles	As close as 15~~35~~ feet from residences
Telecommunications Route #3 (San Fernando Substation Fiber Optic Cable)	City of Los Angeles – Mission Hills, City of San Fernando, City of Los Angeles – Sylmar	~~20–45~~ As close as 10 feet from residences ~~throughout route~~
Telecommunications Route #4 (San Fernando Substation to Fiber Optic Connection Point)	City of Los Angeles – Mission Hills, City of San Fernando, City of Los Angeles – Sylmar, City of Los Angeles – Granada Hills	As close as 8 feet from residences

Source: Google Earth ~~2011~~2013

Population counts for 2010 and population growth projections are presented in Table 4.12-2 for Los Angeles County, the City of Los Angeles, Ventura County, the City of Santa Clarita, the City of San Fernando, and the City of Simi Valley. Table 4.12-3 presents housing unit counts for 2010 and housing unit estimates for 2020 based on forecasted population growth. Both tables show that both population and housing are anticipated to grow between 2010 and 2020. Table 4.12-4 presents information on total employment within the project region, including construction, agricultural trade employment, and unemployment.

Table 4.12-2 Regional Population Trends

	2010 Projection[a]	2020 Projection[b]	2010–2020 Projected Growth		Vacancy Rates (%)
			Total	Percent	
Regional Population and Growth Projections					
Los Angeles County	9,818,605	11,329,829	1,511,224	13.3%	5.9%
City of Los Angeles	3,792,621	4,204,329	411,708	9.8%	6.8%
Ventura County	823,318	937,372	114,054	12.2%	5.2%
City of Santa Clarita	176,320	205,935	29,615	14.4%	4.1%
City of San Fernando	23,645	26,179	2,534	9.7%	5.2%
City of Simi Valley	124,237	132,030	7,793	6.3%	3.0%

Sources: (a) U.S. Census 2010; (b) SCAG 2008

Table 4.12-3 Regional Housing Trends

	2010 Projection[a]	2020 Projection[b]	2010–2020 Projected Growth	
			Total	Percent
Housing Units				
Los Angeles County	3,445,076	3,975,323	530,247	13.3%
City of Los Angeles	1,413,995	1,567,491	153,496	9.8%
Ventura County	281,695	320,718	39,023	12.2%
City of Santa Clarita	62,055	72,478	10,423	14.4%
City of San Fernando	6,291	6,965	674	9.7%
City of Simi Valley	42,506	45,172	2,666	6.3%

Sources: (a) U.S. Census 2010; (b) SCAG 2008

Table 4.12-4 Employment in the Proposed Project Area

Location	Total Employed 2010[a]	Percent in Construction Trades[b]	Percent in Agricultural Trades[b]	2010 Unemployment Rate[a]
Labor Force and Employment				
Los Angeles County	4,262,300	2.4%	0.02%	12.7%
City of Los Angeles	1,647,900	Unknown	Unknown	13.9%
Ventura County	384,300	3.4%	6.3%	10.8%
City of Santa Clarita	81,200	Unknown	Unknown	7.8%
City of San Fernando	9,200	Unknown	Unknown	12.9%
City of Simi Valley	63,100	Unknown	Unknown	8.9%

Sources:
[a] EDD 2010a. Total employed and unemployment rate reflect annual average for 2010.
[b] EDD 2010b. 2008–2018 Occupational Employment Projections

4.12.2 Regulatory Setting

4.12.2.1 Federal

There are no federal plans that apply to the analysis of impacts on population and housing in the proposed project area.

4.12.2.2 State

There are no state plans that apply to the analysis of impacts on population and housing in the proposed project area.

4.12.2.3 Regional and Local

The general plans for Los Angeles County, Ventura County, and the Cities of Los Angeles, Santa Clarita, San Fernando, and Simi Valley do not contain policies that are directly relevant to the proposed project. All of the applicable general plans have policies that focus on maintaining the current housing stock and providing affordable housing options to residents. For example, the Los Angeles County General Plan states that "a sufficient inventory of housing is needed to accommodate the housing needs of unincorporated area residents. The State legislature recognizes significant housing deficiencies among certain economic segments of the State's population and considers housing availability an issue of 'vital State-wide importance'." (Los Angeles County 2008). While the Ventura County General Plan includes a continued commitment to providing housing as population increases, current housing needs are being satisfied in the County (Ventura County 2011).

4.12.3 Methodology and Significance Criteria

Potential impacts on population and housing were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the California Environmental Quality Act Guidelines. The proposed project would cause a significant impact on population and housing if it would:

a) Induce substantial population growth in the area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

Appendix G of the CEQA Guidelines also includes the following checklist items:

- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

The proposed project, however, would not displace any existing housing because no residences are located within the boundaries of the project component areas. Residential developments that border the proposed project area would not be affected by retrofits to existing project infrastructure, and no one would be displaced. Replacement housing would not be required, and there would be no impact; therefore, these items are not applied as criteria in the analysis of environmental impacts presented in the following section.

4.12.4 Environmental Impacts and Mitigation Measures

Applicant Proposed Measures

There are no applicant proposed measures associated with population and housing.

Impact POP-1: Indirectly induce substantial population growth in an area through extension of roads or other infrastructure.
LESS THAN SIGNIFICANT

The proposed project is designed to increase the reliability of the existing storage field facilities and accommodate existing and planned electrical load growth rather than induce growth. Although the project would increase injection capacity at the storage field, natural gas storage or withdrawal capacity would not increase. Space would be available at the Natural Substation for the installation of up to two additional 28 MVA transformers (for a total of 112 MVA) if needed in the future; however, the applicant does not anticipate that future expansion would be required. Any expansion of the Natural Substation would be conducted in response to future growth rather than as an inducement to it. In addition, implementation of the project would not result in any additional long-term staffing increases and would not induce long-term population growth in the project area, either directly or indirectly.

The applicant would hire a local construction workforce, and outside contractors would only be required if local contractors were not available. Because the areas of the project components are adjacent to or within the Los Angeles metropolitan area—one of the most densely populated regions in the country—and because the area currently experiences relatively high rates of unemployment, workers are not expected to relocate to the project region in numbers that would result in an impact. In the event that some workers did relocate to the area, the number would be very small in comparison to the area’s total population, and temporary lodging such as hotels and motels within a 10-mile radius would be able to accommodate these workers. Therefore, population growth would not result from construction of the proposed project.

During operation, no additional staff would be required for operation of the storage field or for periodic inspections and assessments of SCE’s electrical system; staff levels would remain the same as for current operations and maintenance. Therefore, population growth would not result due to operation of the proposed project. The project would result in a less than significant impact under this criterion.

References

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4.13 Public Services and Utilities

This section describes the environmental and regulatory settings and discusses potential impacts associated with the construction and operation of the proposed project with respect to public services, utilities, and service systems.

4.13.1 Environmental Setting

This section focuses on the capacities and capabilities of existing public services, utilities, and service systems in the proposed project component areas. For the purposes of evaluating public services and utilities in the project area, the project will be referred to in this section by the project components as described in Chapter 2, "Project Description." In some cases, the following project components, located at the Aliso Canyon Natural Gas Storage Field (storage field), are also all treated here as one project area or element and are referred to as the "storage field" or "storage field components":

- The existing compressor station and office facilities,
- The site of the proposed Central Compressor Station and office relocation,
- The site of the proposed guardhouse relocation,
- Construction staging areas,
- Soil mixing area,
- Access roads, and
- The 12-kV Plant Power Line.

Table 4.13-1 shows the jurisdiction or multiple jurisdictions that oversee each component of the proposed project.

Table 4.13-1 Public Service Providers by Jurisdiction

Jurisdiction	Public Service System Provider
County of Los Angeles (Central Compressor Station, 12-kV Plant Power Line, Natural Substation, main office and crew-shift building, guardhouse, parts of 66-kV subtransmission line reconductoring route, parts of Telecommunications Route #1 and Telecommunications Route #2)	Fire Protection/Emergency Response: County of Los Angeles Fire Department • Nearest fire station to the storage field site: Station 75 (Battalion 6), at 2~~1~~331̲0 Lake Manor Dr., Chatsworth (approximately 9 miles) • Response time: 13–15 minutes City of Los Angeles Fire Department (LAFD):[1] • Nearest fire stations to the storage field site: Station 8 (Battalion 15), at 11351 Tampa Avenue, Porter Ranch (approximately 2.1 miles) • Response time: 13–15 minutes Police Protection: City of Los Angeles Police Department (LAPD) • Nearest station to the storage field site: Devonshire Community Police Station (approximately 3.6 miles), at 10250 Etiwanda Avenue, Northridge. Devonshire Community Station serves neighborhoods of Chatsworth, Northridge, and parts of Canoga Park, Granada Hills, and Winnetka • Response time: 3–5 minutes

Table 4.13-1 Public Service Providers by Jurisdiction

Jurisdiction	Public Service System Provider
	Schools: Los Angeles Unified School District (LAUSD) (District 1), charter schools, private schools Park Facilities: See Section 4.14, "Recreation." Libraries: County of Los Angeles Public Library System (San Fernando Branch, Newhall Branch); City of Los Angeles Public Library (Porter Ranch Branch, Sylmar Branch) Hospitals: Providence Holy Cross Health Center, 15031 Rinaldi St., Mission Hills (approximately 2.3 miles from the storage field site)
City of Los Angeles (Guardhouse and entry road widening, parts of 66-kV subtransmission line reconductoring route, San Fernando Substation modifications, parts of Telecommunications Routes #2, #3, and #4)	Fire Protection/Emergency Response: LAFD • Nearest fire stations to the storage field site: Station 8 (Battalion 15), at 11351 Tampa Avenue, Porter Ranch (approximately 2.1 miles) • Response time: under 5 minutes • Nearest fire station to the San Fernando Substation: Station 75 (Battalion 12), at 15345 San Fernando Mission Blvd., Mission Hills (approximately 0.5 miles) • Response time: approximately 1 minute Police Protection: LAPD • Nearest station to the storage field site: Devonshire Community Police Station (approximately 3.6 miles), at 10250 Etiwanda Avenue, Northridge. Devonshire Community Station serves neighborhoods of Chatsworth, Northridge, and parts of Canoga Park, Granada Hills, and Winnetka • Response time: 10 minutes • Nearest station to the San Fernando Substation: Mission Community Police Station (approximately 0.5 miles), at 11121 N. Sepulveda Blvd., Mission Hills • Response time: 1 minute. Mission Hills Community Station serves Mission Hills and Panorama City Schools: LAUSD, private schools Park Facilities: See Section 4.14, "Recreation." Libraries: County of Los Angeles Public Library System (San Fernando Branch, Newhall Branch); City of Los Angeles Public Library (Porter Ranch Branch, Sylmar Branch) Hospitals: Providence Holy Cross Health Center, 15031 Rinaldi St., Mission Hills (approximately 2.3 miles from the storage field site)
City of San Fernando (Telecommunications Routes #3 and #4)	Fire Protection/Emergency Response: LAFD • Nearest fire stations: Station 75 (Battalion 12), at 15345 San Fernando Mission Blvd., Mission Hills (approximately 0.5 miles); Station 91 (Battalion 12), at 14430 Polk St., Sylmar (approximately 0.8 miles) • Response time: approximately 1 minute

Table 4.13-1 Public Service Providers by Jurisdiction

Jurisdiction	Public Service System Provider
	Police Protection: San Fernando Police Department • Nearest station: San Fernando Police Station, 910 First St., San Fernando (approximately 1.9 miles from Telecommunications Route #3)[3] • Response time: under 5 minutes Schools: LAUSD, private schools Park Facilities: See Section 4.14, “Recreation.” Libraries: County of Los Angeles Public Library System (San Fernando Branch) Hospitals: Providence Holy Cross Health Center, 15031 Rinaldi St., Mission Hills (approximately 3 miles from the fiber optic installation)
City of Santa Clarita (parts of 66-kV subtransmission line reconductoring route, Newhall Substation modifications, parts of Telecommunications Route #1)	Fire Protection/Emergency Response: County of Los Angeles Fire Department • Nearest fire station: Station 124~~73 (Battalion 6)~~, at 25870~~5~~ Hemingway Avenue, Stevenson Ranch ~~N. San Fernando Ave., Newhall~~ (approximately 1.9~~4.4~~ miles from Newhall Substation) • Response time: approximately 6~~5~~ minutes Police Protection: County of Los Angeles Sheriff’s Department • Nearest station: Santa Clarita Valley Sheriff’s Station (approximately 2.6 miles), at 23740 Magic Mountain Parkway, Valencia. Santa Clarita Valley Station serves City of Santa Clarita and 600 square miles of unincorporated Los Angeles County • Response time: 3–5 minutes Schools: LAUSD, Newhall School District, William S. Hart Union High School District, private schools Park Facilities: See Section 4.14, “Recreation.” Libraries: County of Los Angeles Public Library System (San Fernando Branch, Newhall Branch); City of Los Angeles Public Library (Porter Ranch Branch, Sylmar Branch) Hospitals: Henry Mayo Newhall Memorial Hospital, 23845 McBean Parkway, Valencia (approximately 6.25 miles from the storage field site; approximately 1.3 miles from the Newhall substation)

Table 4.13-1 Public Service Providers by Jurisdiction

Jurisdiction	Public Service System Provider
Ventura County, City of Simi Valley[2] (Chatsworth Substation modifications, Telecommunications Route #2)	Fire Protection/Emergency Response: Ventura County Fire Department • Nearest fire station to Chatsworth Substation: Station 43 (approximately 2.6 miles), at 1262 Cypress St., Simi Valley. Station 43 serves the eastern end of the City of Simi Valley and the unincorporated areas of the Knolls and Box Canyon • Response time: 10–12 minutes Police Protection: Ventura County Sheriff's Department. • Nearest station: East County Patrol Station (approximately 7.9 miles), at 2101 East Olsen Rd., Thousand Oaks • Response time: 23 minutes Schools: Simi Valley Unified School District, private schools Park Facilities: See Section 4.14, "Recreation." Libraries: Ventura County Library System (Simi Valley Branch) Hospitals: Simi Valley Hospital, 2975 Sycamore Dr., Simi Valley (approximately 4.4 miles from Chatsworth Substation)

Sources: Ventura County Sheriff's Department 2011; Bates 2011; Bobadilla 2011; City of San Fernando n.d.; County of Ventura 2009; Daum 2011; Kleckner 2011; LACFD 2010; LAFD 2011; LACSD 2010; LAPD 2011; LAUSD 2003; NSD 2011; SVUSD 2008; Ventura County Sheriff's Office 2011

Key:
kV = kilovolt
LAFD = City of Los Angeles Fire Department
LAPD = City of Los Angeles Police Department
LAUSD = Los Angeles Unified School District

Note:
[1] Although the storage field site is located in unincorporated Los Angeles County, the area borders city and county jurisdictions and is located in an Initial Action Zone; therefore, the LAFD would be the first responder to a fire emergency. See Section 4.13.4 for further discussion.
[2] The proposed project would cross a small area within the eastern edge of the City of Simi Valley. It is not expected that the city's public services or utilities would be used for construction or operation of the proposed project.
[3] The distance is measured from the station to the furthest point on the fiber optic line.

4.13.1.1 Emergency Response

Fire Protection and Emergency Response

The proposed project component areas would be located in an Initial Action Zone (also known as a Mutual Threat Zone or mutual response zone) (CAL FIRE n.d.). All fire management agencies in jurisdictions that border an Initial Action Zone would respond in the event of a fire. In the case of a fire at the storage field site, both the City of Los Angeles Fire Department (LAFD) and the Los Angeles County Fire Department (LACFD) would respond, regardless of jurisdiction.

The LACFD would respond to fire emergencies in the area of the proposed project components in unincorporated Los Angeles County. The LACFD operates 22~~21~~ battalions to provide fire protection to more than four million residents in a 2,305~~2,296~~-square-mile service area. Battalion Six, which includes ~~13~~ 8 fire stations, provides service to the City of Santa Clarita and the communities of Canyon Country, Castaic, Chatsworth, Gorman, Newhall, ~~Santa Clarita,~~ Stevenson Ranch, and Valencia. LACFD Station 75 would be the primary responder to the storage field site; Station 124~~73~~ would be the primary responder to the Newhall Substation.

The LAFD would respond to fire emergencies in the areas of the proposed project components located in the City of Los Angeles and the City of San Fernando. The LAFD operates 106 fire stations. Battalion 15, which includes eight fire stations, serves the northwestern San Fernando Valley communities. Battalion 12 serves the northeastern San Fernando Valley communities, including the City of San Fernando. Per an agreement between Southern California Gas Company (the applicant) and the LAFD, the LAFD is the first responder for fire emergencies at the storage field site, and the LACFD is the second responder. For fire emergencies on the storage field site, LAFD Station 8 would be the primary responder; for fire emergencies at the San Fernando Substation, LAFD Station 75 would be the primary responder.

The Ventura County Fire Department (VCFD) would respond to fire emergencies at the Chatsworth Substation. The VCFD operates 31 fire stations and provides service to 480,000 people in an 848-square-mile service area that includes unincorporated Ventura County, as well as the cities of Ojai, Port Hueneme, Moorpark, Camarillo, Thousand Oaks, and Simi Valley. VCFD Station 43 in the City of Thousand Oaks would be the primary responder.

For information regarding onsite fire protection and emergency response, refer also to Section 4.8, “Hazards and Hazardous Materials.”

Police Protection

The LACFD would provide law enforcement services in the proposed project component areas in unincorporated Los Angeles County and the City of Santa Clarita. The Los Angeles County Sheriff’s Department service area includes 40 incorporated cities, 90 unincorporated communities, and nine community colleges. Specifically, the Santa Clarita Valley Station provides law enforcement services for more than 260,000 people in 600 square miles of unincorporated Los Angeles County, the City of Santa Clarita, and the communities of Stevenson Ranch, Castaic, and Gorman.

The City of Los Angeles Police Department (LAPD) would provide law enforcement services in the proposed project component areas within the City of Los Angeles. The Devonshire Community Police Station, which serves the neighborhoods of Chatsworth and Northridge, and parts of Canoga Park, Granada Hills, and Winnetka, would be the primary responder. In addition, the LAPD would provide law enforcement services at the storage field site.

The San Fernando Police Department would provide law enforcement services to the section of Telecommunications Routes #3 and #4 located in the City of San Fernando. The San Fernando Police Department operates one police station for the City, which has a total area of 2.42 square miles (City of San Fernando n.d.).

The Ventura County Sheriff’s Department would provide law enforcement services to the Chatsworth Substation. The Ventura County Sheriff’s Department Patrol Division comprises seven stations serving unincorporated Ventura County, as well as contract service to the cities of Camarillo, Fillmore, Moorpark, Ojai, and Thousand Oaks. The East County Patrol Station, located in Thousand Oaks, would be the primary responder.

4.13.1.2 Schools and Other Public Facilities

Schools

Table 4.13-2 lists schools within 2 miles of a component of the proposed project.

Table 4.13-2 Schools Within 2 Miles of the Proposed Project Work Areas

Proposed Project Component	Jurisdiction	School	Street Address	Approximate Distance from Proposed Project Component (miles)
Storage Field Site	Los Angeles County	Starter Set Preschool and Child	12111 Reseda Blvd., Northridge	1.2
66-kV Subtransmission Line Reconductoring Route	Los Angeles County	Starter Set Preschool and Child	12111 Reseda Blvd., Northridge	1.2
Natural Substation	Los Angeles County	Starter Set Preschool and Child	12111 Reseda Blvd., Northridge	1.3
Chatsworth Substation	Ventura County	n/a[1]	n/a[1]	n/a[1]
Newhall Substation	City of Santa Clarita	Rise and Shine Preschool	25222 Wiley Canyon Rd., Newhall	0.15
		Wiley Canyon Elementary School	24240 La Glorita Circle, Newhall	0.2
		Santa Clarita Preschool and Infant Center	25022 Hawkbryn Ave., Newhall	0.5
		Peachland Avenue Elementary School	24800 Peachland Ave, Newhall	0.8
		Meadows Elementary School	25577 Fedala Rd., Valencia	0.9
		Pinecrest Schools, Valencia	25443 North Orchard Village Rd., Valencia	1.0
		Pico Canyon Elementary School	25255 Pico Canyon Rd., Stevenson Ranch	1.2
San Fernando Substation	City of Los Angeles	Bishop Alemany High School	11111 N. Alemany Dr., Mission Hills	0.0[2]
Telecommunications Route #4	City of Los Angeles	El Dorado Avenue Elementary School	12749 El Dorado Ave, Sylmar	0.1
Telecommunications ~~Line~~ Route #3	City of San Fernando	Gridley Elementary School	1907 Eighth St., San Fernando	0.2
		San Fernando Elementary School	1130 Mott St., San Fernando	0.2
		O'Melveny Elementary School	728 Woodworth St., San Fernando	0.4
		San Fernando Middle School	130 N. Brand Blvd., San Fernando	0.5
		Sylmar Senior High School	13050 Borden Ave., Sylmar	0.5
		Morningside Elementary School	576 N. Maclay Ave., San Fernando	0.6
		Los Angeles Mission College	13356 Eldridge Ave., Sylmar	0.6
		Mission Continuation School	11015 O'Melveny Ave., San Fernando	0.9
		Kennedy-San Fernando	11254 Gothic Ave.,	1.8

Table 4.13-2 Schools Within 2 Miles of the Proposed Project Work Areas

Proposed Project Component	Jurisdiction	School	Street Address	Approximate Distance from Proposed Project Component (miles)
		Community Adult School	Granada Hills	
Telecommunications ~~Line~~ Route #2	Los Angeles County	The Church at Rocky Peak	22601 Santa Susana Pass Rd., Chatsworth	0.1
		St. Paul's Christian Academy	21621 Heather Lee Lane, Chatsworth	0.4
		Chatsworth Hills Academy	21523 Rinaldi St., Chatsworth	0.4
		Meraj Academy	11070 Santa Susana Pass Rd, Chatsworth	0.6
		Sierra Canyon School	20801 West Rinaldi St., Chatsworth	0.9
		Chime Institute Infant Toddler	22280 Devonshire St., Chatsworth	1.0
		Oakridge Preschool and Infant Care	10433 Topanga Canyon Blvd., Chatsworth	1.0
		Chatsworth Park Elementary School	22005 Devonshire St., Chatsworth	1.1
		Teremok	10040 Hillview Ave., Chatsworth	1.5
		Ernest Lawrence Middle School	10100 Variel Ave., Chatsworth	1.9
		Stony Point High School	10010 De Soto Ave., Chatsworth	2.0
	Ventura County	Christadelphian Heritage School	6701 Santa Susana Pass Rd., Simi Valley	0.6
		Knolls Elementary School	6334 Katherine Rd., Simi Valley	1.0
		Phoenix Ranch School	1845 Oak Rd., Simi Valley	1.7

Sources: Bishop Alemany High School n.d.; LAUSD 2003; NSD 2011; SVUSD 2008
Key:
kV = kilovolt
n/a = not applicable
Notes:
[1] No schools are located within 2 miles of the Chatsworth Substation.
[2] The San Fernando Substation modifications involve work on Bishop Alemany High School property.

Four school districts serve the areas in the vicinity of the proposed project components: the Newhall School District (NSD); the William S. Hart Union High School District; the Los Angeles Unified School District (LAUSD); and the Simi Valley Unified School District (SVUSD). Additionally, a number of private schools are located in the vicinity of the proposed project components.

The NSD (preschool to sixth grade) includes 10 elementary schools in the Santa Clarita Valley. The William S. Hart Union High School District (sixth grade to twelfth grade, plus continuing and adult education) includes 18 schools and programs in the Santa Clarita Valley. The LAUSD (kindergarten to twelfth grade) serves the City of Los Angeles, as well as other cities and unincorporated areas of Los Angeles County. The Simi Valley Unified School District serves the City of Simi Valley.

Other Public Facilities

Three library systems serve the areas in the vicinity of the proposed project components: the County of Los Angeles Public Library System; the City of Los Angeles Public Library System; and the Ventura County Library System.

The County of Los Angeles Public Library offers library services to over 3.5 million residents in a 3,000-square-mile service area that includes unincorporated areas of Los Angeles County as well as 51 of the 88 incorporated cities of Los Angeles County. The City of Los Angeles Public library operates over 80 branches throughout the City of Los Angeles. The Ventura County Library operates 13 branches; the closest branch to a proposed project component (Telecommunications Route #2) is the Simi Valley Branch.

Several hospitals are also in the vicinity of the proposed project components. Providence Holy Cross Health Center is located approximately 2.3 miles from the storage field site and less than 0.5 miles from the San Fernando Substation, and is the closest hospital to these proposed project components. Providence Holy Cross Health Center is a Level II Trauma Center serving the North San Fernando and Santa Clarita Valleys and includes a cancer center, heart center, orthopedic services, and neurosciences and rehabilitation services. Also in the vicinity of the proposed project are the Henry Mayo Newhall Memorial Hospital, located in Valencia, and the Simi Valley Hospital, located in Simi Valley.

Park Facilities

Numerous county, city, and private parks are located in the vicinity of 66-kilovolt (kV) Segments A and B, including Sage Ranch Park (County of Ventura), ~~Rocky Peak Park (Counties of Ventura and Los Angeles),~~ Santa Susana Pass State Historic Park (County of Los Angeles), Michael D. Antonovich Regional Park at Joughin Ranch (County of Los Angeles), and Browns Creek Park (private park in the County of Los Angeles). In addition, Brand Park is located adjacent to the San Fernando Substation, in the City of Los Angeles, and O'Melveny Park is located adjacent to the storage field site in the Granada Hills neighborhood of the City of Los Angeles. For further discussion about park facilities, see Section 4.14, "Recreation."

4.13.1.3 Solid Waste and Wastewater Facilities

Table 4.13-3 shows the agencies that provide solid waste and wastewater services in the areas of the proposed project components.

Solid Waste

City of Los Angeles Sanitation Department of Public Works, Bureau of Sanitation

The City of Los Angeles Sanitation Department of Public Works (LASDPW) serves the City of Los Angeles and its surrounding communities. It is responsible for the collection, recycling, and cleaning of solid and liquid wastes generated by residential, commercial, and industrial users within its jurisdiction. The LASDPW's primary programs are wastewater collection and treatment; solid waste collection and recycling; and watershed protection (City of Los Angeles 2011a).

Table 4.13-3 Public Service Providers by Jurisdiction

Jurisdiction	Public Service System Provider
County of Los Angeles	Wastewater Treatment Provider: City of Los Angeles Sanitation Department of Public Works, Bureau of Sanitation (LASDPW)[1] Water Providers and Districts: Los Angeles Department of Water and Power (LADWP) Storm Water Management Agencies: Los Angeles County Department of Public Works, Watershed Management Division Solid Waste Services: LASDPW, Sunshine Canyon City/County Landfill (14747 San Fernando Rd., Sylmar), Chiquita Canyon Sanitary Landfill (29201 Henry Mayo Dr., Castaic), Puente Hills Landfill (13130 Crossroads Parkway South, City of Industry)
City of Los Angeles	Wastewater Treatment Provider: LASDPW Water Providers and Districts: LADWP Storm Water Management Agencies: LASDPW Solid Waste Services: LASDPW, Sunshine Canyon City/County Landfill (14747 San Fernando Rd., Sylmar), Chiquita Canyon Sanitary Landfill (29201 Henry Mayo Dr., Castaic), Puente Hills Landfill (13130 Crossroads Parkway South, City of Industry)
City of San Fernando	Wastewater Treatment Provider: LASDPW Water Providers and Districts: City of San Fernando Public Works, Water Administration Division Storm Water Management Agencies: City of San Fernando Public Works, Water Administration Division Solid Waste Services: Crown Disposal Co., Inc., contracted by the City of San Fernando Public Works
City of Santa Clarita	Wastewater Treatment Provider: Sanitation Districts of Los Angeles County (Santa Clarita Valley District) Water Providers and Districts: Newhall County Water District Storm Water Management Agencies: City of Santa Clarita Public Works, Environmental Services Division Solid Waste Services: LASDPW, Sunshine Canyon City/County Landfill (14747 San Fernando Rd., Sylmar), Chiquita Canyon Sanitary Landfill (29201 Henry Mayo Dr., Castaic), Puente Hills Landfill (13130 Crossroads Parkway South, City of Industry)

Table 4.13-3 Public Service Providers by Jurisdiction

Jurisdiction	Public Service System Provider
Ventura County, City of Simi Valley[2]	Wastewater Treatment Provider: Ventura Regional Sanitation District Water Providers and Districts: Ventura County Public Works, County Waterworks District 8; Calleguas Municipal Water District Storm Water Management Agencies: Ventura County Watershed Protection District, Zone 4 Solid Waste Services: Ventura County Public Works, Water and Sanitation Department, Integrated Waste Management Division, Simi Valley Landfill and Recycling Center (2801 Madera Rd., Simi Valley), Puente Hills Landfill (13130 Crossroads Parkway South, City of Industry)

Sources: CalRecycle 2011a, 2011b, 2011c; City of Los Angeles 2011a, 2011b, 2011c; City of San Fernando n.d.; Tignac 2011

Key:

LASDPW = City of Los Angeles Sanitation Department of Public Works, Bureau of Sanitation

LADWP = Los Angeles Department of Water and Power

Notes:

[1] The storage field receives all of its fresh water from the LADWP. Sanitary sewer from storage field buildings discharges to LASDPW facilities.

[2] The proposed project would cross a small area within the eastern edge of the City of Simi Valley. It is not expected that the City's public services or utilities would be used for construction or operation of the proposed project.

Sanitation Districts of Los Angeles County (Sanitation Districts)

The Sanitation Districts of Los Angeles County are a partnership of 23 independent districts that provide a combined 5.4 million people within an 815-square-mile service area with wastewater treatment, solid waste management, and energy recovery services. The Sanitation Districts' solid waste management landfills and facilities provide approximately one-fourth of the County's solid waste management needs, operating three sanitary landfills, four landfill energy recovery facilities, two recycle centers, and three materials recovery/transfer facilities (Sanitation Districts n.d.). The Sanitation Districts also participate in the operation of two refuse-to-energy facilities. The Sanitation District operates the Puente Hills landfill, which is the largest landfill in the United States.

City of San Fernando Public Works

The City of San Fernando contracts with Crown Disposal Company, Inc., for collection of residential, commercial, and industrial waste and recyclables. Crown Disposal Company, Inc., also provides construction and demolition hauling services.

Ventura County Public Works, Water and Sanitation Department, Integrated Waste Management Division

The Ventura County Public Works, Water and Sanitation Department, Integrated Waste Management Division (IWMD) is responsible for Ventura County's compliance with the California Integrated Waste Management Act. The IWMD reduces solid waste, prevents pollution, and promotes the sustainable management of waste materials primarily in unincorporated communities but also in partnership with all County municipalities (County of Ventura 2011a).

Wastewater

City of Los Angeles Sanitation Department of Public Works, Bureau of Sanitation

The LASDPW is responsible for wastewater collection and treatment systems for four million residences and businesses in the City of Los Angeles, as well as 29 other contracting cities and agencies. The LASDPW operates more than 6,500 miles of sewers connected to four wastewater and water reclamation plants, which process approximately 550 million gallons of wastewater per day (City of Los Angeles 2011a). The LASDPW provides contract service to the City of San Fernando for sewage treatment and disposal (City of San Fernando n.d.).

Sanitation Districts of Los Angeles County (Sanitation Districts) – Santa Clarita Valley

Along with the landfills under their jurisdiction, the Sanitation Districts also own and operate 1,400 miles of main trunk sewers and 11 wastewater treatment plants, which convey and treat approximately 500 million gallons per day of wastewater, 200 million gallons of which are treated and available for reuse (SDLAC 2011).

The Santa Clarita Valley District operates the Saugus and Valencia Water Reclamation Plants (WRPs). The Saugus WRP has a capacity of 0.25 million gallons per day, and the Valencia WRP has a capacity of 1.5 million gallons per day.

Water Providers and Districts

Los Angeles Department of Water and Power

The Los Angeles Department of Water and Power (LADWP) provides water and electric service to 3.8 million residents in the City of Los Angeles, a service area of 465 square miles. The LADWP provides approximately 215 billion gallons of water per year, drawing from the Eastern Sierra, the Metropolitan Water District of Southern California, and groundwater wells (LADWP n.d.).

Newhall County Water District

The Newhall County Water District (NCWD) is one of four water suppliers in the Santa Clarita Valley. The service area includes the unincorporated communities of Castaic, Newhall, Pinetree, and Tesoro. The NCWD provides approximately 3.62 gallons of water per year to 31,700 customers. Approximately 47 percent of the water comes from groundwater wells, and 53 percent is purchased from the Castaic Lake Water Agency. The NCWD has a storage capacity of 25.56 million gallons (NCWD n.d.).

Ventura County Public Works, County Waterworks District 8

Ventura County Public Works provides water service to 60 percent of Simi Valley through the Waterworks District 8, managed by the City of Simi Valley. The Waterworks District sources primarily from the Calleguas Municipal Water District and delivers approximately 23,000 acre-feet of water per year through 357 miles of water pipes.

City of San Fernando Public Works, Water Administration Division

The Water Administration Division provides water to the City of San Fernando for domestic and fire service use. Local groundwater supply is supplemented with water purchased from the Metropolitan Water district of Southern California. The City of San Fernando has an emergency connection to the LADWP water system (City of San Fernando n.d.). The Water Administration Division also oversees storm water management for the city.

Calleguas Municipal Water District

The Calleguas Municipal Water District (CMWD) serves 365 square miles of southeastern Ventura County, including the cities of Camarillo, Moorpark, Oxnard, Simi Valley, Thousand Oaks, and Port Hueneme, as well as several unincorporated communities, with a total population of 630,000. The CMWD operates four hydroelectric power plants. The majority of the water distributed by CMWD comes from the Metropolitan Water District of Southern California; CMWD also pumps water from the Las Posas Well Field (CMWD 2009).

Storm Water Management Agencies

Los Angeles County Department of Public Works, Watershed Management Division

The Department of Public Works, Watershed Management Division, addresses flood risk management, water quality, and water conservation in the Los Angeles County Flood Control District. The District covers more than 3,000 square miles in 85 cities and operates the majority of drainage infrastructure in incorporated and unincorporated areas in every watershed, including 500 miles of open channel, 2,800 miles of underground storm drain, and an estimated 120,000 catch basins (LADPW n.d.).

City of Los Angeles Sanitation Department of Public Works, Bureau of Sanitation

The LASDPW is responsible for the collection, transport, and disposal of storm water in the City of Los Angeles. The storm water management system includes natural and constructed channels; 1,125 miles of pipelines; 66,260 catch basins; and 11 pump plants (City of Los Angeles 2011c).

City of Santa Clarita Public Works, Environmental Services Division

The Environmental Services Division is responsible for storm water collection and treatment in the City of Santa Clarita. The Division operates storm drains and catch basins throughout the city to prevent pollution in the Santa Clara River.

Ventura County Public Works Agency Watershed Protection District, Zone 4

The Public Works Agency Watershed Protection District provides for the control and conservation of flood and storm waters and for the protection of watercourses, watersheds, public highways, life, and property in the district from damage or destruction from flood and storm waters. Zone 4 covers 61,000 acres in southeast Ventura County (County of Ventura 2011b).

4.13.2 Regulatory Setting

4.13.2.1 Federal

Resource Conservation and Recovery Act of 1976

The Resource Conservation and Recovery Act of 1976 (RCRA) (42 USC §6901 et seq.) establishes requirements for the management of solid waste. The RCRA establishes provisions for the design and operation of solid waste landfills. It authorizes states to carry out many functions of the RCRA through their own waste programs and laws. The U.S. Environmental Protection Agency (EPA) has promulgated regulations to implement the provisions of the RCRA (40 Code of Federal Regulations [CFR] Parts 239–282).

Clean Water Act of 1972

The Clean Water Act of 1972 (33 USC §1251 et seq.) requires states to set standards to protect water quality, including the regulation of storm water and wastewater discharge during construction and operation of a facility.

Occupational Safety and Health Act of 1970

The Occupational Safety and Health Act of 1970 (29 USC §651 et seq.) mandates safety requirements in the workplace. Procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector, are established in 29 CFR Part 1910. Federal approval of California's plans for enforcement of state safety and health requirements is given in 29 CFR Part 1952 Subpart K.

4.13.2.2 State

California Integrated Waste Management Act (AB 939)

The Integrated Waste Management Act of 1989 (Public Resource Code 40050) requires all local and county governments to adopt a Source Reduction and Recycling Element to identify ways to reduce the amount of solid waste sent to landfills. This law set reduction targets of 25 percent by 1995 and 50 percent by the year 2000.

Protection of Underground Infrastructure

Under California Government Code Sections 4216–4216.9, anyone planning to excavate must contact the appropriate regional notification center at least two working days before beginning excavation. Subsequent to this notification, underground infrastructure operators are notified and required to locate and field-mark the approximate location and number of subsurface installations that may be affected. The excavator is then required to determine the exact location of subsurface installations that may be affected by excavating with hand tools.

California Water Law and Permitting

California's water law (California Code of Regulations Title 23) is based on four doctrines: riparian, prior appropriation, groundwater, and pueblo rights. Riparian rights result from the ownership of land bordering a surface water source. Appropriative rights are acquired by putting surface water to beneficial use. Subterranean streams and underflow of surface waters are subject to the laws of surface waters and regulated by the State Water Resources Control Board and its regional boards. Underground water not flowing in a subterranean stream, such as water percolating through a groundwater basin, is not subject to the permitting authority of the State Water Resources Control Board. Pueblo rights refer to the right of a municipality (as the successor of a Spanish pueblo) to the use of naturally occurring surface and groundwater within the old pueblo boundaries, for the use of inhabitants of the municipality. The City of Los Angeles has confirmed pueblo rights. The regional water quality control boards issue permits and licenses for appropriation from surface and underground streams. The evaluation of applications considers the relative benefits derived from the beneficial uses, possible water pollution, and water quality.

California Building Standards Code and California Fire Code

California Code of Regulations Title 24 comprises 11 parts that contain building design and construction requirements as they relate to fire, life, and structural safety. Title 24 incorporates current editions of the

International Building Code, including the electrical, mechanical, energy, and fire codes applicable to the proposed project.

Los Angeles Regional Water Quality Control Board

The Los Angeles Regional Water Quality Control Board (LARWQCB) manages water quality for the majority of Los Angeles County and Ventura County. The LARWQCB is responsible for setting standards, issuing waste discharge requirements, determining compliance, and enforcing standards. The LARWQCB monitors and sets standards for water quality under several programs, including storm water, wastewater treatment, and wetlands protection.

4.13.2.3 Regional and Local

Los Angeles County General Plan, Safety Element (1990)

The Los Angeles County General Plan, Safety Element, includes the following safety action programs related to wildland and urban fire hazards:

> ***<u>Program 15: Strengthen Project Review and Enforcement of Standards</u>***
> ***Action 15.1***
> *Continue to review all development projects proposed in Fire Zone 4 for availability of adequate emergency access and water supply for firefighting purposes. Improve the enforcement of the Water Code, including provision for periodic inspection of water utilities to verify compliance with code requirements.*
>
> ***Action 15.2***
> *Continue to upgrade the Building, Fire, Subdivision and Zoning Codes to require onsite preventative measures, including adequate fire flows, fire breaks, fire resistant landscaping, fire retardant, construction, and automatic sprinkler systems to assist in fire suppression in fire hazardous areas, critical facilities, multistory and high occupancy buildings.*
>
> ***Action 15.3***
> *Continue to require property owners to undertake fuel load management practices such as brush clearance, erosion control, slope stabilization and flammable rubbish removal. Also, continue to review development projects to ensure proper brush clearance, adequate requirements of emergency ingress and egress, and adequate fire flows for fire suppression.*
>
> ***Action 15.4:***
> *Explore the feasibility of requiring applicants for development projects to participate in financing the cost of fire protection (fire stations and other capital improvements).*
>
> ***<u>Program 16: Coordinate and Improve Mutual Aid Agreements</u>***
> ***Action 16.1***
> *Continue to participate in and improve mutual aid agreements with the United State Forest Service, the California Division of Forestry, and other County and city fire fighting agencies.*

The Draft Los Angeles County General Plan (2010) includes the following policy:

> ***Policy PS 7.4:*** *All projects must comply with Los Angeles County Fire Department requirements, including access, water mains, fire flows, and hydrants.*

In addition, the 2010 draft discusses projected population and commercial growth in Los Angeles County, particularly the northern portion of Los Angeles County. Consequently, the County is exploring the possibility of constructing or expanding sheriff's stations in the Newhall and Santa Clarita areas (Los Angeles County 2010).

Santa Clarita Valley Area Plan (2010)

The Santa Clarita Valley Area Plan contains plans to expand the sheriff's station and raise staffing levels in response to the rate of population growth in the Santa Clarita Valley. There is no adopted law enforcement staffing level standard; however, the sheriff's department strives to maintain one officer per 1,000 people, and this service level is being met within the Santa Clarita Valley.

In 2008, the sheriff's department adopted a funding program for capital facilities needed to meet the law enforcement needs of expected growth in the Santa Clarita Valley through collection of a law enforcement impact fee. Both the City and the County collect the law enforcement fee on new development permits, to fund future facilities.

According to the Santa Clarita Valley Area Plan, Los Angeles County has also adopted fire impact fees within the planning area to fund new construction of fire stations and purchase capital fire equipment. These fees are collected from developers who are required to mitigate potential health and safety impacts from fire danger by funding construction of a new fire station or purchase of equipment.

City of Santa Clarita General Plan (2011)

The City of Santa Clarita General Plan, Safety Element, includes the following objectives and policies addressing protection against fire hazards:

> ***Objective S 3.2:*** *Provide for the specialized needs of fire protection services in both urban and wildland interface areas.*
>
> > ***Policy S 3.2.2:*** *Enforce standards for maintaining defensible space around structures through clearing of dry brush and vegetation.*
> >
> > ***Policy S 3.2.3:*** *Establish landscape guidelines for fire-prone areas with recommended plant materials, and provide this information to builders and members of the public.*
>
> ***Objective S 3.3:*** *Maintain acceptable emergency response times throughout the planning area.*
>
> > ***Policy S 3.3.1:*** *Plan for fire response times of five minutes in urban areas, eight minutes in suburban areas, and 12 minutes in rural areas.*

City of Los Angeles General Plan, Granada Hills–Knollwood Community Plan (1996)

The Granada Hills–Knollwood Community Plan, part of the City of Los Angeles General Plan, includes the following guidance for development of public service facilities:

> *The development of other public facilities such as Fire Stations, Police Stations, Libraries, and Schools should be phased and scheduled to provide a balance between land use and public services at all times. New power lines and other utilities and services should be placed underground wherever feasible, and a program for the undergrounding of existing power lines and other utilities and services should be developed.*

4.13.3 Methodology and Significance Criteria

Baseline conditions for the following impacts analysis were established in Sections 4.13.1 and 4.13.2, above. Baseline conditions are evaluated below based on their potential to be impacted by construction, operation, or maintenance activities associated with the proposed project components.

Potential impacts on public services and utilities were evaluated according to the following significance criteria. The criteria were defined based on the checklist items presented in Appendix G of the California Environmental Quality Act Guidelines. The proposed project would be considered to have a significant environmental impact if it would:

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered or need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:
   - Fire protection;
   - Police protection;
   - Schools;
   - Parks; or
   - Other public facilities.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

d) Have insufficient water supplies available to serve the project from existing entitlements and resources, or require new or expanded entitlements;

e) Be served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs; or

f) Not comply with federal, state, and local statutes and regulations related to solid waste.

Appendix G of the CEQA Guidelines also includes the following checklist items:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board; and
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;

Construction of the proposed project components would not result in the generation of sanitary wastewater. Portable toilets would be used during construction. During operation, the number of employees at the storage field site would not be expected to change (increase or decrease), nor would the number of employees maintaining the SCE project components. New bathroom facilities constructed at the storage field site as part of the proposed project would be offset by the demolition of existing bathroom facilities.

Oil and water are byproducts of natural gas production. Water and crude oil are removed from the withdrawal gas stream in various field separators and slug catchers, and water then flows to a water injection plant, where it flows through a wash tank and residual oil is removed. After flowing to the wash tank, the water flows into a surge tank to the injection pumps, where it is pumped into one of the six flood wells or two disposal wells at the storage field according to procedures approved by the EPA.

The proposed project would not discharge concentrated wastewater or large volumes of wastewater to a wastewater treatment facility, exceeding treatment requirements set forth by the LARWQCB. Therefore, these items are not applied as criteria in the analysis of environmental impacts presented in the following section.

4.13.4 Environmental Impacts and Mitigation Measures

4.13.4.1 Applicant Proposed Measures

The applicant has committed to the following applicant proposed measures (APMs) as part of the design of the proposed project. See Section 2.5, “Plans and Applicant Proposed Measures,” Table 2.8 for a full description of each APM.

Public Services and Utilities

- **APM PS-1: Site Cleanup.**
- **APM PS-2: Nonhazardous Waste Management.**

Hazard and Hazardous Materials

- ~~**APM HZ-2: Plant Power Line Inspection and Maintenance.**~~
- **APM HZ-5: Hazardous Materials Use and Storage and Hazardous Waste.**
- **APM HZ-7: Wood Pole Recycling and Disposal.**
- ~~**APM HZ-8: Construction Fire Control and Emergency Response.**~~

In addition, the following plans would be developed as part of the proposed project and implemented during construction and operations:

- Construction Safety and Emergency Response Plan
- Storm Water Pollution Prevention Plan
- Storage Field Security Plan
- Worker Environmental Awareness Training Program

4.13.4.2 Impacts Analysis

Impact PS-1: **Result in substantial adverse physical impacts associated with new or physically altered governmental facilities.**
LESS THAN SIGNIFICANT WITH MITIGATION

The need for public services is largely affected by an area’s population. There is a direct correlation between population size and demand for public services such as fire and police protection, schools, and libraries. Most, if not all, construction workers employed for the proposed project would originate from the regional labor pool or surrounding communities. Although the office facility proposed for the storage field site would be larger than the existing facility, the number of workers present at the storage field during operation would not increase from current levels. Operation and maintenance of the proposed project would not result in a significant increase in population in the proposed project area.

Fire and Police

LESS THAN SIGNIFICANT WITH MITIGATION. Fire, emergency services, and law enforcement would be required to service the proposed project component areas during construction and operation. With the implementation of existing plans at the storage field and the APMs listed above, as well as MM HZ-2 (Construction Fire Control and Emergency Response Measures), construction and operation of the proposed Central Compressor Station, Natural Substation, 12-kV Plant Power Line, 66-kV subtransmission line reconductoring, substation modifications, and telecommunication line routes would not affect service ratios, response times, or other objectives for public services in the area. The applicant would implement APMs to prevent or minimize impacts that could occur as a result of an emergency during construction or operation. Under ~~APM HZ-8~~MM HZ-2, fire prevention measures would be incorporated into construction, engineering design, and operational procedures of the Central Compressor Station and the SCE project components. ~~Under APM HZ-2, the applicant would conduct inspection of the Power Plant Line in order to reduce wildfire hazards, such as accumulated vegetation and improperly maintained equipment.~~ In addition, under ~~APM HZ-8~~MM HZ-2, the applicant would develop fire management measures as part of a Construction Safety and Emergency Response Plan in consultation with its contractors for use during construction and operation of the storage field components. This plan would be developed using the procedures currently in place for the Aliso Canyon facility and would include notification procedures and emergency fire precautions, such as those in the existing Emergency Services Standard for Emergency Planning and the existing Fire/Emergency Action Plan, described below.

The Emergency Services Standard for Emergency Planning exists for current operations at the storage field site. This planning document requires compliance with local, state, and federal emergency plans, and coordination with emergency management agencies in the event of an emergency (SoCalGas n.d.a). The Emergency Services Standard would be modified, or a new one prepared, for the proposed project components at the storage field site. In the case of an emergency involving facilities owned or operated by the applicant in the City of Los Angeles, the applicant would establish communication with the City of Los Angeles Emergency Operations Center, via the LAFD Operations Control Division Dispatch. In the case of such an emergency in the County of Los Angeles, the applicant would coordinate with the County of Los Angeles Emergency Operations Center, via the Los Angeles County Sheriff Communications Section, Emergency Operations Bureau. In addition, the applicant would follow the Transmission Command Post Procedures to provide assistance to field operations through planning and coordinating any repairs needed to transmission infrastructure in order to restore service and protect public safety (SoCalGas 2009b).

The Fire/Emergency Action Plan addresses current operations at the storage field site and applies to emergencies that occur at the site. This planning document establishes protocol for evacuation, including escape procedures, activation of the fire warning system, and other critical plant operations, such as shutting off the gas supply to affected buildings and equipment and powering down gas pumps (SoCalGas n.d.b).

Gas and fire sensors would monitor all equipment at the proposed Central Compressor Station and would automatically shut down the facility if unusual conditions are detected. In addition, the proposed Central Compressor Station would be fenced and paved for fire control, access control, and maintenance purposes. The implementation of these safety measures would reduce the risk of an accident requiring emergency response to a level that would not cause a significant adverse effect on the provision of public services in the proposed project area. In addition, under MM HZ-2~~APM HZ-8~~, the applicant and SCE would develop fire control measures that would supplement the existing Fire/Emergency Action Plan and detail fire prevention measures and response practices during construction and operation of the proposed storage field and SCE project components and, in the case of fire, provide for immediate suppression and notification; and, under MM HZ-~~2~~3, these fire control measures would be reviewed by the local fire departments for adequacy (see Section 4.8, “Hazards and Hazardous Materials”).

As discussed in Section 4.13.1.1, the storage field site is located in an area that is susceptible to brush fires. In addition, much of the proposed project components are located in areas with high risk of wildland fires. According the California Department of Forestry and Fire Protection, these areas are characterized as Very High Fire Hazard Severity Zones (see Section 4.8, “Hazards and Hazardous Materials,” Figure 4.8-1) due to flammable native vegetation and high winds. The existing substations are not located in areas classified as having high risk of wildland fires. Southern California Edison (SCE) participates in the Red Flag Fire Prevention Program, which monitors fire hazard conditions, including air temperature, wind speed, humidity, and live and dead fuel moisture content, to further reduce wildland fire risk. The implementation of ~~APM HZ-2, and~~ MM HZ-2~~APM HZ-8~~, as well as MM HAZ-~~2~~3 would reduce the risk of wildfires to less than significant. For further discussion of wildland fire risks, see Section 4.8, “Hazards and Hazardous Materials.”

The applicant has committed to preparing and implementing a Storage Field Security Plan prior to construction. The proposed project includes construction of a new guardhouse and access gate that would be constructed within the storage field property boundary, in addition to the existing guardhouse, which would remain in place for use as an additional entry-monitoring station. The proposed project also includes additional measures to ensure security. The proposed Natural Substation would be enclosed by a 15-foot-tall chain-link fence made of galvanized steel. At the Natural Substation site, lighting would be installed on the sides of the switchracks, around the transformer banks, and in areas where operations and maintenance activities may take place during evening hours for emergency or scheduled work.

Current local fire and police protection support services, including four fire stations from three separate fire response jurisdictions, as well as five police stations from four separate police jurisdictions, are adequate to serve the areas of the project components. These support services are available to respond to a fire, medical, or security emergency should an incident occur onsite. Construction and operation of the proposed project would not result in a change to the provision of fire or police protection in the proposed project area. Construction and operation of the proposed project would not significantly increase the demand for fire or police protection services in the proposed project area under this criterion.

Schools

LESS THAN SIGNIFICANT. The San Fernando Substation is located adjacent to Bishop Alemany High School in the Community of Mission Hills. As part of the proposed project, the applicant would replace two structures that are located on the grounds of the high school. Any impact incurred would be limited to construction and would therefore be temporary. The proposed project would not physically alter the school facility; cause a substantial increase in population during or after construction; or increase the demand for school services from Bishop Alemany High School or other regional schools. There would be no impacts on schools during project operation. Therefore, any potential impacts under this criterion would be less than significant.

For further discussion of potential impacts on schools, see Section 4.8, “Hazards and Hazardous Materials” and Section 4.11, “Noise.”

Parks

LESS THAN SIGNIFICANT. Construction activities would include replacing a lattice steel tower (LST) that is currently located in Brand Park, just south of San Fernando Substation, with a tubular steel pole (TSP). The location of the existing LST and the proposed TSP for Segments D and E are located within 350 feet of the San Fernando substation and are within an existing SCE right-of-way. The replacement of the LST would result in temporary impacts on Brand Park during construction. A segment of the park may be closed, and the presence of construction equipment, as well as the construction activities themselves, could cause adverse physical impacts on the park. However, impacts would be limited to a confined space within the park and would be temporary. After construction, the area of the park around the TSP would be restored to allow for continued recreational use of the park. Because an LST currently exists where the TSP replacement is proposed, maintenance activities would resemble those performed currently as part of baseline conditions, and no long-term impact would result. Therefore, any potential impacts under this criterion would be less than significant.

Telecommunications Route #2 would begin in unincorporated Ventura County at the existing Chatsworth Substation and connect to the proposed Natural Substation on the storage field site. The path of the proposed fiber optic cable (see Section 2.2, “Components of the Proposed Project,” Figure 2-7) may traverse a number of parks, including Sage Ranch Park, ~~Rocky Peak Park,~~ Santa Susan Pass State Historic Park, Michael D. Antonovich Regional Park at Joughin Ranch, O’Melveny Park, and Browns Creek Park. It has not been determined if existing structures would be used for overhead fiber optic cable installations or if structures would need to be replaced. Any structures that could be replaced would be replaced with structures of a comparable size and type within the short construction period related to the replacement of each structure (less than one week). Impacts on parks would be limited to the short-term construction period, and would be associated with the installation of the fiber optic cable and possible replacement of existing structures along the route. These impacts would be considered less than significant.

Other Public Services

NO IMPACT. The proposed project would not directly increase the local population during or after construction and, therefore, would not affect the provision of other government services or public facilities such as libraries and hospitals. As discussed above, fire and police services in the proposed project area are sufficient to provide emergency response services to the proposed project in the event of an emergency. In addition, the Construction Safety and Emergency Response Plan would include precautionary measures to ensure personnel safety during construction and operation of the proposed project. In the event of an emergency, hospitals in the proposed project area would have sufficient capacity to treat injuries. Therefore, there would be no impact under this criterion.

Impact PS-2: Require or result in the construction of new water facilities or expansion of existing facilities.
LESS THAN SIGNIFICANT

The storage field currently uses between 20,000 and 25,000 gallons of water per month for operations. Pumps transfer water to water tanks with a capacity of approximately 200,000 gallons that are located on the storage field site. The storage field’s water system is capable of and permitted to provide up to 400 gallons per minute. Additional water required during construction of the storage field facilities and other components of the proposed project would also be provided by the LADWP. A groundwater well would not be constructed, and reclaimed water would not be used for construction or operation of the proposed project components.

Portable restroom facilities would be used during construction at the storage field. For grading and compaction of the Central Compressor Station site, water use would be up to 16,000 gallons per day or 352,000 gallons per month (22 workdays per month). For other construction activities at the storage field, water would be used primarily for dust suppression or equipment and roadway wash down (up to 5,000 gallons per day or 110,000 gallons per month). For construction activities associated with the 66-kV subtransmission line, Natural Substation, and telecommunication line routes, water use would be up to one million gallons per month (if these components are constructed concurrently). Total water use during construction of the proposed project components is estimated at ~~11.7~~12.2 million gallons. Water use estimates for construction of the facilities proposed by the applicant and SCE are provided in Table 2-8 of Chapter 2, "Project Description."

Although construction of the proposed storage field components would temporarily increase the storage field's monthly water requirements, it is anticipated that the LADWP would be able to provide the additional water. Water provided by LADWP is also anticipated to meet the construction needs of the SCE project components. Excess water from the storage field is disposed of in its onsite flood wells or disposal wells in accordance with procedures approved by the EPA. Therefore, no new or expanded water or wastewater treatment facilities would be required for the proposed project, and any potential impacts under this criterion would be less than significant.

Impact PS-3: Require or result in the construction of new storm water drainage facilities or expansion of existing facilities.
LESS THAN SIGNIFICANT

Drainage structures would be installed on construction access roads to facilitate construction traffic as well as to prevent road damage and erosion due to uncontrolled water flow. Drainage structures may include wet crossings, water bars, overside drains, pipe culverts, and energy dissipaters. Reengineering of the access road between 66-kV towers 27 and 28 (see Figure 2-12 in Chapter 2, "Project Description") would require the fill and insertion of a culvert in the bottom of an unnamed seasonal wash. Other specific need for and location of drainage systems or similar improvements would be identified during final engineering.

Most of the existing access roads to the proposed Central Compressor Station site are paved. As part of the facility's existing storm water best management practices, V-ditches and drain boxes along the roads inside the storage field would be cleared of debris, and vegetation would be cleared and managed periodically to maintain access. In accordance with Section 401 of the Federal Clean Water Act, the applicant and SCE would prepare Storm Water Pollution Prevention Plans (SWPPPs) that would outline measures to prevent contamination of storm water from construction operations. The SWPPPs would be included in the Worker Environmental Awareness Training Program, and materials associated with the SWPPPs would be stored at all construction staging areas.

The proposed project would result in an increase in impervious surface area, as described in Chapter 2, "Project Description," and Section 4.9, "Hydrology and Water Quality." The Central Compressor Station site would be paved (approximately 1.4 acres). The proposed office building location site and parking area would also be paved (approximately 1.3 acres). The road to the Natural Substation is currently a dirt road and would be paved as well (0.65 acres). Runoff from these sites would be collected and directed through the existing water processing facility at the storage field site. Excess water from the storage field is disposed of onsite flood wells or disposal wells in accordance with procedures approved by the EPA.

Design of the proposed project components would include features and measures to manage any additional storm water that may be generated by the project components. Therefore, any potential impacts from construction and operation of the proposed project would be less than significant under this criterion.

Impact PS-4: Insufficient water supplies available to serve the proposed project from existing entitlements and resources, or require new or expanded entitlements.
LESS THAN SIGNIFICANT

Water used during construction for dust control and other uses would be provided by the LADWP. Water use at the storage field during construction would be limited to dust suppression, hydrostatic testing of pipelines (25,000 gallons), cleanup and equipment cleaning, and human consumption. Construction activities related to subtransmission line reconductoring and structure replacement, fiber optic line installations, and substation construction and modification would be limited to dust suppression, cleanup and equipment cleaning, and human consumption. An estimated ~~11,700,000~~12,212,000 gallons of water would be required for construction of all components of the proposed project during the ~~22~~24-month construction period. This represents an average of approximately 507,000 gallons of water per month.

Operations at the storage field currently use between 20,000 and 25,000 gallons of water per month. Water is provided through a 4-inch metered line by the LADWP. No groundwater or reclaimed water is used at the storage field. Pumps transfer water to water tanks with a capacity of approximately 200,000 gallons that are located on the storage field site. The storage field's system provides a maximum flow rate of 400 gallons per minute. There would be no change in the number of employees at the storage field site after construction and no change in water use from operation of the proposed project. Operation of the reconductored subtransmission lines, fiber optic cables, and new and modified substations would not result in an increase in water use.

Construction and operation of the proposed project would not require construction of a new groundwater well or expansion of an existing well. Any potential impacts under this criterion would be temporary and limited to construction and, therefore, would be less than significant.

Impact PS-5: Served by a landfill without sufficient permitted capacity to accommodate the proposed project's solid waste disposal needs.
LESS THAN SIGNIFICANT

Construction of the proposed project components would generate waste including scrap metal, rags, concrete forms, packaging materials, wooden pallets, excess concrete, excess soil, wooden poles, LST materials, and other similar construction-related waste, as described in Chapter 2, "Project Description." Up to 40 cubic yards of non-hazardous waste would be generated per month during the construction of the Central Compressor Station. Waste would also be generated from the demolition of the existing office facility and turbine-driven compressors (TDCs). The applicant would implement APMs, described below, to ensure that all hazardous and non-hazardous waste would be re-used, recycled, or disposed of appropriately.

Under APM PS-2, non-hazardous waste from decommissioning and demolition will be re-used at the construction site or recycled at an appropriately licensed facility. The TDC train consists of turbines, power turbines, gear reducers, compressors, and gas coolers, which will be sold for salvage. Remaining materials, which include piping, air intakes, exhaust stacks, and supports, will be sold for scrap or recycled. Most of the material to be disposed of would consist of concrete foundations and would be taken to an appropriate landfill. The applicant anticipates that 810 cubic yards of material resulting from demolition of the TDCs will not be recyclable and will need to be disposed of.

The existing office facility consists of two pre-fabricated units measuring 4,500 square feet. After decommissioning, this facility cannot be reused. The existing office facility will be recycled or disposed of in appropriate recycling and disposal facilities, as required under APM PS-2 and according to all applicable laws and regulations. If possible, the existing facility would be removed and would not be demolished onsite, as described in Section 2.2, "Project Components." However, if the facility is too unstable for removal, demolition would occur onsite, and it is anticipated that demolition would generate approximately 150 cubic yards of construction debris.

The estimated volume of non-hazardous waste from construction of the Natural Substation is approximately 20 cubic yards. For the 66-kV subtransmission line reconductoring, the non-hazardous waste generated would consist of recyclable material (e.g., metals, including cable line and tower structures). The estimated non-hazardous waste from the 66-kV subtransmission line reconductoring work to remove existing steel structures, wire/cable, and conductors is approximately 635 tons (467 tons of concrete; 157 tons of steel; 11 tons of wire).

For 66-kV subtransmission line reconductoring, approximately 20 tons of wood/wood poles, some of which would be treated with chemicals, would be generated and recycled, returned to the manufacturer, or disposed of in a Class I hazardous waste landfill, the lined portion of an RWQCB-certified municipal landfill, and/or in accordance with all applicable laws and regulations, and as detailed under APM HZ-5. In addition, the installation of fiber optic cable may require the replacement of treated wooden poles. If all of the poles along Telecommunications Routes #2, ~~and~~ #3, and #4 were replaced, it is estimated that up to ~~590~~760 tons of wood poles, some of which would be treated with chemicals, would be disposed of or recycled. This estimate is conservative, and it is anticipated that the removal of fewer wood poles would be required.

The closest landfills to the proposed project area are the Sunshine Canyon Landfill, Chiquita Canyon Sanitary Landfill, and Simi Valley Landfill and Recycling Center. The Sunshine Canyon Landfill serves the City of Los Angeles and Los Angeles County under a Joint City/County Solid Waste Facility permit. The Sunshine Canyon Landfill is permitted to receive 12,100 tons of municipal waste per day, including construction/demolition and industrial waste, and receives on average less than 7,000 tons per day. The facility has a maximum permitted capacity of 136.4 million cubic yards, and as of January 2011 the remaining capacity at the Sunshine Canyon Landfill was 102.5 million cubic yards (Cipley 2011). Based on these data, the Sunshine Canyon Landfill would be active during construction of the proposed project and would have sufficient space to receive waste generated during construction.

The Chiquita Canyon Sanitary Landfill is permitted to receive approximately 6,000 tons per day and has a maximum permitted capacity of 63.9 million cubic yards. As of January 2011, the Chiquita Canyon Sanitary Landfill has an estimated remaining capacity of 6 million tons. Based on these data, it is estimated that the Chiquita Canyon Sanitary Landfill will remain open and active until mid-2015 (Dean 2011). Although the facility is nearing capacity, it would be active during construction of the proposed project.

The Simi Valley Landfill and Recycling Center is the closest landfill to the Chatsworth Substation. This facility is permitted to receive 3,000 tons per day and currently has a remaining capacity of 18.9 million cubic yards (Tignac 2011).

If wood poles are identified for replacement, SCE may also use the Sanitation District Puente Hills landfill for disposal of utility wood pole waste. The Puente Hills Landfill is permitted to receive approximately 13,200 tons per day and has a maximum permitted capacity of 74 million cubic yards. As of January 2011, the Puente Hills Landfill had an estimated remaining capacity of 29.6 million cubic yards (Sanitation Districts 2011), and is scheduled to close in October, 2013.

Given the available capacity, these landfills would be able to accommodate all waste, under existing permits, resulting from construction activities associated with the proposed project components. In addition, APM PS-2, APM HZ-5, and APM HZ-7 would help ensure proper disposal and recycling of waste from construction of the proposed project. Therefore, any potential impacts under this criterion would be less than significant.

Impact PS-6: **Noncompliance with federal, state, or local statues and regulations related to solid waste.**
LESS THAN SIGNIFICANT

Construction of the proposed project components would result in the generation of various non-hazardous waste materials, including wood, soil, vegetation, sanitation waste (portable toilets), concrete, steel structures, and conductor wire. These materials would either be re-used at the construction site (e.g., clean soil used for backfill) or disposed of at an appropriately licensed offsite facility. There are no known contaminated soils located at any of the proposed project component construction locations. However, under APM PS-2, any soils generated during excavation and grading that are suspected to be contaminated with hazardous materials would be disposed of offsite at an appropriately licensed facility. Construction activities would also generate utility pole and other treated wood waste that would be reused, returned to the manufacturer, or disposed of in a Class I hazardous waste landfill, the lined portion of an RWQCB-certified municipal landfill, and/or in accordance with all applicable laws and regulations, as described under APM HZ-5. In addition, APM PS-1 and APM PS-2 would help ensure proper disposal and recycling of waste from construction of the proposed project. With the implementation of APM PS-2, all hazardous and non-hazardous waste generated during operation of the proposed project would also be disposed of in accordance with all federal and state regulations and with site-specific permits. Therefore, any potential impacts under this criterion would be less than significant.

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4.14 Recreation

This section describes the environmental and regulatory settings and discusses potential impacts associated with construction and operation of the proposed project components with respect to recreation resources.

4.14.1 Environmental Setting

Construction of the proposed project components would occur in incorporated and unincorporated areas of the County of Los Angeles and County of Ventura. The storage field is surrounded by the Santa Susana Mountains, which are part of the Santa Monica Mountains Conservancy. This mountainous area includes many open space and recreation areas in close proximity to the storage field. The northeastern side of the storage field overlaps a small portion of the 480-acre Michael D. Antonovich Open Space Preserve. The Open Space Preserve is part of the larger 4,000-acre Santa Clarita Woodlands Park, which also includes Ed Davis Park (located in Towsley Canyon) and East and Rice Canyon (Figure 4.10-1). These parks are located 0.8 miles north of the storage field. The western side of the storage field is in close proximity to the 2,326-acre Michael D. Antonovich Regional Park at Joughin Ranch. On its eastern side, the storage field borders the 672-acre O'Melveny Park, which is operated by the City of Los Angeles. The City of Los Angeles also operates several community parks on the southern edge of the storage field; this includes Porter Ridge Park, Aliso Canyon Park in Porter Ranch, Wilbur Tampa Park (including Eddleston Park), Limekiln Canyon Park, Browns Creek Park, and Moonshine Canyon Park (including Holleigh Bernson Memorial Park) (City of Los Angeles Department of Recreation and Parks 2011).

The Chatsworth Substation, located in Ventura County, is approximately 0.9 miles from the 625-acre Sage Ranch Park. The Newhall Substation, located in the City of Santa Clarita, is 0.3 miles from the Vista Valencia Golf Course and 0.5 miles from Old Orchard Park (City of Santa Clarita 2011). The San Fernando Substation is 205 feet from Brand Park and 0.5 miles from Andres Pico Adobe Park, both of which are operated by the City of Los Angeles. The 66-kilovolt (kV) Segments A, B, and C would be located in close proximity to the Ed Davis Park, East and Rice Canyon, and Pico Canyon County Park (each of which is located within Santa Clarita Woodlands Park). The 66-kV Segments D and E would be located near Brand Park and Andres Pico Adobe Park. One lattice steel tower located within Brand Park would be replaced with a TSP in order to construct 66-kV Segment E (See Section 4.13, "Public Service and Utilities").

The telecommunications routes would be located within 1 mile of approximately 35~~30~~ recreation areas and would traverse several parks (Table 4.14-1). Telecommunications Route #1 would be located near Vista Valencia Golf Course and~~,~~ Old Orchard Park and~~,~~ parks within the larger Santa Clarita Woodlands Park ~~Ed Davis Park, East and Rice Canyon, and Pico Canyon County Park~~. Telecommunications Route #2 would traverse the following parks: Sage Ranch Park, Corriganville Regional Park, Santa Susana Pass State Historic Park, and Michael D. Antonovich Regional Park at Joughin Ranch, and Brown's Creek Park. Additionally, Santa Susan Park, Chatsworth Natural Preserve, Chatsworth Park South, Chatsworth Park North, Garden of the Gods, Stony Point Park, and Indian Springs Open Space~~, and Chatsworth Oaks Park~~ are located near the proposed fiber optic route. Telecommunications Route #3 would be located near Brand Park, Carey Ranch Park, Layne Park, Las Palmas Park, Heritage Park, ~~an unnamed park on Park Avenue and First Street in the City of San Fernando~~, Glen Oaks Park, Pioneer Park, ~~Sylmar Recreation Center,~~ El Cariso Golf Course, and El Cariso Regional Park. Telecommunications Route #4 would be located near Brand Park, Carey Ranch Park, Layne Park, Las Palmas Park, and Telfair Park.

Table 4.14-1 Recreation Facilities in the Proposed Project Area

Recreation Facility	Component of the Proposed Project	Jurisdiction	Distance from Component of the Proposed Project
Santa Clarita Woodlands Park	Aliso Canyon Storage Field	County of Los Angeles – part of Santa Monica Mountains Conservancy	0.80 miles
MDA Open Space Preserve	Aliso Canyon Storage Field	County of Los Angeles – part of Santa Monica Mountains Conservancy	Overlaps with the project site
MDA Regional Park at Joughin Ranch	Aliso Canyon Storage Field, Chatsworth to Natural Telecommunications Route #2	County of Los Angeles – part of Santa Monica Mountains Conservancy	0.50 miles from the storage field
O'Melveny Park	Aliso Canyon Storage Field	City of Los Angeles – Community of Granada Hills	0.28 miles
Porter Ridge Park	Aliso Canyon Storage Field	City of Los Angeles – Community of Northridge	Shares a border with the project site
Aliso Canyon Park	Aliso Canyon Storage Field	City of Los Angeles – Community of Northridge	0.14 miles
Wilbur Tampa Park	Aliso Canyon Storage Field	City of Los Angeles – Community of Northridge	0.30 miles
Limekiln Canyon Park	Aliso Canyon Storage Field	City of Los Angeles – Community of Northridge	0.04 miles
Moonshine Canyon Park	Aliso Canyon Storage Field	City of Los Angeles – Community of Northridge	0.09 miles
Brown's Creek Park	Aliso Canyon Storage Field, Telecommunications Route #2	City of Los Angeles – Community of Chatsworth	0.66 miles from the storage field
Sage Ranch Park	Chatsworth Substation, Telecommunications Route #2	County of Ventura	0.93 miles from Chatsworth Substation, overlaps Telecommunications Route #2
Vista Valencia Golf Course	Newhall Substation, 66-kV Subtransmission Line Reconductoring Route Segments A, B and C, Telecommunications Route #1	City of Santa Clarita	0.29 miles
Old Orchard Park	Newhall Substation, 66-kV Subtransmission Line Reconductoring Route Segments A, B and C, Telecommunications Route #1	City of Santa Clarita	0.50 miles
Brand Park	San Fernando Substation, 66-kV Subtransmission Line Reconductoring Route Segments D and E, Telecommunications Route #3, Telecommunications Route #4	City of Los Angeles – Community of Mission Hills	0.04 miles from San Fernando Substation, overlaps 66-kV Segment E
Carey Ranch Park	~~San Fernando Substation,~~ Telecommunications Route #3, Telecommunications Route #4	County of Los Angeles	0.59 miles
Layne Park	San Fernando Substation, Telecommunications Route #3, Telecommunications Route #4	City of San Fernando	0.03 miles

Table 4.14-1 Recreation Facilities in the Proposed Project Area

Recreation Facility	Component of the Proposed Project	Jurisdiction	Distance from Component of the Proposed Project
Heritage Park	Telecommunications Route #3	City of San Fernando	0.00 miles (adjacent)
Andres Pico Adobe Park	66-kV Subtransmission Line Reconductoring Route Segments D and E	City of Los Angeles – Community of Mission Hills	0.50 miles
Ed Davis Park (within Santa Clarita Woodlands Park)	66-kV Subtransmission Line Reconductoring Route Segments A, B and C, Telecommunications Route #1	Unincorporated Los Angeles County	0.71 miles
East & Rice Canyon (within Santa Clarita Woodlands Park)	66-kV Subtransmission Line Reconductoring Route Segments A, B and C, Telecommunications Route #1	Unincorporated Los Angeles County	0.4 miles
Pico Canyon County Park (within Santa Clarita Woodlands Park)	66-kV Subtransmission Line Reconductoring Route Segments A, B and C, Telecommunications Route #2, Telecommunications Route #3	Unincorporated Los Angeles County	1.26 miles
Las Palmas Park	Telecommunications Route #3, Telecommunications Route #4	City of San Fernando	0.10 miles
Recreation Park on Park Avenue and First Street (City of San Fernando)	Telecommunications Route #3, Telecommunications Route #4	City of San Fernando	0.70 miles
Glen Oaks Park	Telecommunications Route #3	City of San Fernando	0.46 miles
Pioneer Park	Telecommunications Route #3	City of San Fernando	0.52 miles
Sylmar Recreation Center	Telecommunications Route #3, Telecommunications Route #4	Los Angeles City – Community of Sylmar	0.54 miles
El Cariso Golf Course	Telecommunications Route #3	Los Angeles County – Community of Sylmar	0.50 miles
El Cariso Regional Park	Telecommunications Route #3	Los Angeles County – Community of Sylmar	0.66 miles
Santa Susana Park	Telecommunications Route #2	City of Simi Valley – Rancho Simi Valley Recreation & Parks District (1)	0.71 miles
Chatsworth Natural Preserve	Telecommunications Route #2	Los Angeles County – Community of Chatsworth	0.95 miles
Corriganville Regional Park	Telecommunications Route #2	City of Simi Valley	0.31 miles
Santa Susana Pass State Historic Park	Telecommunications Route #2	Los Angeles County	Overlaps with route
Chatsworth Park South	Telecommunications Route #2	Los Angeles City – Community of Chatsworth	0.60 miles
Chatsworth Park North	Telecommunications Route #2	Los Angeles City – Community of Chatsworth	0.48 miles
Garden of the Gods	Telecommunications Route #2	City of Los Angeles – Community of Chatsworth, part of Santa Monica Mountains Conservancy	0.13 miles
Stony Point Park	Telecommunications Route #2	Los Angeles City – Community of Chatsworth	0.09 miles

Table 4.14-1 Recreation Facilities in the Proposed Project Area

Recreation Facility	Component of the Proposed Project	Jurisdiction	Distance from Component of the Proposed Project
Rocky Peak Park	Telecommunications Route #2	Ventura and Los Angeles Counties	0.07 miles
Indian Springs Open Space	Telecommunications Route #2	Los Angeles City – Community of Chatsworth	0.16 miles
Chatsworth Oaks Park	Telecommunications Route #2	Los Angeles City – Community of Chatsworth	1.18 miles
Telfair Park	Telecommunications Route #4	Los Angeles City- Community of Granada Hills	0.26 miles

Sources: Google Earth 2011; Google Earth 2013; City of Los Angeles Department of Recreation & Parks 2011; Santa Monica Mountains Conservancy 2011; County of Ventura 2011; County of Los Angeles Department of Parks & Recreation 2011; City of Santa Clarita 2011; and Rancho Simi Recreation and Park District 2011
Key:
kV = Kilovolt
MDA = Michael D. Antonovich
Note:
[1] Simi Valley Recreation & Parks District is run independently of the City of Simi Valley.

4.14.2 Regulatory Setting

4.14.2.1 Federal

There are no federal plans that apply to the analysis of impacts on recreation in the proposed project component areas.

4.14.2.2 State

There are no state plans that apply to the analysis of impacts on recreation in the proposed project area.

4.14.2.3 Regional and Local

Recreation facilities within 1 mile of the proposed project components are subject to the County of Ventura General Plan (2010), County of Los Angeles General Plan (1980), City of Los Angeles General Plan (2010), City of Santa Clarita General Plan (1991), City of Simi Valley General Plan (1988), and City of San Fernando General Plan (2008). The plans do not contain policies that would affect the analysis of impacts on recreation in the proposed project area.

4.14.3 Methodology and Significance Criteria

Potential impacts on recreation were evaluated according to the following significance criterion. The criterion was defined based on the checklist items presented in Appendix G of the California Environmental Quality Act Guidelines. The proposed project would cause a significant impact on recreation if it would:

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Appendix G of the CEQA Guidelines also includes the following checklist item – the proposed project would cause a significant impact on recreation if it would:

- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

The proposed project, however, would not involve the construction or expansion of recreational facilities, and would not pose a substantial demand on existing recreational facilities. Therefore, this item is not applied as a criterion in the analysis of environmental impacts presented in the following section.

4.14.4 Environmental Impacts and Mitigation Measures

Applicant Proposed Measures

There are no applicant proposed measures associated with recreational resources.

Impact RE-1: **Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. ~~Result in substantial physical deterioration of parks and recreational facilities.~~**
LESS THAN SIGNIFICANT

The proposed project would use a local construction workforce and only use outside contractors if local contractors are not available. In the event that outside contractors were used for construction of the proposed project, some workers would relocate to the proposed project area for the temporary duration of construction. Construction of the Aliso Canyon storage field components, 12-kV Plant Power Line, and guardhouse is expected to last ~~22~~24 months and would require a maximum of 150 workers per day. Construction of the Natural Substation would take 12 months and require an average of 40 workers per day. Subtransmission line reconductoring would take 18 months and require an average of 10 workers per day with a maximum of 37 workers at any one time at the staging areas. Fiber optic cable installation would take ~~three~~ five months and require a maximum of five workers per day. Although project construction workers could increase the use of local recreation facilities, this use would be temporary and minor, because the local construction workforce population would only increase if outside contractors were required, and only to a small degree. Furthermore, due to the large number of parks and recreational facilities located within two miles of the project component areas and the short project construction period of 24 months, it is anticipated that the temporary increase of the use of parks and recreational facilities during construction would not result in substantial or accelerated physical deterioration of these parks and recreational facilities.

During operation, no additional staff would be required at the storage field. Maintenance activities along the subtransmission line and telecommunications routes would not require staff beyond the existing SCE staff that already conducts periodic inspections and assessments of these systems. In addition, no impacts regarding population-growth inducement would occur (Section 4.12, "Population and Housing"). Therefore, ~~T~~there would be no long-term increase in the use of existing neighborhood and regional parks or other recreational facilities that would result in substantial physical deterioration of these facilities. A less than significant impact would result under this criterion.

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4.15 Transportation and Traffic

This section describes the environmental and regulatory settings and discusses impacts associated with construction and operation of the proposed project with respect to transportation and traffic.

Telecommunications Route #4 was added as a project component after circulation of the Draft EIR. The number of additional workers associated with the construction of this project component would be low (less than 5), and these workers would use roadways and intersections identified in the analysis in this section. No additional road closures would be required for this component other than those described below.

4.15.1 Environmental Setting

Private vehicular travel on area roadways is the primary mode of transportation throughout the areas of the proposed project components. The transportation system in the areas of unincorporated Los Angeles and Ventura Counties and the Cities of Los Angeles Santa Clarita, San Fernando, and Simi Valley in which the proposed project is situated, also includes bus transit, commuter and regional rail, bicycle facilities, pedestrian facilities, and multi-use trails. The following sections describe these facilities in greater detail.

4.15.1.1 Regional Highway Network

The primary highways in the proposed project area include the Golden State Freeway (Interstate-5 [I-5]), the Ronald Reagan Freeway (State Route 118 [SR-118]), and the Foothill Freeway (SR-210). Each of these highways and their relationship to the proposed project component areas is discussed further below.

The Golden State Freeway

The Golden State Freeway is a component of the Eisenhower Interstate Highway system that runs north to south from the Canadian border to the City of San Diego. Within the proposed project component areas, I-5 runs through parts of the City of Santa Clarita, unincorporated Los Angeles County, and the City of Los Angeles. Segment C of the 66-kilovolt (kV) subtransmission line Telecommunications Route #1 would cross I-5 just north of the junction of I-5 and SR-14 in unincorporated Los Angeles County; Telecommunications Route #4 would cross I-5 just south of this junction. Telecommunications Route #3 and a portion of Telecommunications Route #4 would cross I-5 further south, within the City of Los Angeles, just west of the City of San Fernando.

The Ronald Reagan Freeway

The Ronald Reagan Freeway is a state highway that runs west from the Santa Paula Freeway (SR-126) near the town of Saticoy, to SR-210 east of the City of San Fernando (Streets and Highways Code §418[a]). Telecommunications Route #2 crosses beneath SR-118 within the City of Los Angeles, just west of the Ventura County line.

The Foothill Freeway

The Foothill Freeway (I-210/SR-210) is a contiguous interstate/state highway that begins at the junction with I-5 in the City of Los Angeles, just north of the City of San Fernando, and travels southeast to the I-605 junction near the City of Duarte, where I-210 terminates. SR-210 continues east to near the City of Highland, where the highway turns south before terminating at the I-10 junction near the City of Redlands (Streets and Highways Code §510). Telecommunications Route #3 crosses I-210/SR-210 immediately east of the City of San Fernando.

4.15.1.2 Local Roadway Network

The following sections describe the existing major roads within the roadway network in the proposed project area.

The Old Road

The Old Road is a north-south roadway that runs parallel to I-5. Beginning just north of Oak Valley Road, in the community of Castaic, The Old Road becomes San Fernando Road at its intersection with Sierra Highway, just south of the I-5/SR-14 junction, in unincorporated Los Angeles County. The Old Road is a four-lane, divided roadway with a posted speed limit of 55 miles per hour (mph). Both the Los Angeles County Highway Plan and the Circulation Element of the City of Santa Clarita's General Plan designate The Old Road as a major highway (County of Los Angeles 1980; City of Santa Clarita 2011).

Wiley Canyon Road

Wiley Canyon Road is a north-south, divided roadway, located east of I-5, which runs parallel to the freeway. Beginning north of Lyons Avenue in the community of Valencia in the City of Santa Clarita, Wiley Canyon Road is a four-lane, divided roadway with parallel northbound and southbound bicycle lanes. This portion of Wiley Canyon Road meets the definition of a secondary highway in the Circulation Element of the city's General Plan (City of Santa Clarita 2011). South of Lyons Avenue to Calgrove Boulevard, Wiley Canyon Road becomes a two-lane, divided roadway with intermittent on-street parking. This portion of Wiley Canyon Road meets the definition of limited secondary highway in the Circulation Element of the city's General Plan (City of Santa Clarita 2011).

Lyons Avenue

Lyons Avenue is an east-west, divided roadway that extends from Railroad Avenue to I-5. At Railroad Avenue, Lyons Avenue begins as a four-lane, divided roadway with intermittent parking and a posted speed limit of 40 mph. The roadway then expands to six lanes with no on-street parking as it approaches the I-5 corridor. This portion of Lyons Avenue meets the definition of major highway in the Circulation Element of the city's General Plan (City of Santa Clarita 2011). Lyons Avenue intersects with Wiley Canyon Road just east of I-5. Upon crossing I-5, Lyons Avenue becomes Pico Canyon Road, which intersects with The Old Road, just west of the freeway.

Calgrove Boulevard

Calgrove Boulevard is an east-west, undivided roadway that extends from Spring Street to The Old Road, just west of I-5. The roadway consists of two lanes with a posted speed limit of 45 mph. Bicycle lanes are provided on either side of Calgrove Boulevard to where the road intersects with Wiley Canyon Road. Calgrove Boulevard is separated from Spring Street by a gate. Under the definitions included in the Circulation Element of the City of Santa Clarita's General Plan, Calgrove Boulevard would be defined as a limited secondary highway (City of Santa Clarita 2011).

Sesnon Boulevard

Sesnon Boulevard is an east-west, undivided roadway within the City of Los Angeles. The eastern portion of Sesnon Boulevard begins at Balboa Boulevard, within the community planning area of Granada Hills, and travels west as a two-lane, undivided roadway to the intersection with Meadowlark Avenue. From the Meadowlark Avenue intersection, Sesnon Boulevard becomes a four-lane, divided roadway to the intersection of Cascade Canyon Drive. The roadway then continues westward as a two-lane, undivided roadway before terminating at Aliso Canyon. The western portion of Sesnon Boulevard, within the community planning area of Chatsworth–Porter Ranch, begins immediately west of Aliso Canyon. From Aliso Canyon, Sesnon Boulevard continues westward as a four-lane, divided roadway with bicycle lanes to Via Palladino, where it becomes a two-lane, undivided roadway terminating at the intersection with Mason Avenue. The posted speed limit on the western portion of Sesnon Boulevard is 50 mph. The circulation sections of the Chatsworth–Porter Ranch and Granada Hills–Knollwood Community Plans both identify Sesnon Boulevard as a Major Highway Class II (City of Los Angeles 2009, 2007).

Porter Ranch Drive

Porter Ranch Drive is a four-lane, divided roadway that runs north-south from Sesnon Boulevard to just past SR-118. The roadway includes separated bicycle lanes to the intersection with Corbin Avenue. The circulation section of the Chatsworth–Porter Ranch Community Plan identifies Porter Ranch Drive as a Major Highway Class II (City of Los Angeles 2009).

Corbin Avenue

Corbin Avenue runs east-west from Mason Avenue to just past Porter Ranch Drive, where it turns and runs south for approximately 8 miles before terminating in the community of Canoga Park. Within the study area, north of SR-118, Corbin Avenue is a two-lane, divided roadway between Mason Avenue and Porter Ranch Drive. East of Porter Ranch Drive, Corbin Avenue is a four-lane, divided roadway with separate bicycle lanes. The circulation section of the Chatsworth–Porter Ranch Community Plan identifies Porter Ranch Drive as a Major Highway Class II (City of Los Angeles 2009).

Rinaldi Street

Rinaldi Street is a four-lane, divided roadway that runs east from the City of San Fernando through the communities of Granada Hills and Porter Ranch before terminating near the Amtrak/Metrolink–Ventura County Line alignment in the community of Chatsworth. The circulation section of the Chatsworth–Porter Ranch Community Plan identifies Porter Ranch Drive as a Major Highway Class II (City of Los Angeles 2009).

Tampa Avenue

Tampa Avenue runs from just north of Sesnon Boulevard, south to the community of Tarzana. The roadway is divided with four-lanes and separate bicycle lanes. The circulation section of the Chatsworth–Porter Ranch Community Plan identifies Porter Ranch Drive as a Major Highway Class II (City of Los Angeles 2009).

Bicycle Network, Mass Transit, and Rail

The City of Los Angeles maintains a bicycle way network of 334 miles, including 49 miles of bicycle paths, 167 miles of bicycle lanes, and 119 miles of bicycle routes (City of Los Angeles 2010). All of the major roadways in the study area, located within the City of Los Angeles and described above, include separate bicycle lanes. The City of Santa Clarita bicycle way network consists of approximately 33 miles of bicycle paths, 13 miles of bicycle lanes, and more than 2 miles of bicycle routes (City of Santa Clarita 2008).

Transit service in Los Angeles County is provided by the Los Angeles County Metropolitan Transportation Authority (Metro). Metro operates bus, light rail, subway, and commuter rail service throughout Los Angeles County and the City of Los Angeles, including the proposed project area. In the proposed project area, bus service operates on portions of Tampa Avenue, Rinaldi Street, and Corbin Avenue. Telecommunications Route #3 would cross the right-of-way for the Sylmar/San Fernando Metrolink line that provides passenger service in the San Fernando Valley in Los Angeles. Telecommunications Route #2 would cross the right-of-way for the Simi Valley Metrolink line that provides commuter rail service to Ventura County, as well as an Amtrak line that serves the Pacific Surfliner route between San Luis Obispo and San Diego, and the Coast Starlight route that provides service from Los Angeles to Seattle, Washington.

In addition to Metro bus service, the City of Santa Clarita Transit operates bus service within the City of Santa Clarita, with connecting service to the northern areas of the City of Los Angeles. Within the study area, Santa Clarita Transit operates bus routes on Lyons Avenue, Wiley Canyon Road, and Calgrove Boulevard.

4.15.1.3 Existing Traffic Conditions

The operational efficiency of traffic is typically measured by level of service (LOS), a traffic performance metric established by the Transportation Research Board's Highway Capacity Manual. LOS is used to measure the average operating conditions on roadways and at intersections during a one hour period. The metric is based on volume-to-capacity (V/C) ratio, which compares roadway capacity to level of traffic during peak hours. Once determined, a V/C ratio is assigned a corresponding LOS value to describe roadway or intersection operations. Roadways and intersections that are at or near capacity experience greater congestion and corresponding vehicle delay. The highest ranked roadways are designated "LOS A," representing free-flowing traffic, and the lowest ranked roadways are designated "LOS F," representing extreme congestion. "LOS D" is generally identified as the minimum level of delay that motorists will find acceptable in suburban areas, and "LOS C" is the minimum level of delay determined to be acceptable in rural areas (AASHTO 2004). Table 4.15-1 describes the City of Los Angeles' LOS definitions for signalized intersections. These LOS definitions are consistent with those included in the City of Santa Clarita's 1997 General Plan Circulation Element—which was in effect at the time the initial~~,~~ 2009 traffic analysis for the proposed project was completed—and with the current LOS standards included in the Circulation Element of the Santa Clarita 2011 General Plan.

Table 4.15-1 Level of Service Definitions for Signalized Intersections

Level of Service	Volume-to-Capacity (V/C) Ratio	Definition
A	0.000 – 0.600	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.
B	0.601 – 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	GOOD. Occasionally drivers have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 – 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Source: City of Los Angeles California Environmental Quality Act Thresholds Guide; Transportation Research Board, Circular No. 212, Interim Materials on Highway Capacity, 1980.

Table 4.15-2 describes the LOS definitions for unsignalized intersections. These LOS definitions are consistent with those included in the City of Santa Clarita's 1997 General Plan Circulation Element—which was in effect at the time the initial, 2009 traffic analysis was completed for the proposed project—and with the current LOS standards included in the Circulation Element of the Santa Clarita 2011 General Plan.

Table 4.15-2 Level of Service Definitions for Two-way and All-way Stop-controlled Intersections

Level of Service Average Vehicle Delay	Average Vehicle Delay (seconds)
A	0.0 – 5.0
B	5.1 – 10.0
C	10.1 – 20.0
D	20.1 – 30.0
E	30.1 – 45.0
F	> 45.0

Source: City of Los Angeles California Environmental Quality Act Thresholds Guide; Transportation Research Board, Circular No. 212, Interim Materials on Highway Capacity, 1980.

Proposed Project Area Intersections

The applicant initially identified five intersections—four in the City of Santa Clarita, and one in the City of Los Angeles—to be analyzed for impacts associated with construction of the proposed project (see the initial traffic study completed for the proposed project by Urban Crossroads in 2009, Appendix J). These intersections included the following:

1. I-5 Southbound Ramps at Calgrove Boulevard;
2. I-5 Northbound Ramps at Calgrove Boulevard;
3. Wiley Canyon Road at Lyons Avenue;
4. Wiley Canyon Road at Calgrove Boulevard; and
5. Tampa Avenue at Sesnon Boulevard.

The 2009 traffic analysis was supplemented by two later traffic studies, undertaken to address construction-related traffic impacts associated with components (Telecommunications Route #2 and #3) added to the proposed project. The first supplemental analysis was prepared by the applicant in October 2011 and identified nine additional intersections to be analyzed for impacts associated with construction of the proposed project. (see the supplemental traffic analysis prepared by AECOM in 2011, Appendix J). In addition, a new analysis was conducted for the intersection of Tampa Avenue and Sesnon Boulevard. A third traffic analysis was prepared by LLG Engineers (LLG) in October 2011, based on the results of the 2009 analysis and the second supplemental analysis (see the supplemental traffic impact study prepared by LLG in 2011, in Appendix J). In addition to the updated analysis for the Tampa Avenue and Sesnon Boulevard intersection, the additional intersections to be analyzed for impacts associated with construction of the proposed project include:

1. Porter Ranch Drive/Sesnon Boulevard;
2. Porter Ranch Drive/Corbin Avenue;
3. Porter Ranch Drive/Rinaldi Street;

4. Porter Ranch Drive/SR-118 Freeway Westbound On/Off Ramps;
5. Porter Ranch Drive/SR-118 Freeway Eastbound On/Off Ramps;
6. Corbin Avenue/Rinaldi Street;
7. Tampa Avenue/Rinaldi Street;
8. Tampa Avenue/SR-118 Freeway Westbound On/Off Ramps; and
9. Tampa Avenue/SR-118 Freeway Eastbound On/Off Ramps.

Construction activity that would result in traffic impacts would be limited to ~~areas of unincorporated Los Angeles County and~~ the Cities of Los Angeles and Santa Clarita, and therefore, intersections in areas of unincorporated Los Angeles County, Ventura County, and the City of Simi Valley are not included in this section.

Figure 4.15-1 shows the location of all study intersections. Analysis of traffic impacts associated with the proposed project is primarily focused on construction workers commuting to and from the proposed project component sites and employee shuttle traffic. The intersections listed above were thus identified as those most likely to accommodate worker commutes to parking areas for the proposed project component areas and employee shuttle buses to the work sites. Accordingly, these are the intersections most likely to be affected by construction of the proposed project.

Manual vehicular turning movement counts were conducted at each intersection during the weekday morning (7 to 9 a.m.) and afternoon (4 to 6 p.m.) commuter hours to determine peak hour traffic volumes. Traffic counts at the four intersections analyzed for the first traffic analysis were conducted in April and May 2009. Traffic counts conducted for the nine intersections included in the supplemental analysis were conducted in September and October 2011. The weekday a.m. and p.m. peak hour manual counts of vehicle turning movements can be found in Appendix J.

The vehicular turning movement counts were used to determine the LOS for existing conditions at each of the study intersections. The 2009 traffic analysis used the Intersection Capacity Utilization (ICU) methodology to analyze the operation of signalized intersections. To calculate ICU, the volume of traffic using the intersection is compared to the intersection capacity. ICU is generally expressed as a percent, representing the portion of the hour required to provide sufficient capacity to accommodate all traffic at the intersection if all approaches to the intersection operate at capacity. The resultant ICU corresponds to an LOS rating that describes traffic conditions at the intersection.

Similarly, the 2011 supplemental traffic analysis evaluated signalized intersections using the Critical Movement Analysis methodology, while the unsignalized intersections were evaluated using the methodology included in Chapter 17 of the Highway Capacity Manual 2000. The Critical Movement Analysis methodology is used to determine the V/C ratio. As shown in Table 4.15-1, a range of V/C ratios correspond to an LOS rating, which identifies whether an intersection is operating over, at, near, or below capacity.

Reference: *Figure 1-1, Vicinity Map,* Linscott, Law & Greenspan, Engineers, 10/27/2011; ***Exhibit 1-A, Location Map, Urban Crossroads,*** 6/23/2009; and Rand McNally & Company (Map 2 base map)

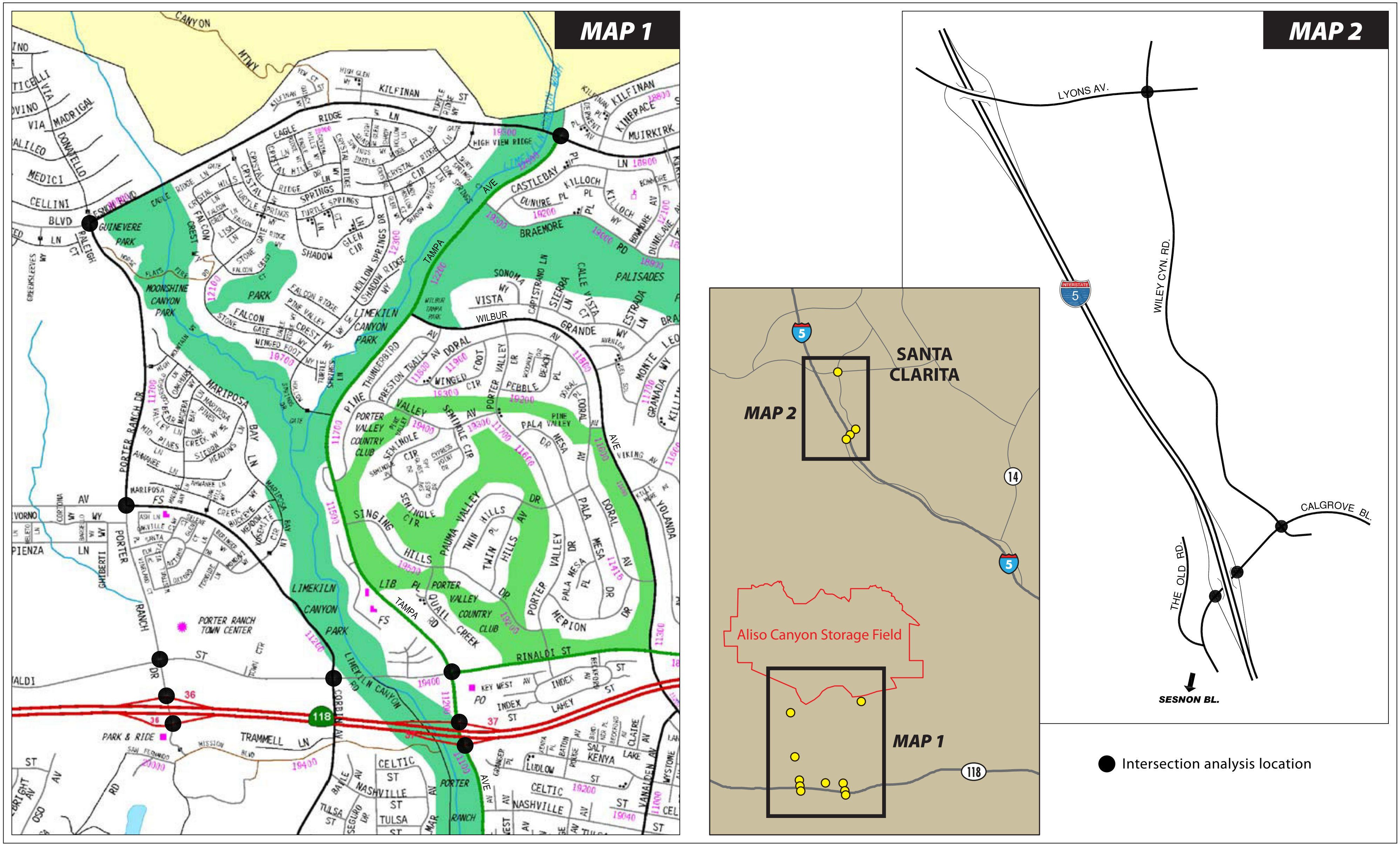

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Figure 4.15-1

Study Intersections

The Highway Capacity Manual methodology for unsignalized intersections quantifies intersection operations in terms of average vehicular delay in seconds. This methodology estimates the average control delay for each of the subject movements and determines the LOS for each constrained vehicle movement. As shown in Table 4.15-2, the overall average delay is measured in seconds per vehicle, ranges of which correspond with an LOS assigned to the whole intersection. Table 4.15-3 shows LOS ratings under existing conditions for all of the study intersections. Figures 4.15-2 and 4.15-3 show traffic volumes and turning movements under existing conditions at the City of Santa Clarita study intersections for the a.m. and p.m. peak hours, respectively. Similarly, Figures 4.15-4 and 4.15-5 show traffic volumes and turning movements under existing conditions at the City of Los Angeles study intersections for the a.m. and p.m. peak hours, respectively.

Table 4.15-3 Existing Level of Service in the Proposed Project Area

No.	Intersection	Peak Hour	V/C or Delay (seconds)	LOS
1.	I-5 Southbound Ramps at Calgrove Boulevard (1)	a.m.	56.0	F
		p.m.	– (2)	F
2.	I-5 Northbound Ramps at Calgrove Boulevard (1)	a.m.	21.8	C
		p.m.	– (2)	F
3.	Wiley Canyon Road at Lyons Avenue	a.m.	0.727 (3)	C
		p.m.	0.720 (3)	C
4.	Wiley Canyon Road at Calgrove Boulevard (1)	a.m.	14.4	B
		p.m.	– (2)	F
5.	Tampa Avenue/Sesnon Boulevard (1)	a.m.	10.33	B
		p.m.	9.00	A
		a.m.	0.335	–
		p.m.	0.233	–
6.	Porter Ranch Drive/Sesnon Boulevard (1)	a.m.	9.18	A
		p.m.	8.64	A
		a.m.	0.331	–
		p.m.	0.254	–
7.	Porter Ranch Drive/Corbin Avenue	a.m.	0.082	A
		p.m.	0.095	A
8.	Porter Ranch Drive/Rinaldi Street	a.m.	0.605	B
		p.m.	0.558	A
9.	Porter Ranch Drive/SR-118 Freeway Westbound On/Off-ramps	a.m.	0.626	B
		p.m.	0.506	A
10.	Porter Ranch Drive/SR-118 Freeway Eastbound On/Off-ramps	a.m.	0.424	A
		p.m.	0.494	A
11.	Corbin Avenue/Rinaldi Street	a.m.	0.471	A
		p.m.	0.504	A
12.	Tampa Avenue/Rinaldi Street	a.m.	0.510	A
		p.m.	0.596	A
13.	Tampa Avenue/SR-118 Freeway Westbound On/Off Ramps	a.m.	0.723	C
		p.m.	0.530	A

Table 4.15-3 Existing Level of Service in the Proposed Project Area

No.	Intersection	Peak Hour	V/C or Delay (seconds)	LOS
14.	Tampa Avenue/SR-118 Freeway Eastbound On/Off Ramps	a.m.	0.625	B
		p.m.	0.614	B

Source: Urban Crossroads, Inc. 2009; LLG Engineers, Inc. 2011
Key:
ICU = Intersection Capacity Utilization
LOS = level of service
SR = State Route
V/C = volume-to-capacity
Notes:
[1] Unsignalized Intersection.
[2] Delay High, Intersection Unstable, LOS "F."
[3] Signalized intersection LOS calculated using ICU method. The City of Santa Clarita requires the use of ICU methodology.

4.15.2 Regulatory Setting

4.15.2.1 Federal

Federal regulations, plans, and standards addressing transportation and traffic were reviewed; none were determined to be relevant to the analysis of impacts for this resource area.

4.15.2.2 State

California Department of Transportation

The California Department of Transportation (Caltrans) is responsible for the oversight of state highways. Caltrans requires that all work done within a state highway right-of-way obtain an encroachment permit. Encroachment permits must also be obtained for transmission lines that span or cross any state roadways. In addition, Caltrans has the discretionary authority to issue special permits for the movement of vehicles/loads exceeding statutory limitations on the size, weight, and loading of vehicles contained in Division 15 of the California Vehicle Code. Completion of a Transportation Permit application is required for requests for such special permits.

4.15.2.3 Regional and Local

The proposed project components span six jurisdictions: unincorporated areas of Los Angeles and Ventura Counties; and the Cities of Santa Clarita, San Fernando, Simi Valley, and Los Angeles. Because proposed project construction activity that would result in traffic impacts would be limited to areas of unincorporated Los Angeles County and the Cities of Los Angeles and Santa Clarita, regulations issued by Ventura County and the Cities of San Fernando and Simi Valley are not further discussed.

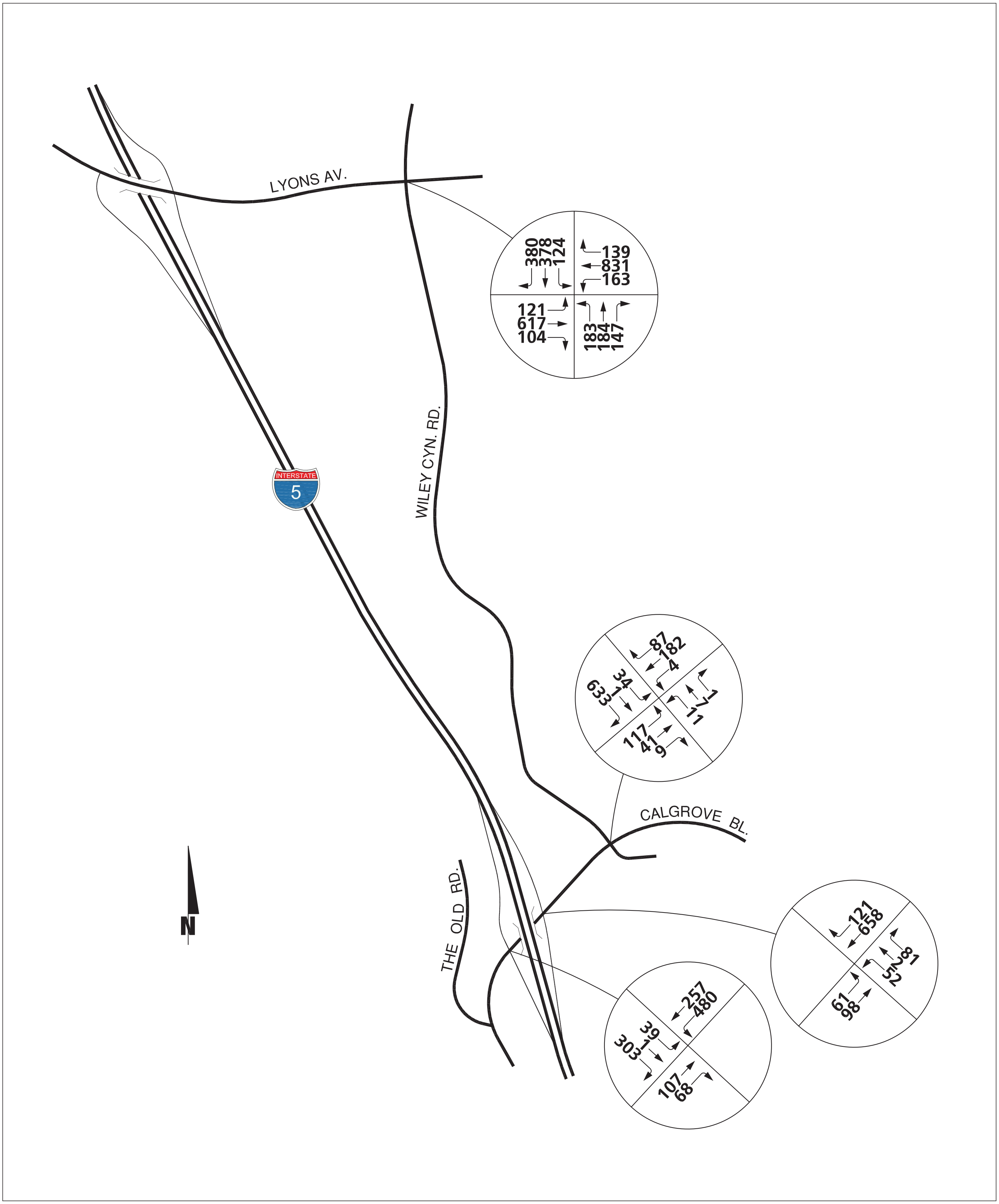

Figure 4.15-2

Existing Traffic Volumes – Weekday – AM Peak Hour – Santa Clarita

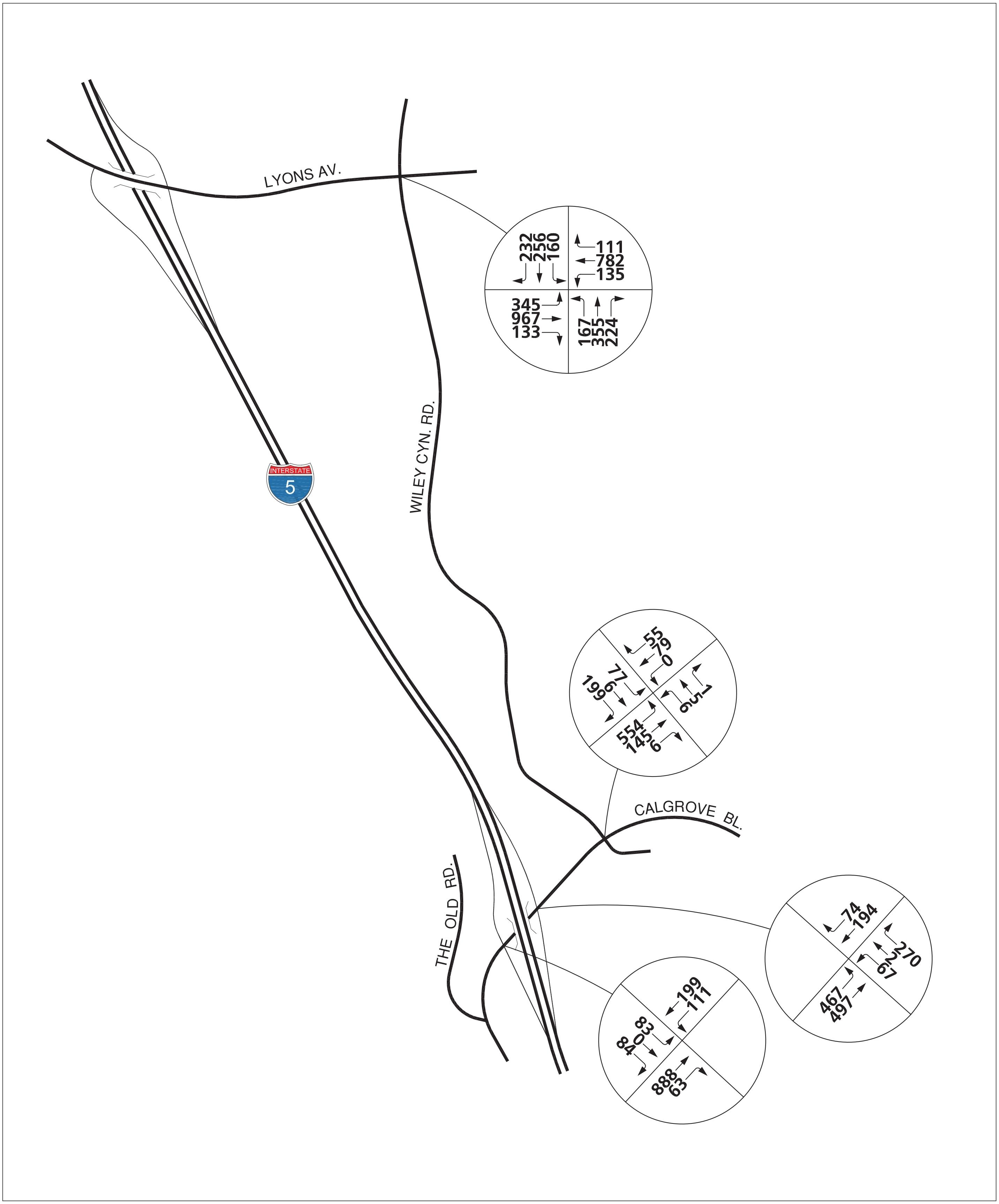

Figure 4.15-3

Existing Traffic Volumes – Weekday – PM Peak Hour – Santa Clarita

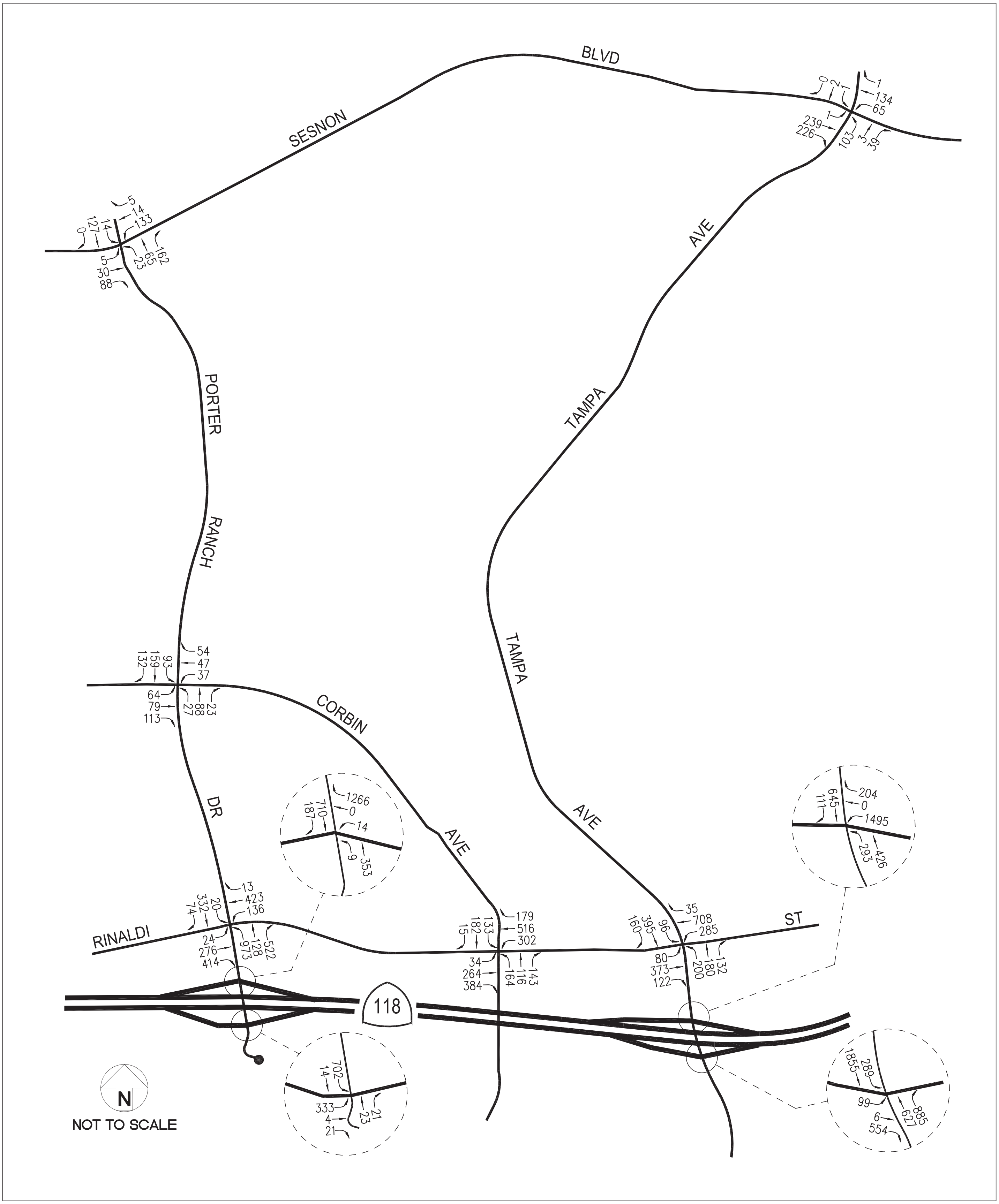

Figure 4.15-4

Existing Traffic Volumes – Weekday AM Peak Hour – Los Angeles

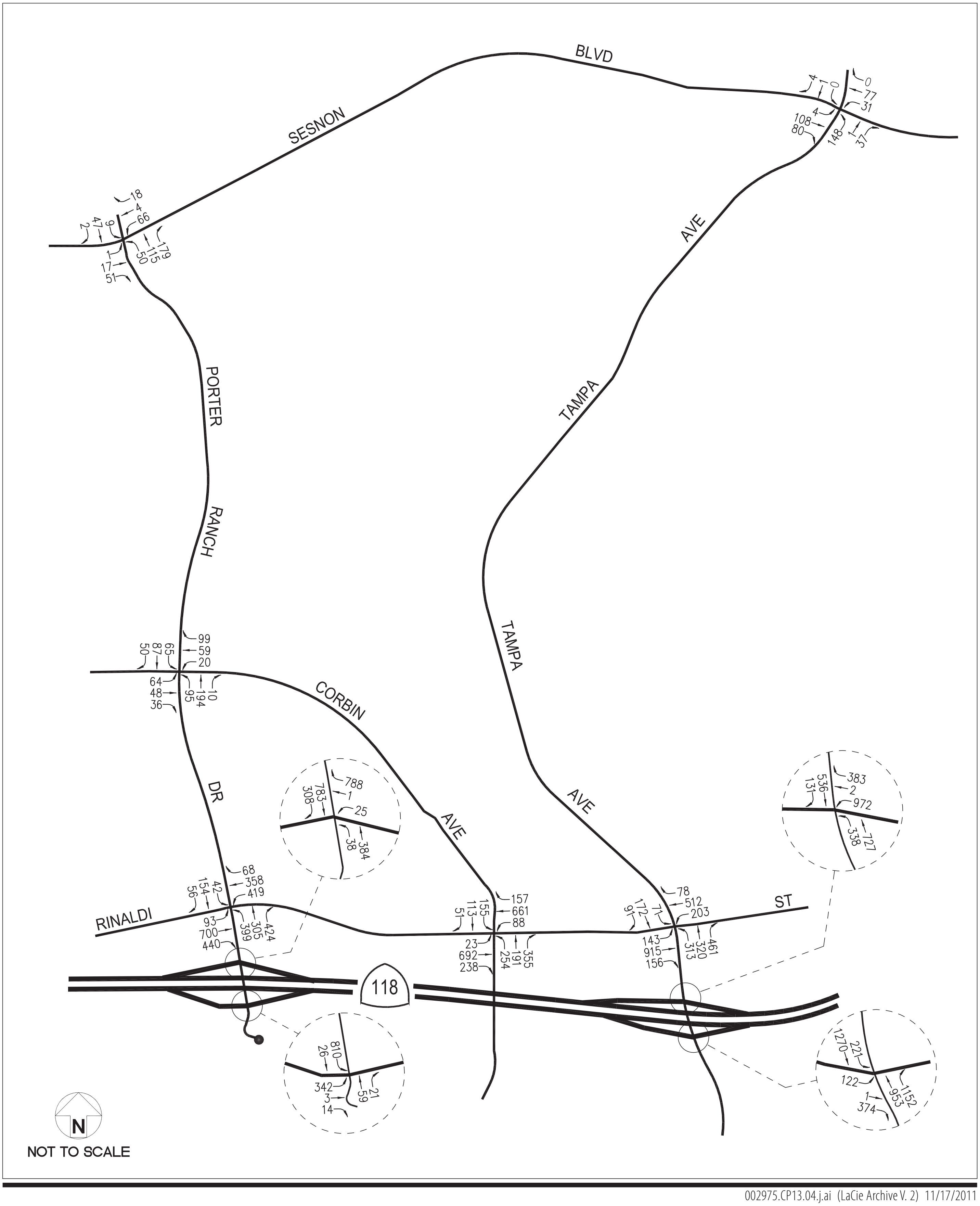

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Figure 4.15-5

Existing Traffic Volumes – Weekday PM Peak Hour – Los Angeles

Los Angeles County Metropolitan Transportation Authority

Metro is the designated Congestion Management Agency (CMA) for Los Angeles County and all cities and other jurisdictions within the County. California law requires that a Congestion Management Program (CMP) be developed, adopted, and updated biennially for every county in the state with an urbanized area. The CMP includes every incorporated city and the county government within the county. Metro enacted the first CMP in 1992 and adopted the most recent program in 2010. The goal of the program is to comply with CMP statutory requirements, including monitoring LOS on the CMP Highway and Roadway network, measuring frequency and routing of public transit, implementing the Transportation Demand Management and Land Use Analysis Program Ordinances, and helping local jurisdictions meet their responsibilities under the CMP (Metro 2010).

All new projects within Los Angeles County are required to comply with the CMP. Appendix D of the CMP includes Transportation Impact Assessment guidelines to assess impacts on traffic and transportation that would arise from projects that would add 50 or more peak hour vehicle trips to area roadways or 150 more per peak hour vehicle trips to mainline freeway monitoring locations (Metro 2010).

City of Los Angeles Department of Transportation

Projects in the City of Los Angeles may be subject to the requirements of the City of Los Angeles Department of Transportation (LADOT) traffic study policies and procedures. Under LADOT policies, technical memoranda may be required for submittal to LADOT if a project would result in the addition of 25 to 42 a.m. or p.m. peak hour trips, and the adjacent intersection(s) are presently estimated to be operating at LOS E or F. A Traffic Study meeting specific LADOT requirements would be required if a project is likely to add 500 or more daily trips, or likely to add 43 or more a.m. or p.m. peak hour trips (LADOT 2011). Both technical memoranda and traffic studies require review and approval from LADOT.

City of Santa Clarita General Plan, Circulation Element

The City of Santa Clarita General Plan~~County of Los Angeles General Plan~~, Circulation Element (2011), outlines the following policies that are relevant to the proposed project:

> ***Policy C 2.2.4:*** *Strive to maintain an LOS D or better on most roadway segments and intersections to the extent practical; in some locations, an LOS E may be acceptable, or LOS F may be necessary, for limited durations during peak traffic periods.*
>
> ***Policy C 3.1.1:*** *In evaluating new development projects, require trip reduction measures as feasible to relieve congestion and reduce air pollution from vehicle emissions.*
>
> ***Policy C 3.1.5:*** *Promote the use of van pools, car pools, and shuttles to encourage trip reduction.*

4.15.3 Methodology and Significance Criteria

Significance criteria for assessing the impacts on transportation and traffic were defined based on the checklist items presented in Appendix G of the CEQA Guidelines. The proposed project would cause a significant impact on transportation and traffic if it would:

a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;

b) Conflict with an applicable congestion management program including, but not limited to, LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

c) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

d) Result in inadequate emergency access; or

e) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Appendix G of the California Environmental Quality Act Guidelines also includes the following checklist item:

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

The proposed project would not affect air traffic patterns, nor would it lead to an increase in air traffic levels or a change in air traffic location that would result in substantial safety risks. Therefore, this item is not discussed further in the analysis of environmental impacts. The following sections discuss the methodology used to forecast future traffic conditions, thresholds of significance, forecasted scenarios, and the potential for associated impacts.

Traffic Forecast Methodology

The addition of construction-related traffic associated with the proposed project would increase the volume of traffic on area roadways. To assess impacts associated with this additional traffic, forecasts of future traffic volumes on area roadways were prepared. Both the 2009 traffic analysis and LLG's 2011 supplemental traffic analysis included forecasts that added estimated traffic generated by approved and/or currently pending development projects ("cumulative projects") to future year traffic volumes based on ambient growth rates applied to the existing traffic volume discussed in Section 4.15.3.1. In addition, LLG's 2011 supplemental traffic analysis also evaluated traffic forecasts included in planning documents (e.g., general plans) for the proposed project area (Appendix J). Table 4.15-4 identifies the cumulative projects that were included in the analysis.

To calculate the ambient traffic volume, ambient growth rate factors were applied to existing traffic volumes discussed in Section 4.15.3.1. The 2009 traffic analysis applied an ambient growth rate of 3 percent per year based on input from the City of Santa Clarita. The supplemental analysis prepared by LLG applied a 1 percent ambient growth rate based on traffic volume growth rates for the West San Fernando Valley area included in the Los Angeles County 2010 Congestion Management Program.

Table 4.15-4 Cumulative Projects

Project	Land Use Data		Location	Daily Trip Ends[1]	AM Peak Hour Volumes[1]			PM Peak Hour Volumes[1]		
	Land Use	Area/Density			In	Out	Total	In	Out	Total
ENV-2008-570-MND	Single-family Residential	197 d.u.	City of Los Angeles	1,885	37	111	148	125	74	199
ENV-2007-5388-MND	Residential Planned Development	5 acres	City of Los Angeles	227	7	7	14	10	10	20
Hidden Creek Estates ENV-2005-6657-EIR	Single-family Residential Park Equestrian Boarding Facility	188 d.u. 16 acres 16 acres	City of Los Angeles	1,799 25	35	106	141	120	70	190
Tentative Tract No. 60913	Condominium Residential	165 d.u.	City of Los Angeles	959	12	61	73	58	28	86
Tentative Tract No. 53426	Single-family Residential	45 d.u.	City of Los Angeles	431	9	25	34	28	17	45
Panorama Place ENV-2006-2133-EIR	Condominium Residential/Retail	504 d.u. 86,000 GLSF	City of Los Angeles	2,928 3,693	38 52	184 34	222 86	176 157	86 164	262 321
New Paradise Church of God and Christ ENV-2003-6669-EIR	Church	11,000 GSF	City of Los Angeles	100	4	2	6	3	3	6
City of Los Angeles Total				12,027	194	530	724	677	452	1129
Tract 53653	Single-family Residential	186 d.u.	City of Santa Clarita	1,780	–	–	–	–	–	–
Tract 50242	Single-family Residential	8 d.u.	City of Santa Clarita	8	–	–	–	–	–	–
Tract 52905	Single-family Residential	37 d.u.	City of Santa Clarita	37	–	–	–	–	–	–
Tract 52796	Single-family Residential	102 d.u.	City of Santa Clarita	102	–	–	–	–	–	–
City of Santa Clarita Total				1,927	–	–	–	–	–	–

Source: LLG Engineers, Inc. 2011 (City of Los Angeles); Urban Crossroads, Inc. 2009 (City of Santa Clarita); Institute of Transportation Engineers, "Trip Generation," 8th Edition, 2008

Key:

d.u. = dwelling unit

GLSF = gross leasable square feet

GSF = gross square feet

– = not available

Note:

1 Trips are one-way traffic movements, entering or leaving.

Once the cumulative projects have been identified and ambient traffic volume estimated, the traffic forecast is completed following a multi-step process. The first step is trip generation, which estimates total arriving and departing traffic for a typical weekday, as well as traffic volumes for the weekday a.m. and p.m. peak hours. Traffic volumes for the cumulative projects were calculated using rates provided in the Institute of Transportation Engineers' 2008 *Trip Generation* manual. Once traffic volume has been calculated, it is distributed within the study area through a process called trip distribution. Trip distribution identifies the origins and destinations of inbound and outbound project traffic volumes based on demographics and existing and/or anticipated travel patterns in the study area. Finally, traffic is allocated or assigned to study area intersections based on factors such as minimization of travel time.

The initial traffic forecast developed using this methodology reflects future year conditions without the proposed project. The 2009 traffic analysis describes this scenario as "Existing Plus Ambient Growth Plus Cumulative Traffic Conditions," and LLG's 2011 supplemental traffic analysis describes this scenario as "Future Cumulative Baseline Conditions." Traffic associated with construction of the proposed project was calculated in both the 2009 traffic analysis and LLG's 2011 supplemental analysis and added to these baseline scenarios to estimate traffic volume during peak project construction activities. To generate this scenario, both the 2009 traffic analysis and LLG's 2011 supplemental analysis applied a passenger car equivalency (PCE) factor to the construction-related vehicles anticipated to be in operation during a typical workday. A PCE factor represents the equivalency value applied to a large, slow-moving vehicle to equate it to a passenger car. In addition, LLG's 2011 supplemental analysis also calculated the number of construction worker vehicles that would be expected to commute to and from the offsite employee parking areas for the proposed project. A more detailed explanation of the methodologies used to prepare the traffic forecasts are included in Appendix J.

Levels of Service

For the purpose of identifying potential impacts, LOS was determined for the study intersections under each of the forecast scenarios using the ICU, Critical Movement Analysis, and Highway Capacity Manual methodologies discussed in Section 4.15.3.1. The City of Los Angeles Automated Traffic Surveillance and Control (ATSAC) and Adaptive Traffic Control System (ATCS) provide computer control of traffic signals that allows for both automatic and manual adjustments to traffic signal timing based on prevalent traffic conditions. LADOT estimates that the ATSAC system reduces the critical V/C ratios by 7 percent (0.07), and the ATCS system further reduces the critical V/C ratios by 3 percent (0.03) for a total reduction of 10 percent (0.10). As discussed in Appendix J, ATSAC and ATCS system upgrades for the eight signalized study intersections in the City of Los Angeles have been implemented, and the LOS calculations at those locations reflect a 0.10 adjustment for all analysis scenarios.

Thresholds of Significance

The potential for impacts on traffic within the City of Los Angeles were determined using the thresholds of significance included in LADOT's *Traffic Study Policies and Procedures* (LADOT 2011). Under LADOT's significance thresholds, an impact would be considered significant if construction-related traffic associated with the proposed project would lead to an increase in the V/C ratio that equals or exceeds the thresholds presented in Table 4.15-5.

Table 4.15-5 City of Los Angeles Intersection Impact Threshold Criteria

Final V/C	Level of Service	Project Related Increase in V/C
> 0.700 – 0.800	C	Equal to or greater than 0.040
> 0.800 – 0.900	D	Equal to or greater than 0.020
> 0.900	E or F	Equal to or greater than 0.010

Key: V/C = volume-to-capacity

Potential impacts to traffic within the City of Santa Clarita were identified based on a comparison of with and without construction-related traffic associated with the proposed project. An impact would be considered significant if the traffic volume resulting from the addition of construction-related traffic associated with the proposed project would result in an increase in delay or ICU that would lead to an unacceptable LOS as defined in the Circulation Element of the City of Santa Clarita General Plan at the study intersections (Urban Crossroads, Inc. 2009).

Traffic Impact Analysis Scenarios

The following sections discuss the traffic impact analysis scenarios that were prepared to assess impacts at the study area intersections due to construction-related traffic associated with the proposed project. The first set of scenarios assesses impacts on study area intersections in the City of Santa Clarita, and the second set assesses impacts on the study area intersections in the City of Los Angeles per LADOT traffic study guidelines. In addition, as required by the *Sunnyvale West Neighborhood Assn* decision (the "Sunnyvale decision")[1], traffic under existing conditions and existing conditions with the proposed project was also evaluated. Table 4.15-8 presents a comparison of these two scenarios.

Future Cumulative Baseline and Future Cumulative Baseline with Proposed Project – City of Santa Clarita

The future cumulative baseline conditions were forecasted based on the addition of traffic generated by the completion and occupancy of cumulative projects, as well as the ambient growth in existing traffic using the methodology described above. Table 4.15-6 shows the LOS at the study area intersections for both scenarios (referred to as "Existing Plus Ambient Growth Plus Cumulative Traffic Conditions," and "Existing Plus Ambient Growth Plus Cumulative Plus Project Conditions," in the 2009 traffic analysis. Figures 4.15-6 and 4.15-7 show traffic volumes and turning movements for the City of Santa Clarita study area intersections under future cumulative baseline and future cumulative baseline with project conditions for both a.m. and p.m. peak hours, respectively. While construction-related traffic associated with the proposed project would result in an incremental increase in ICU at study area intersection #3 (Wiley Canyon Road at Lyons Avenue), this increase would not be substantial enough to result in a significant impact on traffic. The worksheets used to complete this analysis are included in Appendix J.

[1] *Sunnyvale West Neighborhood Assn. v. City of Sunnyvale City Council*, (2010) 190 Cal.App.4th 1351.

Table 4.15-6 Pre-construction and Construction Conditions

No.	Intersection	Peak Hour	Existing Plus Ambient Growth Plus Cumulative Traffic Conditions		Existing Plus Ambient Growth Plus Cumulative Plus Project Conditions		Significant Impact?
			ICU or Delay (seconds)	LOS	ICU or Delay (seconds)	LOS	
1.	I-5 Southbound Ramps at Calgrove Boulevard (1)	a.m.	72.4	F	72.4	F	No
		p.m.	–(2)	F	–(2)	F	No
2.	I-5 Northbound Ramps at Calgrove Boulevard (1)	a.m.	24.7	C	24.7	C	No
		p.m.	–(2)	F	–(2)	F	No
3.	Wiley Canyon Road at Lyons Avenue	a.m.	0.761	C	0.800	D	No
		p.m.	0.748	C	0.773	C	No
4.	Wiley Canyon Road at Calgrove Boulevard (1)	a.m.	14.7	B	14.7	B	No
		p.m.	–(2)	F	–(2)	F	No

Source: Urban Crossroads, Inc. 2009
Key:
ICU = Intersection Capacity Utilization
LOS = level of service
Notes:
1 Unsignalized Intersection.
2 Delay High, Intersection Unstable, LOS "F."

Future Cumulative Baseline and Future Cumulative Baseline with Proposed Project – City of Los Angeles

Using the methodology described above, the future cumulative baseline conditions were forecasted based on the addition of traffic generated by the completion and occupancy of cumulative projects, as well as the ambient growth in existing traffic. Table 4.15-7 shows the LOS at study area intersections for both scenarios. Figures 4.15-8 and 4.15-9 show traffic volumes and turning movements for the future cumulative baseline conditions for the weekday a.m. and p.m. peak hours, respectively. Similarly, Figures 4.15-10 and 4.15-11 show traffic volumes and turning movements for future baseline cumulative with project conditions for the weekday a.m. and p.m. peak hours, respectively. As shown, while the V/C ratios at all of the study intersections are incrementally increased with the addition of construction-related traffic generated by the proposed project, all study intersections are expected to continue operating at LOS C or better during the weekday a.m. and p.m. peak hours with the addition of growth in ambient traffic, cumulative project traffic, and project construction traffic. The incremental increase in V/C ratios at the study area intersections due to construction-related traffic associated with the proposed project would not be substantial enough to result in a significant impact on traffic.

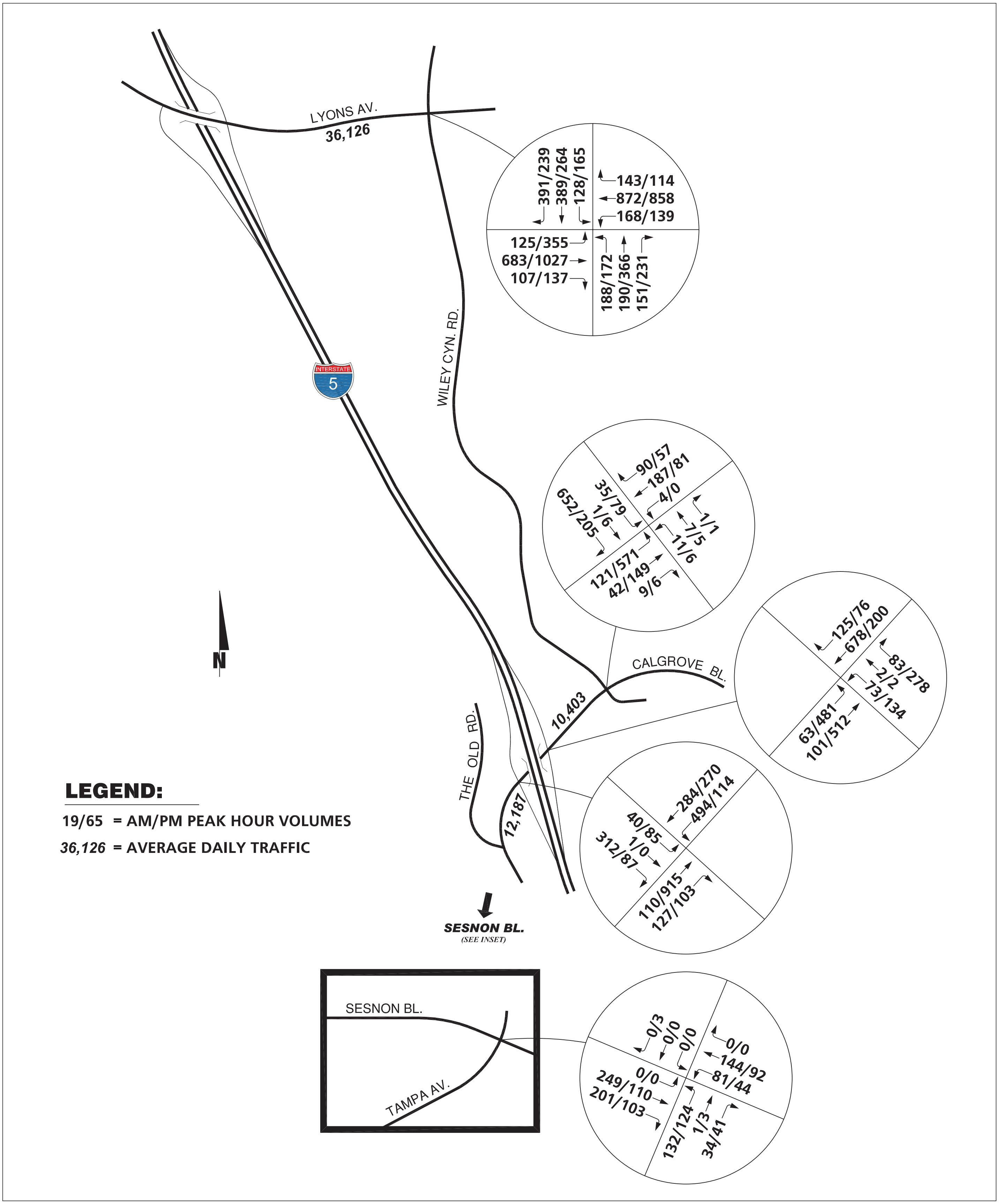

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Figure 4.15-6

Future Cumulative Baseline Traffic Volumes –
Weekday AM and PM Peak Hour – Santa Clarita

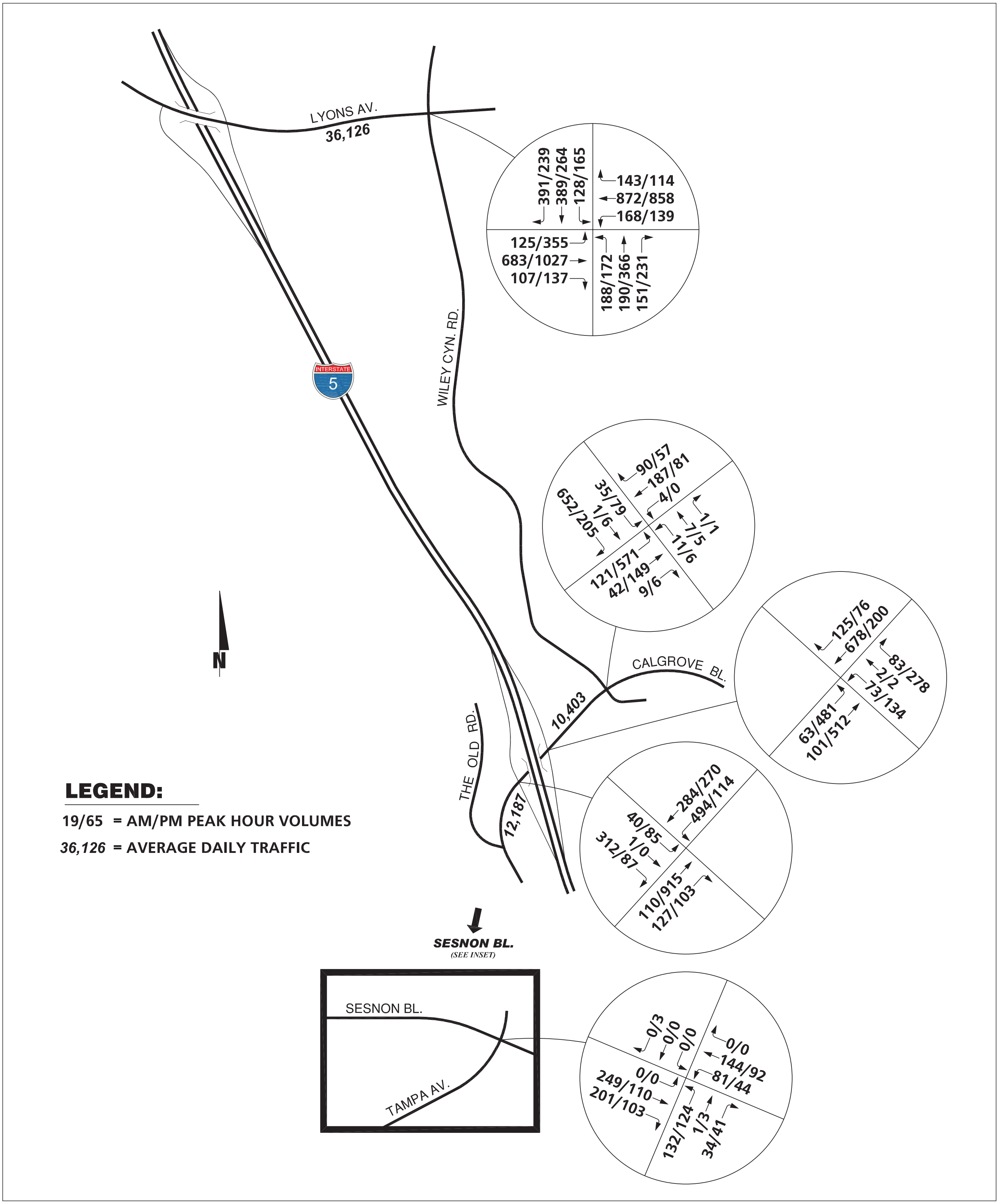

Figure 4.15-7

**Future Cumulative Baseline Traffic Volumes with Project –
Weekday AM and PM Peak Hours – Santa Clarita**

Table 4.15-7 Future Cumulative Baseline without and with the Proposed Project

No.	Intersection	Peak Hour	Cumulative Baseline Conditions		Cumulative Baseline with Proposed Project		Change in V/C	Significant Impact?
			V/C or Delay (seconds)	LOS	V/C or Delay (seconds)	LOS		
5.	Tampa Avenue/Sesnon Boulevard (1)	a.m.	10.51	B	11.24	B	0.042	No
		p.m.	9.08	A	9.51	A	0.036	No
		a.m.	0.346	–	0.388	–	–	
		p.m.	0.240	–	0.267	–	–	
6.	Porter Ranch Drive/Sesnon Boulevard (1)	a.m.	9.27	A	9.70	A	0.048	No
		p.m.	8.71	A	9.02	A	0.048	No
		a.m.	0.341	–	0.389	–	–	–
		p.m.	0.262	–	0.310	–	–	–
7.	Porter Ranch Drive/Corbin Avenue	a.m.	0.088	A	0.098	A	0.010	No
		p.m.	0.101	A	0.111	A	0.010	No
8.	Porter Ranch Drive/Rinaldi Street	a.m.	0.627	B	0.665	B	0.038	No
		p.m.	0.578	A	0.670	B	0.092	No
9.	Porter Ranch Drive/SR-118 Freeway Westbound On/Off-ramps	a.m.	0.648	B	0.655	B	0.007	No
		p.m.	0.524	A	0.557	A	0.033	No
10.	Porter Ranch Drive/SR-118 Freeway Eastbound On/Off-ramps	a.m.	0.440	A	0.446	A	0.006	No
		p.m.	0.512	A	0.553	A	0.041	No
11.	Corbin Avenue/Rinaldi Street	a.m.	0.488	A	0.524	A	0.036	No
		p.m.	0.522	A	0.687	B	0.165	No
12.	Tampa Avenue/Rinaldi Street	a.m.	0.529	A	0.580	A	0.051	No
		p.m.	0.618	B	0.691	B	0.073	No
13.	Tampa Avenue/SR-118 Freeway Westbound On/Off Ramps	a.m.	0.748	C	0.753	C	0.005	No
		p.m.	0.549	A	0.567	A	0.018	No
14.	Tampa Avenue/SR-118 Freeway Eastbound On/Off Ramps	a.m.	0.647	B	0.658	B	0.011	No
		p.m.	0.635	B	0.692	B	0.057	No

Source: LLG Engineers, Inc. 2011.
Key:
LOS = level of service
SR = State Route
V/C = volume-to-capacity
Note:
1 Unsignalized Intersection.

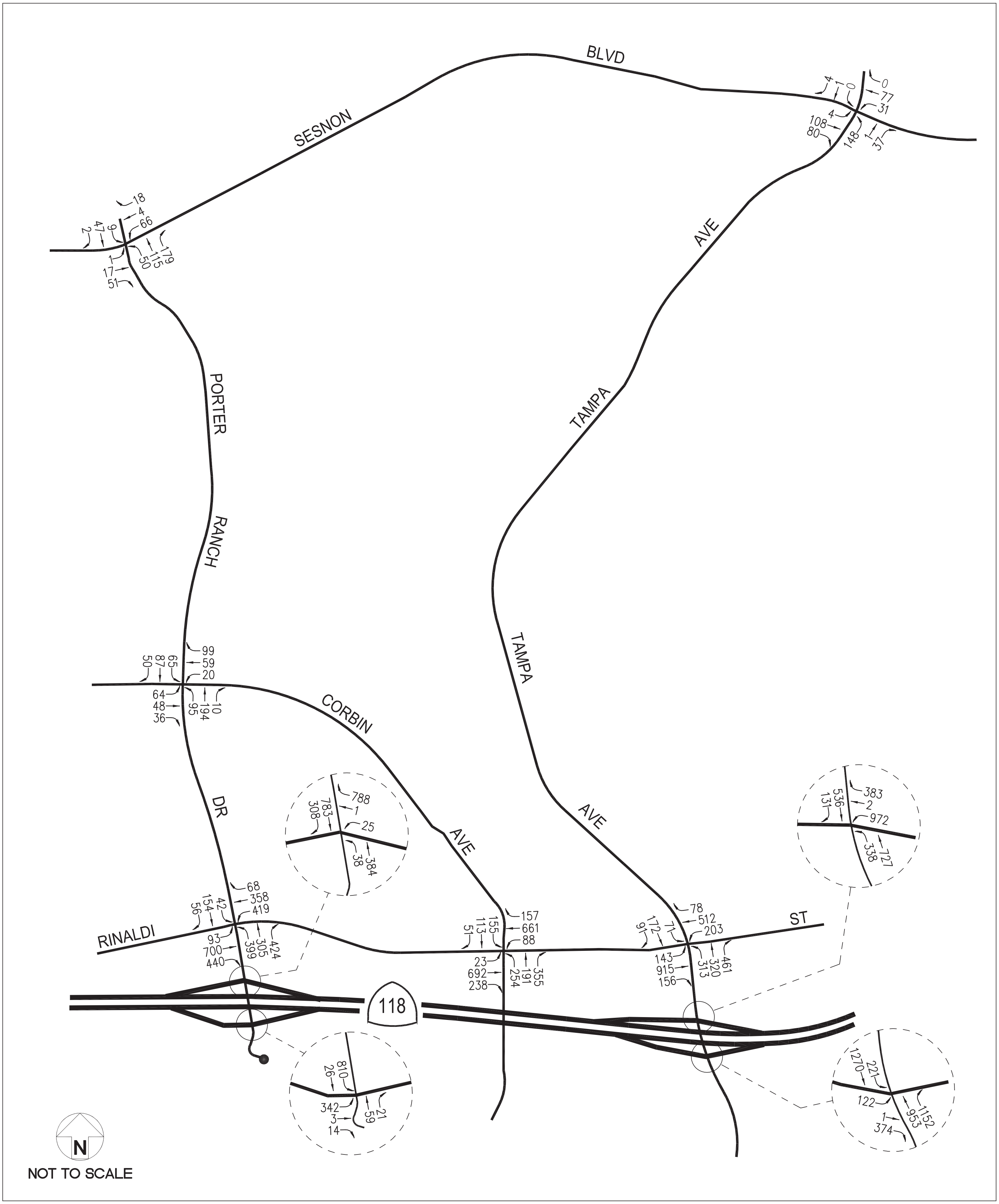

Figure 4.15-8

Future Cumulative Baseline Traffic Volumes – Weekday AM Peak Hour – Los Angeles

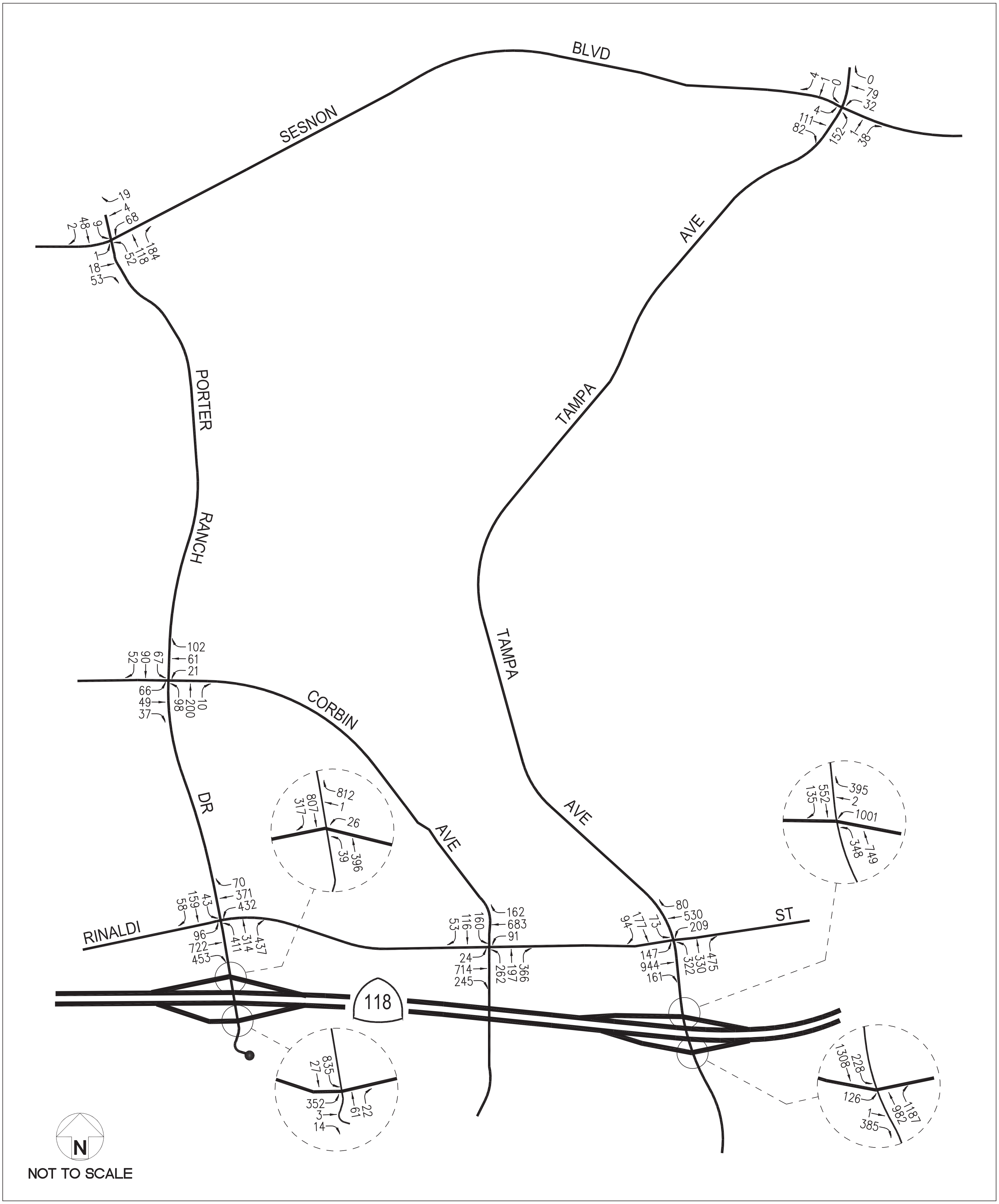

Figure 4.15-9

Future Cumulative Baseline Traffic Volumes – Weekday PM Peak Hour – Los Angeles

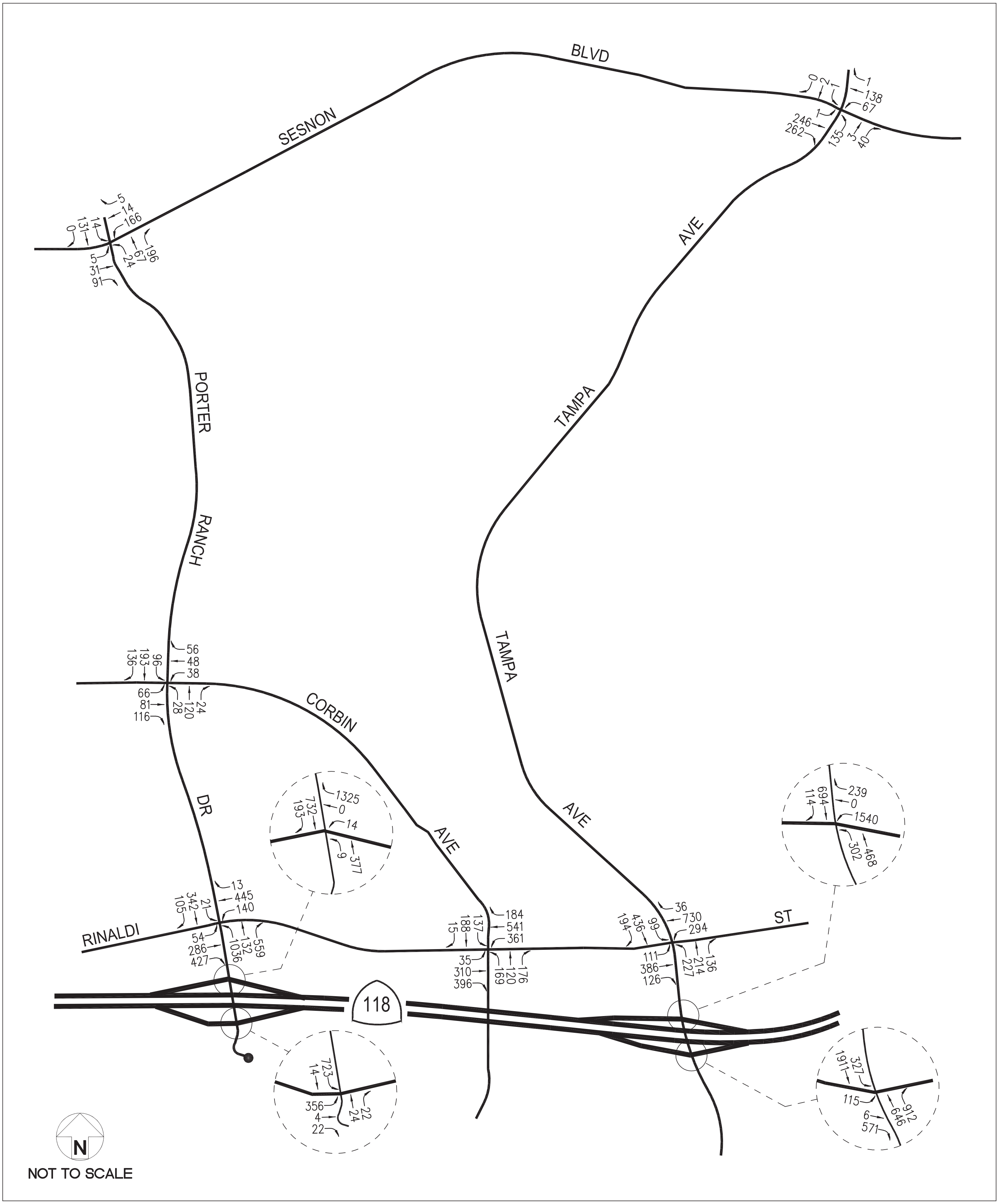

Figure 4.15-10

Future Cumulative with Project Traffic Volumes – Weekday AM Peak Hour – Los Angeles

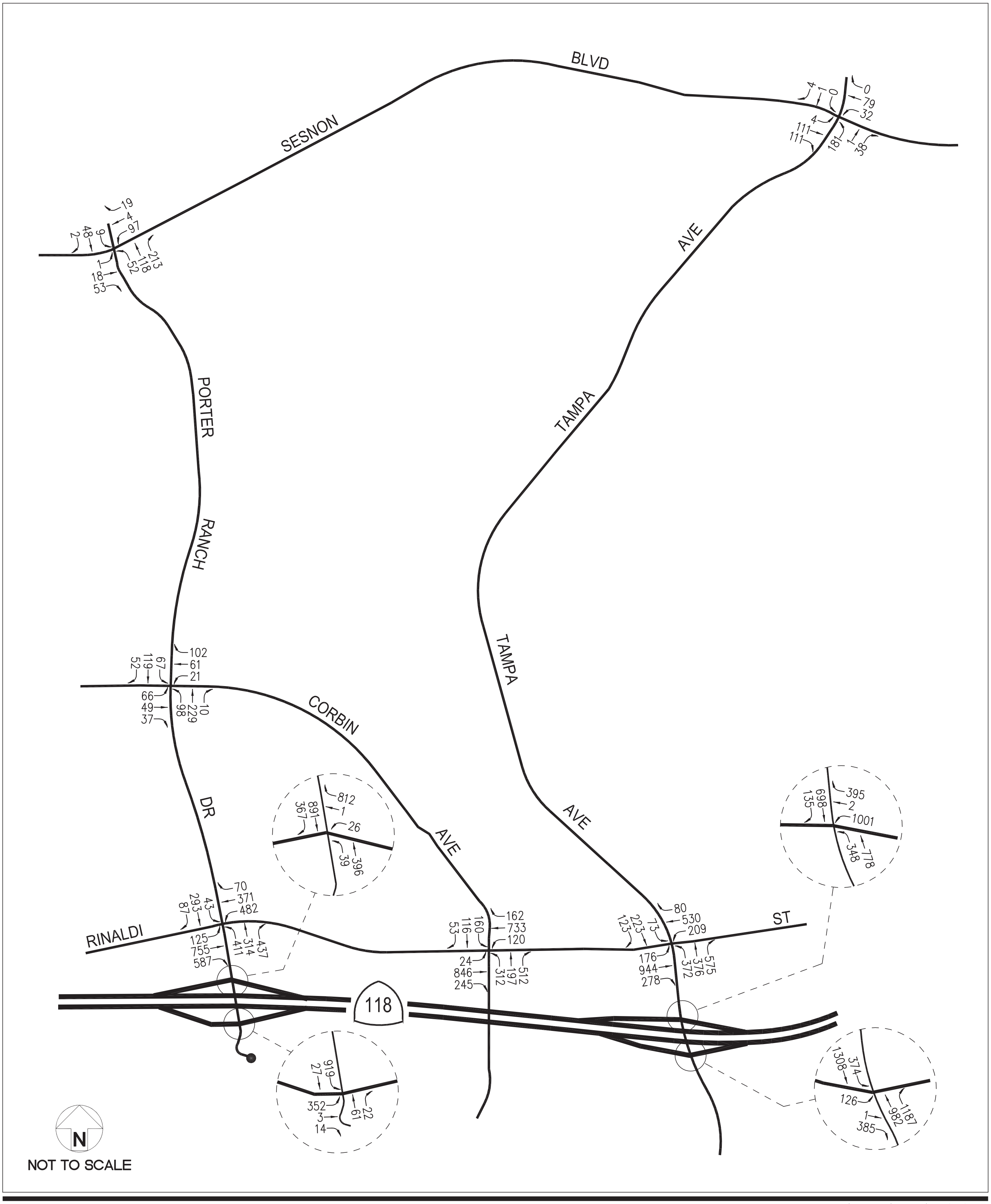

Figure 4.15-11

Future Cumulative with Project Traffic Volumes – Weekday PM Peak Hour – Los Angeles

Existing Conditions and Existing Conditions with the Proposed Project – City of Santa Clarita

Estimates of ICU and LOS were calculated for existing conditions plus the proposed project (see Appendix J). As shown in Table 4.15-8, LOS at all study area intersections would only be incrementally affected by the addition of traffic associated with construction of the proposed project. This incremental increase would not be substantial enough to create significant impacts at any of the study intersections. Because there are no significant impacts, no traffic mitigation measures are required or recommended for the study intersections under the "Existing with Project Construction" conditions.

Table 4.15-8 Existing Conditions without and with the Proposed Project – City of Santa Clarita

No.	Intersection	Peak Hour	Existing Conditions: ICU or Delay (seconds)	Existing Conditions: LOS	Existing Conditions with Project: ICU or Delay (seconds)	Existing Conditions with Project: LOS	Significant Impact?
1.	I-5 Southbound Ramps at Calgrove Boulevard (1)	a.m.	56.0	F	56.0	F	No
		p.m.	–(2)	F	–(2)	F	No
2.	I-5 Northbound Ramps at Calgrove Boulevard (1)	a.m.	21.8	C	21.8	C	No
		p.m.	–(2)	F	–(2)	F	No
3.	Wiley Canyon Road at Lyons Avenue	a.m.	0.727	C	0.746	C	No
		p.m.	0.720	C	0.745	C	No
4.	Wiley Canyon Road at Calgrove Boulevard (1)	a.m.	14.4	B	14.4	B	No
		p.m.	–(2)	F	–(2)	F	No

Source: E & E, 2011; Urban Crossroads, Inc. 2009
Key:
ICU = Intersection Capacity Utilization
LOS = level of service
Notes:
1 Unsignalized Intersection.
2 Delay High, Intersection Unstable, LOS "F."

Existing Conditions and Existing Conditions with the Proposed Project – City of Los Angeles

As shown in Table 4.15-9, under existing conditions, all study intersections are presently operating at LOS C or better during the weekday a.m. and p.m. peak hours. Application of the city's threshold criteria to the "Existing with Project Construction" scenario indicates that proposed project construction, while contributing incrementally to traffic volume, does not do so substantially enough to create significant impacts at any of the study intersections. Because there are no significant impacts, no traffic mitigation measures are required or recommended for the study intersections under the "Existing with Project Construction" conditions.

Table 4.15-9 Existing Conditions without and with the Proposed Project – City of Los Angeles

No.	Intersection	Peak Hour	Existing Conditions		Existing Conditions with Project		Change in V/C	Significant Impact?
			V/C or Delay (seconds)	LOS	V/C or Delay (seconds)	LOS		
5.	Tampa Avenue/Sesnon Boulevard (1)	a.m.	10.33	B	11.02	B	0.043	No
		p.m.	9.00	A	9.42	A	0.036	No
		a.m.	0.335	–	0.378	–	–	
		p.m.	0.233	–	0.269	–	–	
6.	Porter Ranch Drive/Sesnon Boulevard (1)	a.m.	9.18	A	9.59	A	0.048	No
		p.m.	8.64	A	8.95	A	0.049	No
		a.m.	0.331	–	0.379	–	–	
		p.m.	0.254	–	0.303	–	–	
7.	Porter Ranch Drive/Corbin Avenue	a.m.	0.082	A	0.092	A	0.010	No
		p.m.	0.095	A	0.105	A	0.010	No
8.	Porter Ranch Drive/Rinaldi Street	a.m.	0.605	B	0.644	B	0.039	No
		p.m.	0.506	A	0.649	B	0.091	No
9.	Porter Ranch Drive/SR-118 Freeway Westbound On/Off-ramps	a.m.	0.626	B	0.633	B	0.007	No
		p.m.	0.506	A	0.539	A	0.033	No
10.	Porter Ranch Drive/SR-118 Freeway Eastbound On/Off-ramps	a.m.	0.424	A	0.430	A	0.006	No
		p.m.	0.494	A	0.535	A	0.041	No
11.	Corbin Avenue/Rinaldi Street	a.m.	0.471	A	0.507	A	0.036	No
		p.m.	0.504	A	0.669	B	0.165	No
12.	Tampa Avenue/Rinaldi Street	a.m.	0.510	A	0.561	A	0.051	No
		p.m.	0.596	A	0.669	B	0.073	No
13.	Tampa Avenue/SR-118 Freeway Westbound On/Off Ramps	a.m.	0.723	C	0.728	C	0.005	No
		p.m.	0.530	A	0.548	A	0.018	No
14.	Tampa Avenue/SR-118 Freeway Eastbound On/Off Ramps	a.m.	0.625	B	0.636	B	0.011	No
		p.m.	0.614	B	0.670	B	0.056	No

Source: LLG Engineers, Inc. 2011
Key:
LOS = level of service
SR = State Route
V/C = volume-to-capacity
Note:
[1] Unsignalized Intersection.

4.15.4 Environmental Impacts and Mitigation Measures

4.15.4.1 Applicant Proposed Measures

The applicant has committed to the following applicant proposed measures (APMs) as part of the design of the proposed project. See Section 2.5, "Plans and Applicant Proposed Measures," Table 2-8, for a full description of each APM.

- **APM TT-1: Traffic Control Plan.**
- **APM TT-2: Repair of Damaged Roads.**
- **APM TT-3: Commuter Plan.**

4.15.4.2 Impact Analysis

Operational impacts would be very minor as the proposed project would require minimal maintenance and would not require more than a few vehicles for operation and maintenance activities. It is estimated that Southern California Edison (SCE) personnel would visit the proposed Natural Substation three to four times per month and inspect the 66-kV subtransmission line and 12-kV Power Plant Line at least once per year either by flying or driving the line routes. Emergency repairs to the 66-kV subtransmission lines, 12-kV Power Plant Line, and proposed Natural Substation may occasionally be required. Once a year, the applicant would perform routine maintenance of telecommunications components located at the substations. Therefore, impacts from operation of the proposed project are not considered in the following analysis.

In addition, because construction activity that would result in traffic impacts would be limited to ~~areas of unincorporated Los Angeles County and~~ the Cities of Los Angeles and Santa Clarita, intersections within Ventura County, areas of unincorporated Los Angeles County, and the City of Simi Valley are not included in the following analysis.

Because the traffic impact studies described above include conservative assumptions, the number of additional workers associated with the construction of Telecommunications Route #4 would be low (less than 5), and these workers would use roadways and intersections identified in the analysis in this section, the impact discussion below addresses the minor impacts that would be associated with this additional project component. No additional road closures would be required for this component other than those described below.

Impact TT-1: **Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.**
LESS THAN SIGNIFICANT

Impacts on traffic within the City of Los Angeles were determined using the thresholds of significance included in the Circulation Element of the City of Santa Clarita General Plan and LADOT's *Traffic Study Policies and Procedures*. The results of the traffic impact analysis indicate that under all traffic analysis scenarios, study area intersections would continue to operate at an acceptable LOS, and therefore, no significant impacts on study area intersections would occur.

The City of Santa Clarita's General Plan includes several policies focused on encouraging use and development of multiple modes of transportation, including public transit and bicycles. Similarly, the City of Los Angeles General Plan Transportation Element and Bicycle Plan also include policies encouraging transportation multimodality, including public transit and bicycles. However, LOS standards have not been adopted for these modes of transportation, thus a qualitative assessment of impacts on these facilities is not possible. In general, the proposed project would not conflict with policies governing these facilities. While construction of certain proposed project components would affect bicycle infrastructure and public transit (see discussion under Impact TT-5), any impact on these facilities would be short term and temporary and would not conflict with any applicable plan, ordinance, or policy.

In addition, a Traffic Control Plan (APM TT-1) and Commuter Plan (APM TT-3) would be developed and implemented to ensure that conflicts with applicable plans, ordinances, or policies establishing measures of effectiveness for the performance of the circulation system are avoided. Therefore, long-term conflicts with the overall circulation system within the proposed project area would not occur, and impacts would be less than significant under this criterion.

Impact TT-2: Conflict with an applicable congestion management program including, but not limited to, LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
LESS THAN SIGNIFICANT

The 2010 CMP for Los Angeles County was implemented to address the impact of local growth on the regional transportation system. The CMP addresses congestion for the County and all cities within the County. As required under the CMP, project applicants may be required to prepare a Traffic Impact Assessment (TIA) to assess impacts on designated monitoring locations of the CMP highway system. Under the CMP criteria, a significant transportation impact would occur:

- If the proposed project would increase traffic demand on a CMP facility by 2 percent of capacity ($V/C \geq 0.02$), causing or worsening LOS F ($V/C > 1.00$); or
- If the facility is already at LOS F, a significant impact would occur if the proposed project would increase traffic demand on a CMP facility by 2 percent of capacity ($V/C \geq 0.02$) (Metro 2010).

The impact criteria apply to both intersection and freeway monitoring locations. Two CMP intersection monitoring facilities were identified near the proposed project area:

- No. 64: Topanga Canyon Boulevard/Devonshire Street; and
- No. 66: Topanga Canyon Boulevard/SR-118 Freeway Westbound Ramps.

In addition, two CMP freeway monitoring locations were also identified near the proposed project area:

- Seg. No. 1051: SR-118 Freeway at Los Angeles/Ventura County Line; and
- Seg. No. 1052: SR-118 Freeway east of Woodley Avenue.

Under the CMP TIA guidelines, impacts on CMP intersection monitoring facilities must be assessed using the significance thresholds described above if a proposed project will add 50 or more trips during either the a.m. or p.m. weekday peak hours. Similarly, the CMP TIA guidelines require that impacts on freeway monitoring locations must be assessed using the significance thresholds described above if the proposed project will add 150 or more trips (in either direction) during either the a.m. or p.m. weekday peak hours. The proposed project would not add 50 or more trips during the a.m. or p.m. peak hours at any of the CMP monitoring intersections, nor would it add 150 or more trips (in either direction) during either the a.m. or p.m. weekday peak hours to the CMP freeway monitoring locations. Additionally, a Traffic Control Plan (APM TT-1) and Commuter Plan (APM TT-3) would be implemented to ensure that conflicts with congestion management programs and standards are avoided. <u>To ensure that the Traffic Control Plan reduces traffic impacts related to temporary lane closures along Wiley Canyon Road, the applicant is required per Mitigation Measure (MM) TT-1 (under Impact TT-4, below) to confer with the City of Santa Clarita traffic engineer and to incorporate the engineer's recommendations into the Traffic Control Plan prior to commencing work within Santa Clarita city boundaries.</u> Therefore, because the proposed project does not meet the requirements for preparation of a TIA under the CMP TIA guidelines and traffic control and commuter plans would be implemented, impacts under this criterion would be less than significant.

Impact TT-3: **Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).**
LESS THAN SIGNIFICANT

The proposed project includes the expansion, repair, or construction of new service roads. The entry road into the Aliso Canyon Natural Gas Storage Field (storage field) from Sesnon Boulevard (Tampa Avenue/Limekiln Canyon Road) would be widened by 12 feet for approximately ~~500~~<u>300</u> feet leading up to a proposed guardhouse site. Other roadway modifications would include increasing the width, grading, and paving an existing 1,500-foot dirt road to the proposed Natural Substation site, installation of a crossing and/or culvert in a service road between 66-kV subtransmission line structures 27 and 28, and widening of existing access roads to existing 66-kV subtransmission line structures 50, 51, and 52 (project alignment sheets depicting structure numbers are provided in Appendix D). In addition, new 18-foot-wide access roads would be required along the 66-kV subtransmission line reconductoring route where new structures would be installed and no existing structures are currently present. Most of the roads constructed to accommodate construction of the proposed project would be left in place for maintenance access. Roads would be designed to avoid hazardous features for the safety of operation and maintenance crews.

Excluding the entry road to the storage field, none of the roads that would be expanded, repaired, or constructed as a part of the proposed project would be accessible to the public or comprise a part of the public roadway system. Access would be restricted through installation of gates at fenced property lines to restrict public and recreational vehicular access to proposed project roads. While the entry road to the storage field opens onto a public roadway, the entry road is private and not open to public use. In addition, widening the entry road would help alleviate truck congestion at the intersection of Tampa Avenue and Sesnon Boulevard by allowing delivery trucks to line up for entry using one lane and allowing other vehicles to enter the storage field without delay by using the second lane. Accordingly, any potential hazards to passing traffic would be reduced due to a reduction in queuing and congestion at the storage field entry. None of the proposed project roadway components would result in changes to existing public roadway design, including intersections, alignment, lane configuration, or medians.

Construction of the proposed project would potentially require the use of oversize and/or overweight vehicles on area roadways. Installation of the replacement tubular steel poles (TSPs) along the 66-kV subtransmission line reconductoring route would require the hauling and stacking of bundles of steel at tower locations, involving the use of several tractor-trailers for the delivery of construction materials. However, the applicant would implement APM TT-1, Traffic Control Plan, during project construction to minimize short-term, construction-related impacts on local traffic and reduce potential traffic safety hazards through measures such as the installation of temporary warning signs at strategic locations near access points for the project components. Therefore, the proposed project would not substantially increase hazards due to a design feature or incompatible use and impacts would be less than significant under this criterion.

Impact TT-4: **Result in inadequate emergency access.**
LESS THAN SIGNIFICANT WITH MITIGATION

The proposed project would require the replacement of six existing lattice steel towers (LSTs) with new installation of TSPs along the Wiley Canyon Road corridor within the City of Santa Clarita. Five of the LSTs to be replaced are located on the east side of Wiley Canyon Road, between Lyons Avenue and Calgrove Boulevard, and the remaining LST is located on the east side of Old Wiley Canyon Road, just south of Wabuska Street. It is estimated that the tower replacement activities would take up to one week per tower. The crane that would be used for both the removal of the LSTs and installation of the new TSPs would likely require a full lane of the roadway in which to operate. This would result in temporary travel lane reductions near four tower locations, and full road closures on Wiley Canyon Road near two tower locations where the roadway is reduced to only two lanes of traffic. Similarly, reconductoring of the 66-kV subtransmission line and installation of Telecommunications Route #1 would likely require the temporary closure of a section of I-5, between Calgrove Boulevard and SR-14.

Typically, roadway closures may result in inadequate access for emergency vehicles. However, the applicant would implement APM TT-1, Traffic Control Plan, and APM TT-3, Commuter Plan, during project construction to minimize short-term construction-related impacts on local traffic, including emergency access. Under the traffic control plans, construction activities would be coordinated with the affected local agencies in order to prevent closure of any emergency access route. Flaggers may briefly hold traffic back while conductor is pulled across a roadway, but emergency vehicles would be provided access even in the event of temporary road closures. Emergency access would not be directly impacted by construction of the proposed project because all streets would remain open to emergency vehicles at all times during construction activities.

In places where proposed project components would require lane closures, construction activities would be coordinated with local jurisdictions in order to avoid closure of any emergency access route. Flaggers may briefly hold traffic back for construction equipment, but emergency vehicles would be provided access even in the event of temporary road closures. In addition, each of the TSP locations would be designed for 24-hour vehicular access during operation of the proposed project for emergency and maintenance activities. As a result, temporary road and lane closures associated with construction activities would not significantly lengthen the response time required for emergency vehicles passing through the construction zone because all streets would remain open to emergency vehicles at all times.

In order to minimize any impacts/inconveniences to the general public, the temporary closure of the I-5 freeway would be scheduled on days/times when traffic on the freeway is at its lowest (i.e., during late night/early morning hours and/or weekend). In addition, sufficient public notice in advance of the freeway closure, as well as signage for potential detour routes, would be provided. Traffic control plans would also be submitted to all affected jurisdictions for review and approval prior to conducting the tower replacement activities. Further, coordination and approvals from the affected agencies, including Caltrans, would be required prior to closure of I-5.

As identified by the City of Santa Clarita in their comment letter on the Draft EIR (May 17, 2012), potentially significant traffic impacts could occur if multiple lanes in the City of Santa Clarita (Wiley

Canyon Road, Lyons Avenue and Calgrove Avenue near Wiley Canyon Road) were closed simultaneously or if the closures occurred during peak traffic hours or during special events. To ensure that the Traffic Control Plan reduces traffic impacts related to temporary lane closures, MM TT-1 would require SCE to confer with the City of Santa Clarita traffic engineer and to incorporate their recommendations into the project Traffic Control Plan prior to commencing work within Santa Clarita city boundaries.

> **MM TT-1: City of Santa Clarita Traffic Engineer Review.** Prior to commencing work within Santa Clarita city boundaries, SCE will submit their Traffic Control Plan for the project to the City of Santa Clarita traffic engineer, and incorporate any recommendations from this review into the Traffic Control Plan.

Measures included under APM TT-1 and APM TT-3 would ensure that construction activities would not interfere with emergency response by ambulance, fire, paramedic, and police vehicles within the proposed project area. Travel routes for emergency vehicles would remain unobstructed and adequate. Therefore, project construction activities would not result in inadequate emergency access and, with the implementation of MM TT-1, impacts would be less than significant under this criterion.

Impact TT-5: Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.
LESS THAN SIGNIFICANT

Extensive bicycle infrastructure is present throughout the proposed project component areas. Roadways within the proposed project areas with bicycle lanes include Tampa Avenue, Corbin Avenue, Porter Ranch Drive, and Sesnon Boulevard in the City of Los Angeles; and Calgrove Boulevard and Wiley Canyon Road in the City of Santa Clarita.

The proposed project area is also serviced by extensive public transit facilities. Santa Clarita Transit bus Route 634 serves Wiley Canyon Road and Routes 4, 5, 6, and 14 serve Lyons Avenue. In addition, several Metro bus and rail lines serve the proposed project area, including the Antelope Valley and Ventura County Metrolink commuter rail lines.

Replacement of LSTs with TSPs along Wiley Canyon Road would necessitate temporary lane reductions and closures that would directly affect bicycle lanes on Wiley Canyon Road and Santa Clarita Transit Route 634. In addition, a portion of Telecommunications Route #3 would cross the Metrolink Antelope Valley commuter rail line, potentially requiring a temporary closure of the rail line at this location until the fiber optic line has been strung and secured across the rail alignment. However, as part of the proposed project, the applicant would implement APM TT-1, Traffic Control Plan, and MM TT-1 during project construction to minimize short-term construction-related impacts on these facilities. Under APM TT-1 and MM TT-1, all construction work would be coordinated with affected local agencies in order to prevent negative effects to these facilities. The Traffic Control Plan would include provisions for temporary alternate routes to route local bicycle and bus traffic around construction zones. In addition, work conducted on Telecommunications Route #3 that crosses the Metrolink alignment would be scheduled to avoid the regular operating schedule of the rail line.

The applicant would also implement APM TT-2, Roadway Repair, to ensure that any damage done to area roadways, including bicycle lanes, resulting from construction work would be repaired following completion of project construction. Therefore, impacts on public transit, bicycle, or pedestrian facilities would be less than significant under this criterion.

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5.0 Comparison of Alternatives

The purpose of an alternatives analysis pursuant to the California Environmental Quality Act (CEQA) is to identify options that would feasibly attain most of the basic project objectives while reducing significant effects of the proposed project. CEQA does not require the inclusion of an alternatives analysis when the results of the environmental analysis show that with mitigation, the proposed project would not result in significant adverse environmental impacts. Nonetheless, the California Public Utilities Commission (CPUC) reviewed information about alternatives during the preparation of this Environmental Impact Report (EIR).

Pursuant to Section IX.A.1.e of CPUC General Order 131-D, Southern California Gas Company (the applicant) provided an analysis of the proposed project and alternatives as part of its application and Proponent's Environmental Assessment. After the application was filed, additional alternatives to the proposed project were identified during scoping and by the CPUC Energy Division as a result of the agency's independent review. Written comments from the California Department of Fish and Game, for example, requested that the CEQA document include a range of alternatives that would minimize impacts on sensitive biological resources (Appendix B, "Scoping Summary Report"). The alternatives considered included alternative compressor technologies, central compressor station and substation sites, electrical designs, and electrical and telecommunications line routings (Appendix C, "Alternatives Screening Report"). The alternatives screening process identified and evaluated 11 potential alternatives to the proposed project, including the No Project Alternative.

This chapter provides a comparison of the environmental advantages and disadvantages of the proposed project and each alternative retained for consideration in this EIR (Chapter 3, "Description of Alternatives"). The comparison is based on the assessment of environmental impacts of the proposed project presented in Chapter 4, "Environmental Analysis," with the impacts of the following ~~three~~two alternatives:

- Design Alternative (Alternate Compressor Drive Type, a Non-wires Alternative); and
- ~~Routing Alternative A (Telecommunications: Sylmar Substation to San Fernando Substation); and~~
- No Project Alternative.

An Environmentally Superior Alternative is identified in Section 5.3.

5.1 Comparison Methodology

Specific direction regarding the methodology of alternatives comparison is not provided by the CEQA statute or guidelines. Projects must be evaluated in terms of the resource areas associated with the type of project and environmental setting. Resource areas that are generally given more weight in the comparison of alternatives are those with long-term impacts. Impacts associated with construction (i.e., temporary or short-term impacts) or those that can be easily mitigated to less than significant levels are given less weight. In this chapter, the following methodology is used to compare the proposed project and alternatives:

- **Step 1: Identification of Alternatives and Potential Environmental Effects.** A screening process was used to identify a number of alternatives to the proposed project. An Alternatives Screening Report (Appendix C) was prepared during this process that documents the criteria used to evaluate and select alternatives for further analysis, including their feasibility, the extent to which they would meet most of the basic objectives of the proposed project, and their potential to avoid or substantially lessen the significant effects of the proposed project. It also describes the alternatives to the proposed project that were retained for consideration in this EIR, and those that were initially evaluated but then eliminated from further consideration, and discusses the reasons for their elimination. The alternatives retained for consideration are described in more detail in Chapter 3 of this EIR.

- **Step 2: Evaluation of Environmental Impacts.** The potential environmental effects listed in the Alternatives Screening Report (Appendix C) were identified based on the CPUC's initial review of the Proponent's Environmental Assessment and the applicant's subsequent responses to CPUC requests for further information about the proposed project. The environmental impacts of construction and operation of the proposed project are evaluated by resource area in Chapter 4 of this EIR. The evaluation presented in Chapter 4 is more detailed than the initial evaluation of potential environmental effects completed during the screening process.
- **Step 3: Comparison of the Proposed Project and Alternatives.** In this chapter, the environmental impacts of the proposed project are compared to those of each alternative. An Environmentally Superior Alternative is then identified. The Environmentally Superior Alternative is then compared to the No Project Alternative.

5.1.1 Environmental Impacts of the Proposed Project

All of the impacts identified in Chapter 4, "Environmental Analysis," would be less than significant or, with mitigation, reduced to less than significant levels. Because the proposed project would not result in any significant and unavoidable adverse impacts, an analysis of alternatives that are capable of avoiding or reducing significant impacts is not required by CEQA. Although not required, a qualitative analysis of the advantages and disadvantages of each alternative retained for analysis in this EIR in comparison to the proposed project is presented in the following sections, and an Environmentally Superior Alternative is identified. The comparison of alternatives is provided to better inform decision makers at the CPUC about the steps taken during the EIR development process and the rigor under which the proposed project was evaluated.

5.2 Analysis of Alternatives

A qualitative analysis of the advantages and disadvantages of each alternative in comparison to the proposed project is presented in this section. Determinations are provided that indicate whether the proposed project or an alternative would be environmentally superior for each resource area. Where the analysis determines that impacts would be similar to the proposed project, the proposed project is selected as environmentally superior for that resource area. For most resource areas, the Design Alternative is shown to be environmentally superior, because of the smaller overall footprint of ground disturbance associated with this alternative. Table 5-1 provides a summary of the analysis and determinations.

Table 5.1 Comparison of Alternatives to the Proposed Project (Adverse Environmental Impacts by Resource Area)

Resource Area	Proposed Project (Impact Determination)	Impact Type	Design Alternative (Alternate Compressor Drive Type)	~~Routing Alternative A (Telecom: Sylmar Substation to San Fernando Substation)~~	No Project Alternative	Environmentally Superior Alternative*
Aesthetics	Less than significant	Temporary	Less	~~Similar~~	Less	Design Alternative
Agriculture and Forestry Resources	Less than significant	Temporary	Less	~~Similar~~	Less	Design Alternative
Air Quality	Less than significant *with mitigation*	Long term	Greater (1)	~~Similar~~	Greater (1)	Proposed Project
Biological Resources	Less than significant *with mitigation*	Temporary, long term	Less	~~Similar~~	Less	Design Alternative
Cultural and Paleontological Resources	Less than significant *with mitigation*	Temporary	Less	~~Similar~~	Less	Design Alternative
Geology, Soils, and Mineral Resources	Less than significant	Temporary, long term	Less	~~Similar~~	Less	Design Alternative
Greenhouse Gas Emissions	Less than significant	Long term	Greater (2)	~~Similar~~	Greater (2)	Proposed Project
Hazards and Hazardous Materials	Less than significant *with mitigation*	Temporary	Less	~~Similar~~	Less	Design Alternative
Hydrology and Water Quality	Less than significant	Temporary, long term	Less	~~Similar~~	Less	Design Alternative
Land Use and Planning	Less than significant	Temporary	Less	~~Similar~~	Less	Design Alternative
Noise	Less than significant *with mitigation*	Temporary	Less	~~Less (3)~~	Less	Design Alternative
Population and Housing	Less than significant	Long term	Less	~~Similar~~	Less	Design Alternative
Public Services and Utilities	Less than significant	Temporary	Less	~~Similar~~	Less	Design Alternative
Recreation	Less than significant	Temporary	Less	~~Similar~~	Less	Design Alternative
Transportation and Traffic	Less than significant	Temporary	Less	~~Similar~~	Greater (4)	Design Alternative
Cumulative	Less than significant	Temporary, long term	Greater (5)	~~Similar~~	Greater (5)	Proposed Project
Growth Inducing	~~Less than significant~~No impact	Long term	~~Less~~Similar	~~Similar~~	~~Less~~Similar	Design Alternative N/A

Notes:

* If the Environmentally Superior Alternative is the No Project Alternative, CEQA requires the identification of an Environmentally Superior Alternative among the other alternatives (CEQA Guidelines Section 15126.6). In addition, where impacts would be similar to the proposed project, the proposed project is selected as environmentally superior rather than the alternative.

(1) Refer to the air quality analyses presented in Sections 5.2.1.1 and 5.2.3.1.

(2) Refer to the greenhouse gas emission analyses presented in Sections 5.2.1.1 and 5.2.3.1.

~~(3) Refer to the noise analysis presented in Section 5.2.2.1.~~

(4) Refer to the transportation and traffic analyses presented in Section 5.2.3.1.

(5) Refer to the cumulative impacts analyses, which focus on air quality and greenhouse gases, presented in Sections 5.2.1.1 and 5.2.3.1.

5.2.1 Design Alternative (Alternate Compressor Drive Type, a Non-wires Alternative)

This section compares the environmental impacts of the proposed project with those of a design alternative under which new gas turbine–driven compressors with greater capacity than the existing gas turbine–driven compressors would be installed instead of the proposed electric-driven, variable-speed compressors. Determinations are provided that indicate whether the proposed project or alternative would be environmentally superior for each resource area. A description of the Design Alternative is provided in Chapter 3, "Description of Alternatives." As discussed in Chapter 3, this alternative is potentially feasible and would meet the basic objectives of the proposed project.

5.2.1.1 Environmental Impacts and Mitigation

Air Quality

Construction

Air pollutant emissions would be generated during the various activities associated with construction of the Design Alternative. Air pollutants would be emitted by diesel- and gasoline-fueled construction equipment and on-road vehicles (e.g., delivery trucks and worker vehicles). Onsite construction activities and vehicle travel would also generate fugitive dust.

The additional 8 to 10 workers and equipment required for this alternative would increase emissions associated with construction of the Central Compressor Station; however, overall, fewer construction workers and less equipment would be required because none of the proposed and modified electrical and telecommunications facilities would be constructed. Therefore, daily construction emissions would be considerably less for the Design Alternative than the proposed project.

Operations

Modern gas turbine–driven compressors can be equipped with technology that provides lower emissions of air pollutants, such as oxides of nitrogen (NO_x) and carbon monoxide, than the existing gas turbine–driven compressors, which were installed at the storage field in the 1970s. It is anticipated that add-on control technology would be needed to meet the Best Available Control Technology/Lowest Achievable Emission Rate emissions requirements within the South Coast Air Quality Management District. The most feasible emissions control technology for NO_x emissions would likely be a Selective Catalytic Reduction (SCR) system. SCR systems can reduce NO_x emissions by more than 90 percent. An oxidation catalyst system may be required to control emissions of other pollutants, such as carbon monoxide and reactive organic gases.

The use of SCR would generate ammonia emissions. Ammonia, which would be stored at the Aliso Canyon Natural Gas Storage Field (storage field) in aqueous or crystallized form, would be fed into the SCR unit to react with the NO_x to form inert nitrogen. A small amount of ammonia goes unreacted in the SCR and is released out of the turbine stack, which is often referred to as *ammonia slip*. Regulatory requirements and permit conditions typically limit the amount of ammonia slip to low levels that would have an very minor air quality impact. The emissions control system would require maintenance that would not be necessary for the proposed electric-driven compressors; it is anticipated that this additional maintenance would generate only a small amount of air pollutant emissions that would have an very minor impact on air quality.

It is likely that daily emissions of air pollutants, including NO_x and carbon monoxide, under the Design Alternative would decrease compared to the existing natural gas compressor units. Although there may be an increase in emissions of some air pollutants due to the increased size and capacity of the new turbines, it is expected that these daily emission increases would be below South Coast Air Quality Management District significance thresholds. Regardless, during operations, emissions of NO_x, carbon monoxide, and other pollutants under the Design Alternative would be higher than those from the proposed project.

Determination

Implementation of the air quality mitigation measures identified in this EIR for the proposed project would ensure that impacts from construction and operation of the Design Alternative would also be less than significant for this resource area. Air pollutant emissions during construction would be less than those from the proposed project because none of the proposed electrical and telecommunications facilities would be constructed. During operations, emissions of NO_x, carbon monoxide, and other pollutants would be higher than those from the proposed electric-driven compressors. Therefore, although the Design Alternative would reduce emissions during construction, the proposed project would be environmentally superior for this resource area because it would have lower long-term air pollutant emissions.

Greenhouse Gases

Construction and operation activities associated with the Design Alternative would generate greenhouse gas (GHG) emissions, primarily carbon dioxide. During construction, GHGs would be emitted by diesel- and gasoline-fueled construction equipment and on-road vehicles. The Design Alternative, however, would not require the construction activities associated with the proposed new and modified electrical and telecommunications facilities. Overall, daily construction GHG emissions would be less for the Design Alternative than for the proposed project because none of the proposed new and modified electrical and telecommunications facilities would be constructed.

During operations, GHGs would be emitted by the gas turbine–driven compressors. During operations, the majority of GHGs emissions would be offset by GHG reductions associated with the removal of the three existing gas turbine–driven compressors. It is anticipated that there would be a net increase in GHG emissions (amortized GHG construction emission plus GHG emissions from new gas turbine–driven compressors, minus GHG emissions from the existing gas turbine–driven compressors). The net increase in GHG emissions, however, would be anticipated to be less than the South Coast Air Quality Management District's GHG significance threshold of 10,000 metric tons of carbon dioxide or equivalent GHG emissions per year. GHG emissions are anticipated to be less for the proposed electric-driven compressors during operations.

Without mitigation, it is anticipated that GHG emissions from both the Design Alternative and the proposed project would be less than significant during construction and operations. Although GHG emissions under the Design Alternative would be less than significant, during operations they would be greater than for the proposed project. Therefore, because the proposed project would have lower long-term GHG emissions, it would be environmentally superior for this resource area.

Biological Resources

Coastal California Gnatcatcher

Under the Design Alternative, impacts on coastal California gnatcatcher critical habitat during construction and operation of the proposed project would be reduced because 66-kilovolt (kV) subtransmission line reconductoring, Natural Substation construction, and telecommunications line installations would not be required. Up to 75 acres of critical habitat would be disturbed by construction of the new and modified electrical and telecommunications facilities for the proposed project. Approximately 8 of the 75 acres would be permanently disturbed. Indirect impacts on coastal California gnatcatcher from increased noise and human presence would also be reduced under this alternative (Section 4.4, "Biological Resources"). Although the Aliso Canyon Plant Station (Plant Station) site is located within critical gnatcatcher habitat, this area is already highly disturbed and would not be significantly impacted by construction or operation of the Central Compressor Station or other activities that would occur at the Plant Station site during construction or operation of the proposed project or Design Alternative. All of the mitigation measures associated with coastal California gnatcatcher that are applicable to the proposed project would also be applicable to the Design Alternative.

Special Status and Nesting Birds and Other Special Status Animal Species

Direct and indirect impacts from construction and operation of the proposed project on special status birds, including golden eagle, least Bell's vireo, loggerhead shrike, northern harrier, olive-sided flycatcher, southwestern willow flycatcher, western burrowing owl, white-tailed kite, yellow-breasted chat, yellow warbler, and a number of other bird species that may be nesting in the areas of the proposed project components or are protected under the Migratory Bird Treaty Act would be avoided or reduced under the Design Alternative. Direct and indirect impacts on special status species, including Coast Range newt, western spadefoot, coast horned lizard, silvery legless lizard, two striped garter snake, western pond turtle, and bats from construction and operation of the proposed project would also be avoided or reduced. Mitigation measures for these species that are applicable to the proposed project, other than those specific to the proposed project components that would be completed by Southern California Edison (SCE), would also apply to this alternative.

In addition, indirect effects on wildlife and occupied habitat can result from increased construction and operational noise levels. Three gas turbine–driven compressors (rated at 15,000 to 26,000 horsepower) would generate approximately 77 dBA[1] at 50 feet when operating at full capacity (Washington International Group 2007). Electric-driven compressors with specifications comparable to those required for the proposed project (rated at 22,000 horsepower each) would be quieter because they would not generate the air intake and exhaust noises associated with combustion engines. Although noise data for electric-driven compressors of this size are limited because most natural gas compression facilities use gas-driven compressors (CH2M Hill 2008), it is anticipated that the three proposed electric-driven compressors would generate less noise than three gas turbine–driven compressors at 50 feet.

Given that wildlife currently accessing areas on or near the Plant Station site are most likely habituated to the existing gas turbine–driven compressors (15,000 horsepower), which have been in service since the 1970s, it is not anticipated that operational noise from the Design Alternative would increase impacts on biological resources. Installation of the proposed electric-driven compressors, however, would decrease stationary noise levels at the Plant Station site and may reduce associated impacts for some wildlife species.

Special Status Plant Species, Riparian Habitat, Significant Ecological Areas, Oak Trees, and Non-native and Invasive Plants

During construction, direct and indirect impacts on special status plants, including Plummer's mariposa lily, slender mariposa lily, and riparian habitat would be avoided or reduced under the Design Alternative. A segment of the 66-kV subtransmission line to be modified, west of the Sunshine Canyon Landfill, passes through an area of the Santa Susana Mountains that is designated as a Significant Ecological Area

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[1] To account for the fact that human hearing does not process all frequencies equally, an A-weighted decibel (dBA) scale was developed. The dBA noise scale is used for measurements and standards involving human perception of noise.

(SEA) by Los Angeles County; a portion of Telecommunications Route #2 would also pass through an area designated as an SEA (Section 4.4, "Biological Resources"). These areas would be avoided by the Design Alternative. Mitigation measures for special status plant species, riparian habitat, and non-native and invasive plants during construction of the proposed project would also apply to this alternative. Impacts on oak trees would also be avoided by the Design Alternative, and mitigation associated with the proposed project would not apply.

Determination

Implementation of the mitigation measures identified in this EIR for the proposed project, other than those specific to SCE, would ensure that impacts on biological resources from construction and operation of the Design Alternative would be less than significant.

The Design Alternative would be environmentally superior in comparison to the proposed project with regard to biological resources because direct and indirect impacts during construction and operation of the proposed project on special status and nesting birds, special status animal species, special status plant species, riparian habitat, SEAs, and oak trees would be avoided or reduced. Additionally, although noise levels would be reduced at the Plant Station site with operation of the proposed electric-driven compressors instead of the existing or new gas turbine–driven compressors, the Design Alternative would be environmentally superior with regard to impacts on coastal California gnatcatcher because it would avoid the disturbance of up to 75 acres of critical habitat, 8 of which would be permanently disturbed by the proposed project.

Cultural and Paleontological Resources

Under the Design Alternative, impacts during construction of the proposed project on cultural and paleontological resources would be avoided or reduced because subtransmission line reconductoring, Natural Substation construction, and telecommunications line installations would not be required. Each of the proposed new and modified electrical and telecommunications facilities has the potential to disturb cultural or paleontological resources. Areas that would be disturbed on the storage field for construction and operation of the Design Alternative, however, have been previously disturbed and are not anticipated to contain cultural or paleontological resources (Section 4.5, "Cultural and Paleontological Resources").

Implementation of the mitigation measures identified in this EIR for the proposed project would ensure that impacts on cultural and paleontological resources from construction and operation of the Design Alternative would be less than significant. The Design Alternative would be environmentally superior in comparison to the proposed project because impacts during construction of the proposed project on unknown cultural and paleontological resources would be avoided or reduced.

Hazards and Hazardous Materials

Fire hazards during construction activities would be reduced under the Design Alternative because the proposed electrical and telecommunications facilities would not be required. The storage field and proposed subtransmission line reconductoring and telecommunications line routes are located within a Very High Fire Hazard Severity Zone (Section 4.8, "Hazards and Hazardous Materials"). Implementation of the mitigation measures identified in this EIR for the proposed project, other than those specific to SCE, would ensure that impacts from increased risk of fire hazards during construction would be less than significant. The Design Alternative would be environmentally superior in comparison to the proposed project because impacts during construction of the proposed project from fire hazards would be avoided or reduced.

Noise

Noise impacts on sensitive receptors associated with construction of the proposed electrical and telecommunications facilities would be avoided under the Design Alternative because the proposed electrical and telecommunications facilities would not be required. The proposed 66-kV Subtransmission Line Segments A and B and Telecommunications Routes #1 and #3 would generate noise levels that could exceed applicable daytime allowable noise standards in the City of Santa Clarita, City of Los Angeles, City of San Fernando, and Los Angeles County (Section 4.11, "Noise"). Sensitive receptors near 66-kV Subtransmission Line Segments A and B and Telecommunications Routes #1, ~~and~~ #3, and #4 would be avoided under the Design Alternative.

Impacts would be less than significant for the proposed project with mitigation, and impacts would be less than significant without mitigation for the Design Alternative. Therefore, the Design Alternative would be environmentally superior in comparison to the proposed project because noise impacts on sensitive receptors during construction of the proposed project would be avoided.

Other Resource Areas

Neither the proposed project nor the Design Alternative are anticipated to have a significant impact on the following resource areas: Aesthetics; Agriculture and Forestry Resources; Hydrology and Water Quality; Land Use and Planning; Geology, Soils, and Mineral Resources; Population and Housing; Public Services and Utilities; Recreation; and Transportation and Traffic. It follows that no mitigation measures have been included in this EIR to avoid or reduce impacts on these resource areas. The comparative environmental merits of the Design Alternative and the proposed project with respect to these resource areas are discussed in this section.

During construction, impacts associated with sensitive visual receptors located near 66-kV Subtransmission Line Segments A and B construction sites, and on the visual character of communities through which the segments would traverse, would be avoided under this alternative (Section 4.1, "Aesthetics"). Temporary construction impacts on land zoned for agriculture would be temporarily disturbed by construction of 66-kV Segments A and B and Telecommunications Routes #1 and #2, would also be avoided (Section 4.2, "Agriculture and Forestry Resources"). In addition, groundwater that could be encountered during drilling required for the installation of tubular steel poles would be avoided by the Design Alternative, and during construction and operations, the reconductoring of 2,000 feet of subtransmission line along 66-kV Segments A and B that are located within a 100-year floodplain would be avoided (Section 4.9, "Hydrology and Water Quality").

Impacts on public services and utilities would be reduced under the Design Alternative because, during construction, less waste would be produced and less water would be used (Section 4.13, "Public Services and Utilities"). The risk of emergency requiring fire, police, or medical services would also be reduced. Under the Design Alternative, fewer workers would be required, and the chance that workers would relocate to the proposed project area for work would be reduced (Section 4.14, "Recreation"). Therefore, the risk of impacts on recreational facilities during construction would also be reduced. Additionally, portions of the proposed project would pass through two areas designated as SEAs by Los Angeles County. These areas would be avoided by the Design Alternative. During construction and operations, impacts associated with an Alquist–Priolo Earthquake Fault Zone traversed by Telecommunications Route #3 would also be avoided under the Design Alternative (Section 4.6, "Geology, Soils, and Mineral Resources").

The guardhouse and road widening components of the proposed project would still be constructed under the Design Alternative, which would reduce truck congestion at the intersection of Tampa Avenue and

Sesnon Boulevard (Chapter 2, “Project Description”). Traffic associated with the proposed electrical and telecommunications facilities, however, would not occur.

Determination

The Design Alternative would be environmentally superior in comparison to the proposed project with regard to Aesthetics; Agriculture and Forestry Resources; Hydrology and Water Quality; Land Use and Planning; Geology, Soils, and Mineral Resources; Public Services and Utilities; Recreation; and Transportation and Traffic because impacts on these resource areas from construction and operation of the proposed electrical and telecommunications facilities would be avoided or reduced.

Cumulative Impacts

The Design Alternative would avoid or reduce all cumulative impacts associated with the proposed project except for those associated with air quality and GHG emissions. A number of residential projects and several industrial and commercial projects, all of which would results in air pollutant and GHG emissions from construction equipment and fugitive dust, are discussed in Chapter 6, “Cumulative Impacts and Other CEQA Considerations.” A new 75-mile-long 230-kV transmission line (the Barren Ridge Renewable Transmission Project), which would extend from northeast of the City of Santa Clarita (Figure 2-1) southwest to Rinaldi Substation, which is located approximately 1 mile northwest of San Fernando Substation, would also result in air pollutant and GHG emissions from construction equipment and fugitive dust.

Although long-term cumulative impacts on coastal California gnatcatcher and other biological resources would be avoided under the Design Alternative, and a number of short-term construction impacts would be avoided or reduced, air quality and GHG impacts are both long-term and widespread. Furthermore, while offsets can be purchased for air quality impacts, and offsets may be negotiated for GHG impacts, mitigation through the purchase of offsets is indirect. Indirect mitigation is generally less effective than direct mitigation, and direct mitigation for air pollutant and GHG emissions can be difficult to implement. Therefore, the proposed project would be environmentally superior with regard to cumulative impacts.

Growth-inducing Impacts

The gas turbine–driven compressors that would be installed under the Design Alternative would not be more or less growth inducing than the proposed electric-driven compressors. Both the alternative and the proposed project would increase the injection rate ~~capacity~~ at the storage field by approximately 150 million cubic feet per day as required by the terms of the Settlement Agreement (Appendix A).

Although neither the Design Alternative nor the proposed project is expected to substantially induce growth, the proposed Natural Substation is expandable from 56 to 112 megavolt amperes if needed to accommodate future growth of the gas field operations. While the Natural Substation could at some point be expanded and converted to accommodate new development in the area, the availability of electrical capacity by itself does not normally ensure or encourage growth within a particular area. Other factors such as economic conditions, land availability, population trends, availability of water supply or sewer services, and local planning policies have a more direct effect on growth. For this reason, there would be no difference between the Design Alternative and the ~~would be environmentally superior~~ proposed project with regard to growth-inducing impacts~~, because regardless of which type of compressor is installed, the storage field’s injection capacity would be increased by approximately the same amount, and hence, an accommodation for increased electrical demand that could be associated with future economic or population growth would be avoided because the Natural Substation would not be constructed~~.

~~5.2.2 Routing Alternative A (Telecommunications: Sylmar Substation to San Fernando Substation)~~

~~This section compares the environmental impacts of the proposed project with those of Routing Alternative A. Determinations are provided that indicate whether the proposed project or alternative would be environmentally superior for each resource area. A description of Routing Alternative A is provided in Chapter 3, "Description of Alternatives." As discussed in Chapter 3, this alternative is potentially feasible and would meet the basic objectives of the proposed project.~~

~~5.2.2.1 Environmental Impacts and Mitigation~~

~~Noise~~

~~Routing Alternative A would extend approximately 4.8 miles from San Fernando Substation north to Sylmar Substation (Figure 3-1). Approximately 4 miles would be located within the City of Los Angeles, and approximately 0.8 miles within the City of San Fernando. The proposed route (Telecommunications Route #3) would extend east from San Fernando Substation approximately 5.1 miles to a fiber optic connection point within the right-of-way of an existing SCE 220-kV subtransmission line corridor. Approximately 4 miles would be located within the City of Los Angeles, and approximately 1.1 miles within the City of San Fernando.~~

~~In the City of San Fernando, noise from construction of the proposed project would be exempt from the city's noise standards. In the City of Los Angeles, any daytime noise levels of 75 dBA or higher within 500 feet of a residential zone would exceed the city's noise standards. Given that the average maximum noise level from construction activities would be 83 dBA L_{eq},[2] a noise source would be in exceedance of the city's standard for a receptor within 225 feet of the source (Section 4.11, "Noise").~~

~~During construction, approximately 550 sensitive receptors located within the City of Los Angeles would be impacted by noise levels in excess of the city's noise standard along the proposed telecommunications route. Less than 100 sensitive receptors located within the City of Los Angeles would be impacted by construction noise levels in excess of the city's noise standard along the alternative route. Additionally, within the City of Los Angeles, trenching would occur near sensitive receptors along the proposed route but would not occur near sensitive receptors along the alternative route. All of the mitigation measures included in this EIR to reduce noise impacts on sensitive receptors to less than significant levels for the proposed route would also be applicable to Routing Alternative A. The alternative would be environmentally superior for this resource area because fewer sensitive receptors would be impacted by construction noise in excess of City of Los Angeles noise standards.~~

~~Other Resource Areas~~

~~Impacts associated with the alternative route would be similar to the proposed project for all of the following resources areas: aesthetics; agriculture and forestry resources; air quality; biological resources; cultural and paleontological resources; geology, soils, and mineral resources; GHG emissions; hazards and hazardous materials; hydrology and water quality; land use and planning; population and housing; public services and utilities; recreation; transportation and traffic; and for cumulative and growth-inducing impacts. It follows that all of the mitigation measures included in this EIR to reduce significant impacts on these resources areas to less than significant levels would also be applicable to Routing Alternative A. Neither Routing Alternative A nor the proposed project would be environmentally superior with regard to these resource areas.~~

~~[2] The Sound Equivalent Level, or L_{eq}, is used to characterize the average sound energy that occurs during a relatively short period of time, such as an hour.~~

5.2.3 No Project Alternative

This section compares the environmental impacts of the proposed project with those of the No Project Alternative. The No Project Alternative involves the circumstances under which the proposed project does not proceed. Pursuant to CEQA Guidelines Section 15126.6(e), the following qualitative analysis takes into consideration events and actions that would be reasonably expected to occur in the foreseeable future if the proposed project were not approved. In addition, it is assumed that environmental conditions in the proposed project area in October 2010, when the Notice of Preparation of an EIR for the proposed project was circulated for public review, would not be changed because the proposed project would not be constructed. The No Project Alternative would not meet the basic objectives of the proposed project (Chapter 3, “Description of Alternatives”).

5.2.3.1 Environmental Impacts and Mitigation

Air Quality and Greenhouse Gases

Under the No Project Alternative, the applicant would continue to operate and maintain the storage field’s three existing gas turbine–driven compressors in their existing state and as currently permitted. Operational emissions of NO_x, carbon monoxide, GHGs, and other pollutants would be the same as those reported in Section 4.3, “Air Quality,” and Section 4.7, “Greenhouse Gases.” Although air pollutant and GHG emissions from construction of the proposed project would be avoided, long-term impacts on air quality and from GHG emissions due to continued operation of the existing gas turbine–driven compressors would be substantially greater under the No Project Alternative. Therefore, the proposed project would be environmentally superior with regard to air quality and greenhouse gases.

Transportation and Traffic

Under the No Project Alternative, the new guardhouse would not be constructed, and the storage field’s entry road would not be widened. The new guardhouse and road widening are proposed to alleviate truck congestion at the intersection of Tampa Avenue and Sesnon Boulevard within the City of Los Angeles (Section 2.2.4, “Guardhouse and Entry Road Widening”). According to the traffic study (Appendix J), however, the existing Level of Service (LOS) at the intersection of Tampa Avenue and Sesnon Boulevard is “B” during the day and “A” during the night. LOS “A” represents free-flowing traffic at low volumes and LOS “B” represents stable-flowing traffic at low volumes.

The City of Los Angeles has established LOS “C” as an acceptable level of operation for residential and industrial areas (Section 4.15, “Transportation and Traffic”). All other impacts from construction of the proposed project on transportation and traffic would be avoided under the No Project Alternative because none of the components of the proposed project would be constructed. Therefore, it is not anticipated that the No Project Alternative would result in a significant impact with regard to transportation and traffic.

Although construction of the new guardhouse and widening of the entry road to the storage field as part of the proposed project would not reduce an LOS to less than significant levels, it would allow trucks to queue along the widened portion of the entry road rather than along Sesnon Boulevard. For this reason, trucks that could otherwise block traffic would be out of the way, and therefore, the proposed project would be environmentally superior for this resource area.

Other Resource Areas

None of the components of the proposed project would be constructed under the No Project Alternative. It follows that none of the mitigation measures included in this EIR to reduce significant impacts to less than significant levels would apply to the No Project Alternative. Significant impacts from construction and operation of the proposed project would be avoided for coastal California gnatcatcher; other special status plants and animal species; riparian habitat; Significant Ecological Areas; and oak trees. Significant impacts from construction of the proposed project on cultural and paleontological resources; from increased fire risk (hazards); and from noise would also be avoided. Therefore, the No Project Alternative would be environmentally superior in comparison to the proposed project with regard to biological resources; cultural and paleontological resources; noise; and fire risk.

The proposed project is not anticipated to have a significant impact on the following resource areas: aesthetics; agriculture and forestry resources; geology, soils, and mineral resources; hydrology and water quality; land use and planning; population and housing; public services and utilities; and recreation. It follows that no mitigation measures have been included in this EIR to avoid or reduce impacts on these resource areas. Nonetheless, impacts would still be avoided or reduced for each of these resource areas under the No Project Alternative because none of the components of the proposed project would be constructed. Therefore, the No Project Alternative would be environmentally superior in comparison to the proposed project with regard to aesthetics; agriculture and forestry resources; geology, soils, and mineral resources; hydrology and water quality; land use and planning; population and housing; public services and utilities; and recreation.

Cumulative Impacts

Under the No Project Alternative, the applicant would continue to operate and maintain the storage field's three existing gas turbine–driven compressors in their existing state as currently permitted. Air pollutant and GHG emissions from construction of the proposed project would be avoided, but long-term impacts on air quality and from GHG emissions due to continued operation of the existing gas turbine–driven compressors would be substantially greater under the No Project Alternative.

Although long-term cumulative impacts on coastal California gnatcatcher and other biological resources would be avoided under the No Project Alternative, a number of short-term construction impacts on biological resources would be avoided or reduced under this alternative.

Growth-inducing Impacts

~~Although t~~The proposed project is not expected to substantially induce growth (Chapter 6, "Cumulative and Growth-inducing Impacts")~~, the Natural Substation is expandable from 56 to 112 megavolt amperes if needed to accommodate future growth~~. For this reason, ~~the~~ there would be no difference between the No Project Alternative and the proposed project ~~would be environmentally superior~~ with regard to growth-inducing impacts ~~because the Natural Substation would not be constructed~~.

5.3 Environmentally Superior Alternative

The qualitative analysis presented in this chapter focuses on resource areas for which an alternative would either reduce or increase an impact in comparison to the proposed project. Resource~~s~~ areas for which impacts would be similar to the proposed project are briefly listed and then dismissed from further analysis. For selection of the Environmentally Superior Alternative, the following discussion focuses on impacts that would be significant without mitigation. For the proposed project, the following resource areas would have significant impacts that require mitigation to reduce impacts to less than significant levels: air quality; biological resources; cultural and paleontological resources; hazards and hazardous materials; and noise (Table 5-1).

The proposed project would be environmentally superior with regard to air quality in comparison to each of the alternatives evaluated in this EIR. For biological resources; cultural and paleontological resources; hazards and hazardous materials; and noise, the No Project Alternative would be environmentally superior. However, when the Environmentally Superior Alternative is the No Project Alternative, CEQA requires the identification of an Environmentally Superior Alternative among the other alternatives (CEQA Guidelines Section 15126.6). Therefore, the Design Alternative would be environmentally superior with regard to these four resource areas because the analysis presented in this chapter has shown that impacts would be avoided or reduced in comparison to the proposed project (Section 5.2.1.1).

~~With regard to temporary construction noise, Routing Alternative A would be environmentally superior to the proposed project because fewer sensitive receptors would be impacted. During operations, noise impacts would be similar to the proposed project. During construction and operations for all other resource areas, impacts would be similar to those of the propose project. Routing Alternative A would not, however, be environmentally superior to the Design Alternative with regard to temporary construction noise impacts (Section 5.2.1.1).~~

Impacts on cultural and paleontological resources; hazards and hazardous materials; and noise would be short term in that they would only occur during construction of the proposed project. Impacts on biological resources under the proposed project, and impacts on air quality under the Design Alternative would be long term in that they would be permanent (e.g., new electrical structures located on coastal California gnatcatcher critical habitat) or would occur throughout operations (e.g., air pollutant emissions). Under the proposed project, 8 acres of coastal California gnatcatcher critical habitat would be permanently disturbed, while under the Design Alternative, no coastal California gnatcatcher critical habitat would be disturbed.

During operations, ~~local~~onsite emissions of NO_x, carbon monoxide, and other air pollutants under the Design Alternative would be substantially higher than those from the proposed project. Although a quantitative analysis was not performed to compare emissions data, given ~~Within~~ the scope of the qualitative analysis presented in this chapter, the proposed project would be environmentally superior with regard to air quality within the South Coast Air Basin. The proposed project would also be superior with regard to onsite GHG emissions during operations.

Although long-term impacts on coastal California gnatcatcher and other biological resources would be avoided under the Design Alternative, and a number of short-term construction impacts would be avoided or reduced, the alternative's air quality and GHG emissions impacts would be both long-term and widespread, impacting resources in addition to those located in proximity to the components of the Design Alternative. Air quality and GHG impacts would also be cumulatively more considerable than under the proposed project (Section 5.2.1.1). Furthermore, while offsets can be purchased for some air quality impacts, and offsets may be negotiated for GHG impacts, mitigation through the purchase of offsets is indirect. Direct mitigation for air pollutant and GHG emissions can be difficult to implement and, in some cases, cannot sufficiently reduce impacts. Therefore, because the proposed project, during operations, would avoid or reduce long-term impacts from air pollutant emissions and result in a net reduction of GHG emissions in comparison to the Design Alternative, ~~and construction noise from Routing Alternative A would impact fewer sensitive noise receptors,~~the proposed project ~~with Routing Alternative A~~ would be the Environmentally Superior Alternative.

References

CH2M Hill. 2008. Oregon Pipeline Noise Survey and Analysis: Appendix 9E (Report PDX/073440036). Prepared for LNG Development Company, LLC and Oregon Pipeline Company, LLC. October.

Washington International Group. 2007. Environmental Noise Assessment. Prepared for Southern California Gas Company, Aliso Canyon Turbine Replacement Project (Report 28909-001). January 18.

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6.0 Cumulative Impacts and Other CEQA Considerations

This section addresses cumulative impacts and other considerations in accordance with the California Environmental Quality Act (CEQA), including growth-inducing impacts, significant and unavoidable adverse impacts, and significant and irreversible environmental changes, that may occur as a result of the proposed project. Cumulative impacts of the proposed project are analyzed in this section in conjunction with other developments that affect or could affect the proposed project component areas. According to CEQA, a cumulative impact refers to two or more individual effects that are considerable when taken together or that compound or increase other environmental impacts (CEQA Guidelines Section 15355). CEQA requires the cumulative impacts discussion to reflect the likelihood that the impacts would occur and their severity if they did occur, and allows the discussion to contain less detail than must be provided for individual impacts. A cumulative scenario has been developed that identifies and evaluates past, present, and reasonably foreseeable future projects within the cumulative study area (within 5 miles of a component of the proposed project) that would be constructed or commence operation during the timeframe of activity associated with the proposed project.

In addition to cumulative impacts, this section analyzes growth-inducing impacts that may result from the proposed project. Growth-inducing impacts directly or indirectly foster additional development beyond what is already assumed to occur in local and regional land use plans or in projections made by regional planning authorities, irrespective of the proposed project. Significant and unavoidable adverse impacts and significant, irreversible environmental changes, including the consumption of nonrenewable natural resources (e.g., natural gas), are also discussed in this section.

6.1 Cumulative Impacts

6.1.1 Methodology

A list of development projects within the cumulative study area (within 5 miles of a component of the proposed project) was identified and is presented in Table 6-1. The list includes both approved and pending projects that are anticipated to be either under construction or operational by the time of the completion of the proposed project. Because the area within which a cumulative effect can occur varies by resource area, for the purpose of this analysis, the geographic scope also varies according to the resource being evaluated. For example, traffic and noise impacts tend to be localized while air quality and biological resources impacts are typically widespread. Information pertaining to past, present, and reasonably foreseeable future projects was obtained from the Planning Department and Division websites of the County of Los Angeles Department of Regional Planning, the City of Los Angeles, the City of Santa Clarita, Ventura County, and the City of Simi Valley. Information on cumulative projects was also obtained from the California Public Utilities Commission, California Department of Transportation, the California Office of Planning and Research (CEQANet Database); the U.S. Environmental Protection Agency, and Southern California Edison. Figure 6-1 depicts the location of each project. Each location is labeled with a number that correspond to those presented in Table 6-1.

This table does not include all projects that would contribute to cumulative impacts along with the proposed project; rather, it includes a number of concurrent projects in the area to demonstrate the scope and nature of development in Los Angeles~~Riverside~~ County.

Table 6-1 Reasonably Foreseeable Future Projects within Five Miles of the Proposed Project

Project Number	Project Name/Date Location	Description of Project	Project Location	Environmental Review and Construction Schedule
County of Los Angeles				
A1	Stevenson Ranch, CA; Tract Number 52796	Residential development project of 102 units on 230 acres.	West of I-5 off of Pico Canyon Road	Not yet approved. Time extension until May 19, 2011.
A2	Lyons Canyon Ranch Residential Development; Tract Number 53653	Residential development on 235 acres. Includes re-zoning of 9.3 acres from Heavy Agriculture to Commercial-Development Program. Includes senior citizen housing, hillside development, development within an SEA, and oak tree permit to remove 162 oak trees and encroach into the protected zone of 52 oak trees.	Unincorporated area near Santa Clarita. West of I-5 and Old Road between Calgrove Boulevard and Sagecrest.	Final EIR certified August 2008; conditions of approval drafted August 2009. Not yet constructed.
A3	Skyline Ranch Residential Development; Tract Number 60922	Residential development on a 2,173-acre site; project would be developed on 622 acres. Project includes 1,260 residential lots, an 11-acre elementary school site, park areas, and open space.	Unincorporated area near Santa Clarita. West of Sierra Highway, south of Vasquez Canyon Road, and north of the City of Santa Clarita, within the Sand Canyon Zoned District.	Project approved December 15, 2010.
A4	Landmark Village Residential Development; Tract Number 53108	Residential development including 1,444 residential dwelling units (308 single-family units, 1,136 multifamily units), 1 million square feet of mixed-use/commercial uses, elementary school, fire station, community park, and trails and recreational facilities.	Unincorporated area near Santa Clarita. Cross streets: Chiquita Canyon Road, Commerce Center Drive, and Highway 126.	Revised Final EIR issued September 2011 (LA County Planning 2011).
A5	Mission Village Development; Tract Number 61105	Residential/mixed-use development on approximately 1,855 acres. Includes 4,055 residential units, 1.5 million square feet of mixed-use commercial uses, elementary school, community park and recreation areas, library, fire station, bus transfer station, a 16-kV SCE substation, underground utility corridor, open space and trails, and extension of an existing roadway.	Within the Newhall Ranch Specific Plan Area. South of SR-126, west of I-5 and Six Flags Magic Mountain Theme Park.	Final EIR published May 2011 and project approved for development October 2011. Not yet under construction.

Table 6-1 Reasonably Foreseeable Future Projects within Five Miles of the Proposed Project

Project Number	Project Name/Date Location	Description of Project	Project Location	Environmental Review and Construction Schedule
A6	Entrada Project; Tract Number 53295	Residential/mixed-use development on approximately 515 acres. Includes 1,640 residential units, 726,000 square feet of commercial development, elementary school, public facilities, a park, two private recreation centers, and open space areas.	East of the boundary of the Newhall Ranch Specific Plan Area and Mission Village development. West of I-5 and the Old Road, south of Six Flags Magic Mountain Theme Park.	Notice of Preparation of an EIR circulated July 2010. Environmental assessment in process, not yet approved.
A7	Sunshine Canyon Landfill Expansion Project and SCE Subtransmission Line Relocation ~~Projects~~	The landfill operates as a Joint City/County Landfill as of January 2009 after approval of the Sunshine Canyon Landfill Expansion project. The landfill expansion requires that SCE's existing 66-kV subtransmission line be relocated from within the landfill to a location along the landfill's outer perimeter within the County of Los Angeles.	The 1,036-acre landfill is located approximately 2 miles east of the Aliso Canyon Natural Gas Storage Field.	Expansion of landfill approved in 2009 (Cipley 2011). SCE Permit to Construct ~~CPUC~~ application for relocation of 66-kV subtransmission line is anticipated to be filed at the CPUC in fall 2012.~~in process.~~
A8	SCE's Antelope–Pardee 500-kV Transmission Line Project (CPUC Application No. A.04-12-007)	Construction of a new 25.6-mile 500-kV transmission line. Existing 12-kV, 66-kV, and 500-kV facilities (e.g., towers, conductors, and associated hardware) to be relocated or removed.	Would extend from SCE's Antelope Substation (City of Lancaster) to the Pardee Substation (City of Santa Clarita), and traverse the Angeles National Forest.	Construction began early 2008 and is expected to complete summer 2009.
A9	Gavin Distribution Line Extension Project	SCE's 16-kV Gavin Distribution Line currently provides electrical power to the Aliso Canyon Natural Gas Storage Field. The project would extend the 16-kV line east to west within the northern half of the storage field. The alignment of the existing line would not be impacted.	The existing line crosses from the northeast corner of the storage field southwest toward the Aliso Canyon Plant Station site.	SCE would complete the Gavin Distribution Line Extension Project separate from (and potentially prior to) starting construction of the proposed Natural Substation and subject to SoCalGas granting SCE an easement pursuant to authorization under CPUC Code Section 851.
A10	Sunshine Gas Producers Renewable Energy Project	Sunshine Gas Producers, LLC proposes to develop and operate a gas turbine electrical generation facility at Sunshine Canyon Landfill.	The proposed project would be located within the boundaries of a northern area of the landfill within unincorporated Los Angeles County.	Final~~Draft~~ Subsequent EIR ~~issued~~certified April 2012~~May 2011~~ by the South Coast Air Quality Management District. Project under construction (CPUC 2013).
NA	Santa Clarita Valley Area Plan Update	Update of Santa Clarita Valley Area Plan by the City of Santa Clarita and the County of Los Angeles (joint planning effort) to address future growth in the Santa Clarita Valley.	Santa Clarita Valley area, which is bounded on the west by the Ventura County line, north by the Los Padres and Angeles National Forest areas, east by the Angeles	Preliminary draft issued October 2008 (LA County Planning 2011).

Table 6-1 Reasonably Foreseeable Future Projects within Five Miles of the Proposed Project

Project Number	Project Name/Date Location	Description of Project	Project Location	Environmental Review and Construction Schedule
			National Forest, and south by a ridgeline that separates the Santa Clarita and San Fernando Valleys.	
NA	General Plan Update Program	Update of Los Angeles County 2035 General Plan to address anticipated population growth, housing, and jobs within unincorporated areas.	County of Los Angeles.	Draft EIR expected Summer 2012 (LA County Planning 2011).
NA	Zoning Ordinance Update Program	Comprehensive update of the Planning and Zoning Ordinance (Title 22 of the County Code) to respond to present and future growth and for consistency with the General Plan.	County of Los Angeles.	Regional Planning Commission Hearing held on in March 2011 (LA County Planning 2011).
City of Santa Clarita				
B1	South Santa Clarita Sphere of Influence Amendment, Annexation, and Pre-zone (Master Case No. 11-116)	Pre-zoning of approximately 595 acres currently located in the unincorporated portion of Los Angeles County as Residential Estate (0 to 0.5 du/ac) and Residential Moderate (0 to 11 du/ac) consistent with the City of Santa Clarita General Plan.	County of Los Angeles on the southern edge of the City of Santa Clarita north of SR-14 and I-5 interchange. Southern project boundary follows the natural ridgeline of the San Gabriel and Santa Susana Mountains (natural division between the City of Santa Clarita and the City of Los Angeles).	Approved October 25, 2011 (City of Santa Clarita Resolution 11-80). No construction is currently associated with this project. Once sphere of influence, annexation, and pre-zoning are approved, proposed residential developments would be submitted for consideration at a future date.
B2	Vista Canyon Ancillary Annexation Area (Master Case No. 07-127)	Annexation and mixed-use (2,257-acre) development: 1,324 dwelling units (70 single-family detached, 1,254 multi-family attached), 700,000 square feet of commercial office, 164,000 square feet of retail, a hotel, and related infrastructure (e.g., roadways; water reclamation plant; parks and trails). Includes a segment of the Santa Clara River.	Unincorporated Los Angeles County, adjacent to City of Santa Clarita, in Santa Clarita Valley Planning Area, south of SR-14.	Approved February 15, 2011 (City of Santa Clarita Resolution P11-03). Project would be completed in multiple (4) phases, with initial phase occupied in 2012 and last phase completed in 2015.
B3	Elsmere Canyon Annexation (Master Case No. 10-150)	Annexation of Elsmere Canyon (806.52 acres) into the City of Santa Clarita with the intent of preserving the land as open space. No construction is associated with this project.	Southeast of SR-14, south of Whitney Canyon, west of the Angeles National Forest, and north of the Los Angeles City sphere of influence in the Elsmere Canyon area in the southern portion of the Santa Clarita Valley.	Negative Declaration issued February 2011; city ordinance for annexation proposed but not yet adopted (City of Santa Clarita Planning Division 2011). No construction is associated with this project.

Table 6-1 Reasonably Foreseeable Future Projects within Five Miles of the Proposed Project

Project Number	Project Name/Date Location	Description of Project	Project Location	Environmental Review and Construction Schedule
B4	Gate King Industrial Park	Industrial/commercial project on 584 acres, including 4.5 million square feet (170.1 acres) industrial/commercial development, including film studios; 64.3 acres of rights-of-way (SCE, MTA, roads); and 349.6 acres comprising slopes, trails, large oak groves, and open space.	West of the Antelope Valley Freeway (SR-14), bounded by the Sierra Highway to the east and San Fernando Road to the north. Undeveloped mountainous terrain is located to the south.	Final EIR issued June 2003 and Draft Additional Analysis Report to the Final EIR completed in March 2006. Construction has not yet commenced; litigation in process (Barragan 2011).
B5	Henry Mayo Newhall Memorial Hospital Expansion (Valencia Community)	Expansion of existing HMNMH medical campus on 29.6 acres includes the construction of a three-story, 60,000-square-foot medical office building; three-level plus basement; 278-space parking structure; five-level plus basement; 579-space parking structure.	North of intersection of McBean Parkway and Orchard Village Road, east of I-5, at the existing HMNMH medical campus located at 23845 McBean Parkway.	Project approved November 2010. Construction of Phase 1 in process (Barragan 2011). Build out of Phases 2 and 3 expected to occur during the 25-year master plan timeframe (City of Santa Clarita 2006).
B6	Golden Valley Road Bridge	1,100-foot-long bridge over the Santa Clara River to connect Newhall Ranch Road and Soledad Canyon Road.	East of the recently extended Newhall Ranch Road and north of Soledad Canyon.	Caltrans prepared an EA in March 2008. Currently under construction. Operational as of March 2010 (City Briefs 2011).
B7	Keystone Residential Development	The development would take place on a 246-acre site and include 648 residential units, an 8.7-acre park, and a 1.6-acre park, a trail system, and a 30,476-square-foot community/fitness YMCA center.	Northern Santa Clarita. Bordered on the east at the westerly extension of Ermine Street and northwest by existing residential neighborhoods. The Santa Clara River would be located to the south.	Final EIR issued March 2006. Construction has not yet commenced due to market conditions (Barragan 2011).
B8	Riverpark (Panhandle) Residential Development	Residential development on a 695.4-acre site including 1,183 residential units, 40,000 square feet for commercial uses, a trail system, and a 29-acre park along the Santa Clara River.	Central Santa Clarita and at the eastern terminus of Newhall Ranch Road, east of Bouquet Canyon Road between the Castaic Lake Water Agency property and Soledad Canyon Road.	Final EIR certified May 2005; project approved June 2005. Construction in process but slowed due to market conditions (Barragan 2011).
B9	Soledad Village Residential Development	Residential development on a 30-acre site; includes 437 residential units, an 8,000-square-foot retail building, and a 1,200-square-foot recreation building.	Central Santa Clarita along the north side of Soledad Canyon Road adjacent to the Santa Clara River, between Bouquet Canyon Road and Golden Valley Road.	Draft EIR issued November 2005. Construction has not yet commenced due to market conditions (Barragan 2011).

Table 6-1 Reasonably Foreseeable Future Projects within Five Miles of the Proposed Project

Project Number	Project Name/Date Location	Description of Project	Project Location	Environmental Review and Construction Schedule
City of San Fernando				
C1	City Affordable Housing Residential Development	Twenty residential units would be constructed as part of an affordable housing project on a 15,000-square-foot site owned by the City of San Fernando.	1422 San Fernando Road.	Approved for construction in 2011. Construction anticipated to start early 2012 and end by January 2013 (Ramirez 2011).
C2	Other Affordable Housing Residential Developments	Approximately 95 residential units would be constructed as part of affordable housing projects.	112 Alexander Street, 208 Jessie Street, and 131 Park Avenue.	Approved for construction in 2011. Construction anticipated to start early 2012 and end by January 2013 (Ramirez 2011).
C3	Commercial Developments	A 15,000 to 20,000-square-foot commercial facility and a 100,000-square-foot shopping center would be constructed.	603 San Fernando Road and 753 San Fernando Road.	Approved for construction in 2011. Construction anticipated to start early 2012 and end by February 2013 (Ramirez 2011).
City of Los Angeles				
D1	Wireless Telecommunications Facility (Case No. ENV-2009-3841-CE)	Installation of a new wireless telecommunications facility consisting of 12 antennas mounted on a 55-foot structure.	12211 North High View Ridge (Lot 77, Tract 41627) along the southern border of the storage field.	Conditional Use approved December 2007; categorical exemption from CEQA applied for in November 2009. Public hearing held March 2010.
D2	Residential / Condominium Development (Case No. CPC-2007-3140-GPA-ZC-ZV)	Residential condominium development of 81 units.	16410 North Nicklaus Drive, Sylmar.	Development Agreement approved with conditions February 2008 (City of Los Angeles 2011b).
D3	Hidden Creeks Estates Project (Case No. ENV-2005-6657-EIR)	Residential development on a 259-acre site of 188 single-family residences, associated roadways and infrastructure, a 15.5-acre public park, and a new 15.8-acre equestrian boarding facility.	12100 Browns Canyon Road (to be annexed into the city). Immediately west of Porter Ranch community in northwestern Los Angeles County at the foothills of the Santa Susana Mountains.	Final EIR issued September 2011.
D4	Andora Avenue TTM Project (Case No. ENV-1986-0062-EIR)	Re-zoning of agricultural property residential use; subdivision of property into 48 lots for 45 single-family and three open space lots.	9503 Andora Avenue (Chatsworth–Porter Ranch Community Plan Area)	Subsequent Draft EIR issued February 2010 (City of Los Angeles 2011b). No construction is associated with this project, but the zone change indicates that the area will be built out in the future with residential uses.

Table 6-1 Reasonably Foreseeable Future Projects within Five Miles of the Proposed Project

Project Number	Project Name/Date Location	Description of Project	Project Location	Environmental Review and Construction Schedule
D5	Panorama Place Project (Case No. ENV-2006-2133-EIR)	Mixed-use project on 8.7-acre site including 504 residential condominium units with associated amenities and approximately 452,400 square feet of retail shopping uses.	14665–14697 West Roscoe Boulevard, within the Panorama City community.	Draft EIR issued September 2008. Final EIR in process (City of Los Angeles 2011b).
D6	New Paradise Church of God and Christ (Case No. ENV-2003-6669-EIR)	New church on a 54,506-square-foot parcel. Church would be 11,000 square feet, with 425 congregants and 85 parking spaces.	13187 North Fellows Avenue (Sylmar).	DEIR issued August 2007; Final EIR on hold (City of Los Angeles 2011b).
D7	Residential Condominium Development (Case No. ENV-2011-962-ND)	Residential condominium development (81 units).	21511 W Roscoe Blvd (Chatsworth–Porter Ranch area).	Approved with conditions August 2011 (City of Los Angeles 2011b).
D8	Residential Development (Porter Ranch)	Residential development (367 dwelling units) pursuant to the Porter Ranch land use / transportation specific plan.	11401 North Porter Ranch Drive (Chatsworth–Porter Ranch area).	Application submitted 5/23/2011.
D9	Residential Development (Northridge)	Residential development (47 dwelling units), including zone change and subdivision tract map.	18432 West Halsted Street (Northridge).	Application submitted 8/17/2011.
D10	Transitional Living Facility	A 90-bed transitional housing facility on two lots.	8740–8756 North Canby Avenue (Northridge).	Application submitted 9/6/2011.
D11	Elderly Care Facility	Construction of two four-story elderly care facilities comprising a 98-unit and a 58-unit building (156 total units) for senor independent living and assisted care housing.	13340 West Hubbard Street (Sylmar).	Application submitted 9/22/2011.
NA	Solar Interim Control Ordinance (Case No. CPC-2011-958-ICO)	Interim Control Ordinance temporarily prohibiting the issuance of permits for the installation of ground-mounted solar systems within very high fire hazard severity zones.	Citywide.	Disapproval recommended at June 2011 City Planning Commission Special Meeting (City of Los Angeles 2011b).
NA	Solar Zoning Ordinance (Case No. CPC 2011-1853-CA)	Would modify sections of the Los Angeles Municipal Code to provide exceptions for structures that solely support solar energy systems such as reductions in parking stall length and width, modified height exceptions, and other technical corrections.	Citywide.	Adopted October 2011 (City of Los Angeles 2011b).

Table 6-1 Reasonably Foreseeable Future Projects within Five Miles of the Proposed Project

Project Number	Project Name/Date Location	Description of Project	Project Location	Environmental Review and Construction Schedule
NA	The City of Los Angeles Department of Water and Power's Barren Ridge Renewable Transmission Project	Construction of a 230-kV transmission line from the new Barren Ridge Switching Station to Haskell Canyon on double circuit structures; addition of a 230-kV circuit on existing double circuit structures from Haskell Canyon to the Castaic Power Plant; upgrading of the existing Owens Gorge–Rinaldi 230-kV Transmission Line with larger capacity conductors between the Barren Ridge Switching Station and Rinaldi Substation; and construction of a new electrical switching station in Haskell Canyon near the southern boundary of the Angeles National Forest. Study area is approximately 1,280 square miles.	Within northwestern Los Angeles County and southern Kern County. Spans a distance of approximately 75 miles from the Mojave Desert south to the San Fernando Valley. Northern boundary is the southern slopes of the Tehachapi Mountains, eastern boundary parallels SR-14, southern boundary generally parallels the Santa Clara River, and western boundary parallels I-5.	Draft EIS/EIR issued August 2011. Construction is expected to begin late 2012 and end early 2015 (BLM 2011).
NA	Granada Hills–Knollwood New Community Plan	New (updated) community plan to allocate land for the range of uses that the community will need through 2030, including land for housing, jobs, and recreation.	Granada Hills–Knollwood Community Planning Area: approximately 9,651 acres about 21 miles north of downtown Los Angeles, bounded by the unincorporated County of Los Angeles on the northwest, Sylmar Community Plan Area (City of Los Angeles) on the northeast, Northridge Community Plan Area (City of Los Angeles) on the southwest, and Mission Hills–Panorama City–North Hills Community Plan Area on the southeast.	Notice of Preparation of an EIR issued February 13, 2008. Draft EIR not yet available.
NA	Sylmar New Community Plan	New (updated) community plan to allocate land for the range of uses that the community will need through 2030, including land for housing, jobs, and recreation.	The Sylmar Community Plan Area contains approximately 7,990 acres and is bounded by the city boundary on the north and east, the City of San Fernando on the south and southwest, and I-405 and 1-5 Freeways on the west.	Workshops held in 2008. Notice of Preparation for an EIR not yet available.

Table 6-1 Reasonably Foreseeable Future Projects within Five Miles of the Proposed Project

Project Number	Project Name/Date Location	Description of Project	Project Location	Environmental Review and Construction Schedule
City of Simi Valley				
E1	Archangel Michael Coptic Orthodox Church	Construct a 500-seat sanctuary, multi-purpose room, day care center, guest house, and convert existing church to senior center.	1122 Appleton Road.	Currently in Plan Check.
E2	Centre Court	Conversion of a soccer field in an existing retail center to a one-story, 10,600-square-foot retail building. Includes proposal to change the General Plan designation from Commercial Recreation to General Commercial and to amend Royal Madera Specific Plan.	1208-1390 Madera Road.	Application determined complete; review of project underway.
E3	Church of God; CUP-S-0687	Enlarge an existing church by approximately 10,000 square feet.	4450 Barnard Street.	Approved, not yet under construction.
E4	City Hall Expansion	Two additions totaling 9,425 square feet to the existing City Hall building.	2929 Tapo Canyon Road.	Currently in Plan Check.
E5	Guardian Street Office Building	Construct a 54,311-square-foot three-story office building and parking lot.	4180 Guardian Street.	Approved, not yet under construction.
E6	Hummingbird Nest Ranch	Proposal for a commercial resort with a conference center, hotel and spa. Includes proposal for a General Plan Amendment to change land use from Estate/Open Space to Resort Commercial (New Category) and a Specific Plan to create a Commercial Resort.	2940 Kuehner Drive.	Application determined incomplete; applicant will submit additional information.
E7	Manios SVTC Retail Development	Construct a 14,700-square-foot commercial retail center.	1717 Simi Town Center Way.	Approved and under construction.
E8	Seventh Day Adventist Church	Church, school, and retirement facility.	North of First Street and west of Falcon Street.	Application determined incomplete; applicant will submit additional information.
E9	Simi Valley Hospital ER Expansion	Construct a 17,100-square-foot addition to the hospital.	2975 Sycamore Drive, Simi Valley Hospital.	Approved, not yet under construction.
E-10	Sinaloa Park	Community park facility with miniature golf and associated uses.	980 Madera Road.	Currently in Plan Check.
E-11	Ventura County Fire Station #43	Construct a 12,000-square-foot fire station.	5850 East Los Angeles Avenue.	Approved and under construction.
E-12	Ventura County Fire Station #47	Construct a 7,173-square-foot fire station.	Erringer Road south of Falcon Street.	Approved and under construction.

Table 6-1 Reasonably Foreseeable Future Projects within Five Miles of the Proposed Project

Project Number	Project Name/Date Location	Description of Project	Project Location	Environmental Review and Construction Schedule
E-13	MOD#01 to Viking Home Sales	Sales display of manufactured homes.	2982 East Los Angeles Avenue.	Approved and under construction.
E-14	William Morris Chevrolet	Construct a recreational vehicle storage and sales lot.	1001 Cochran Street.	Application determined incomplete; applicant will submit additional information.
E-15	APA Industries warehouse project	Covered loading platform and 16,612-square-foot warehouse building addition to an existing industrial building and related improvements. Includes property line adjustment.	2130 Ward Avenue.	Approved and under construction.
E-16	Simi Valley Auto & Recreation Vehicle Storage	Construct a Recreational Vehicle storage facility with 84 spaces.	Southwest corner of Alviso Street and Callahan Avenue.	Approved, not yet under construction.
E-17	Arroyo Simi Greenway	Construct a recreational trail and associated improvements along the Arroyo Simi Greenway. Includes re-zoning request to change the Specific Plan Overlay zoning designation to the properties within the Arroyo Simi Greenway project area, and Specific Plan.	Along the Arroyo Simi, from the west end of the city to the east end.	Application determined complete; review of project underway.
E-18	Cerberus (formerly Casden) project	Construct 266 townhomes and condominiums. Includes subdivision of 16.28 acres into 266 lots for residential development.	Southeast corner of Los Angeles Avenue and Madera Road.	Approved, not yet under construction.
E-19	Cochran Apartments	Construct a 36-unit apartment complex with nine affordable housing units. Includes amendment of Kadota Fig Specific Plan to remove the requirement for senior housing.	4862 Cochran Street.	Application determined incomplete; applicant will submit additional information.
E-20	Kuehner Townhomes	Construct 66 condominiums with seven affordable housing units. Includes subdivision of 10.19 acres into 66 lots for residential development.	Northwest corner of Kuehner Drive and 118 Freeway.	Approved, not yet under construction.
E-21	Los Arboles residential development	Construct 43 single-family residences.	Southeast corner of Royal Avenue and Corto Street.	Approved and under construction.
E-22	Madison Gardens Assisted Living Center	Assisted living center.	3008 North School Street.	Approved, not yet under construction.

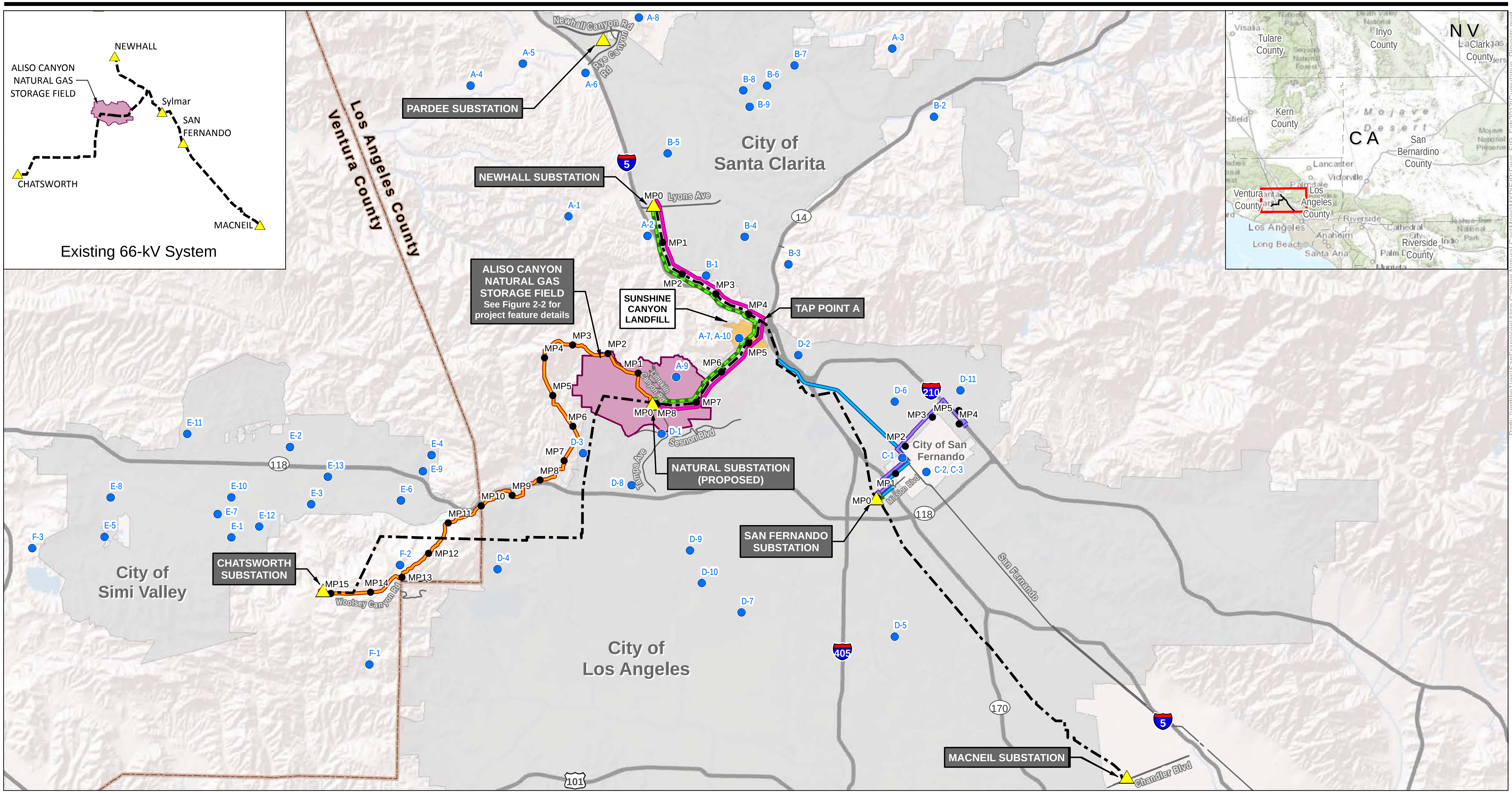
Table 6-1 Reasonably Foreseeable Future Projects within Five Miles of the Proposed Project

Project Number	Project Name/Date Location	Description of Project	Project Location	Environmental Review and Construction Schedule
E-23	North Canyon Ranch residential development	Construct 122 single-family residences. Includes subdivision of approximately 125 lots for residential development; pre-zoning of site to Residential Medium (RM) and Open Space (OS); and amendment of General Plan land use designation to Open Space and Medium Residential.	North side of Falcon Street, 200 feet west of Erringer Road.	Application determined incomplete; applicant will submit additional information.
E-24	River Run residential development	Construct 40 townhomes. Includes subdivision of 2.31 acres into 40 units for residential development.	1748 Heywood Street.	Application determined complete; review of project underway.
E-25	Runkle Canyon residential development	Mixed housing development, consisting of 298 single-family residences, 25 custom single-family homes, 138 senior dwelling units, a senior recreational center, and related improvements. Includes a subdivision for residential development.	Southerly terminus of Sequoia Avenue.	Application determined incomplete; applicant will submit additional information.
E-26	Simi-37 residential development	Construct 37 multi-family townhomes. Includes subdivision.	Southeast corner of Los Angeles Avenue and Simi Village Drive.	Approved, not yet under construction.
E-27	Spanish Villas at the Park	Construct 38 condominiums with four affordable units.	4871 East Los Angeles Avenue.	Currently in Plan Check.
E-28	Tapo Street Market Place residential development	Construct up to 72 townhomes, 36 senior apartments, and a commercial building.	2225 and 2245 Tapo Street.	Approved and under construction.
E-29	Watt's Water Stone residential development	Construct 48 townhomes.	South of Heywood Street, east of Duncan Street.	Approved and under construction.
Ventura County				
F1	Bell Canyon Community Service District and Bell Canyon Association Public Service/Utility Facility; Case No. LU09-0013	Approximately 5,000-square-foot public service/utility facility.	27 East. Baymare Road, Bell Canyon Community.	Mitigated Negative Declaration issued July 2011. Public hearing to occur prior to project approval (Linder 2011).
F2	Boeing Santa Susana Field Laboratory	Site of a former Boeing Field Laboratory where past operations resulted in chemical and radiological contamination. Soil, surface water, and groundwater investigation and cleanup have been ongoing at the site for decades.	A 2,850-acre site in the Simi Hills area of eastern Ventura County south of Sage Ranch Park, which is located at 1 Black Canyon Rd, Simi Valley, CA.	Public Comments sought for Draft Site-Wide Groundwater Remedial Investigation Report July 2011 (DTSC 2011).

Table 6-1 Reasonably Foreseeable Future Projects within Five Miles of the Proposed Project

Project Number	Project Name/Date Location	Description of Project	Project Location	Environmental Review and Construction Schedule
F3	SCE Presidential Substation and Subtransmission Lines; CPUC Application A.08-12-023	Construction of a new substation with two 28 MVA 66/16-kV transformers on an approximately 4-acre site and 3.5-miles of 66-kV subtransmission lines.	Madera Road north of Wood Ranch Reservoir in unincorporated Ventura County and the City of Thousand Oaks.	Draft EIR issued September 2011. Project under CPUC review through 2012. ~~Construction anticipated to start Spring 2012 and last up to 20 months (CPUC 2011).~~

Key:
CEQA = California Environmental Quality Act
CPUC = California Public Utilities Commission
du/ac = dwelling unit per acre
EA = Environmental Assessment
EIR = Environmental Impact Report
EIS = Environmental Impact Statement
HMNMH = Henry Mayo Newhall Memorial Hospital
I-5 = Interstate 5
kV = kilovolt
MTA = Metropolitan Transit Authority
MVA = megavolt ampere
NA = Not available
SCE = Southern California Edison
SEA = Significant Ecological Area
SR = State Route



- Cumulative Project
- Milepost (MP)
- 66-kV Subtransmission Line Reconductoring Route (Proposed)
- Telecommunications Route #1
- Telecommunications Route #2
- Telecommunications Route #3
- Telecommunications Route #4
- Existing 66-kV Sub Transmission Line

0 1 2 4 Miles

Figure 6-1

Cumulative Projects

Note: Where subtransmission lines and telecommunications routes are parallel, they are shown offset for graphical purposes only. The lines would be co-located overhead on the same structures.

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6.1.2 Cumulative Scenario

Los Angeles County, the City of Los Angeles, the City of San Fernando, the City of Santa Clarita, the City of Simi Valley, and Ventura County have experienced a dynamic shift over the past 50 years toward greater urbanization. Open spaces, natural areas, and farmlands have been developed with residential neighborhoods, commercial spaces, public facilities, and public works infrastructure such as sanitary sewers and electrical transmission lines, as well as a landfills, highways, and roads. Other formerly industrial and commercial areas within existing cities and urban districts remain to be developed, or redeveloped with new uses. Open spaces, natural areas, and ridgelines are often protected from urban encroachment, and development projects proposed for such areas are subject to rigorous regulatory and environmental review, such as that undertaken by Los Angeles County’s Significant Ecological Areas Technical Advisory Committee.

Residential Projects

A number of residential development projects have been proposed within 5 miles of the proposed project component areas in the City of Santa Clarita, City of Los Angeles, and City of Simi Valley. These projects are in various stages of development; some have been partially constructed, and some may be constructed simultaneously with the proposed project, depending upon when permits are approved. All residential developments would have the same type of impacts, such as temporary and permanent increases in traffic, air emissions, and changes in the visual landscape.

Places of Worship

In addition to existing and proposed residential developments, numerous places of worship are distributed throughout the area of the proposed project components. In general, places of worship would not contribute to cumulative impacts during construction of the proposed project components because the majority of worship services are held on weekends when no construction of proposed project components would take place. Other church services or events may occur during the weekdays, but would most likely occur in the evenings and would not contribute substantially to cumulative effects.

Commercial and Retail Developments

The proposed project components are located both within and adjacent to densely populated urban and suburban areas in the City of Los Angeles and the City of Santa Clarita, and numerous commercial and retail developments are also distributed throughout the proposed project vicinity. Commercial developments—including a Walmart Supercenter, big box retail outlets, and a Whole Foods Supermarket—are located north of Highway 118 along Rinaldi Street near the intersections of Porter Ranch Drive and Tampa Avenue. In the City of Santa Clarita, multiple commercial uses are distributed along Lyons Avenue, which intersects the 66-kilovolt (kV) subtransmission line reconductoring route.

16-kV Gavin Distribution Line Extension Project

SCE’s 16-kV Gavin Distribution Line currently provides electrical power to the Aliso Canyon Natural Gas Storage Field (storage field). SCE plans to extend the existing distribution line as part of the proposed 16-kV Gavin Distribution Line Extension Project, which is independent of the proposed Aliso Canyon Turbine Replacement Project. The existing Gavin Distribution Line crosses from the northeast corner of the storage field southwest toward the Aliso Canyon Plant Station site. The line originates at SCE’s Newhall Substation, but follows a separate alignment from the existing 66-kV subtransmission line that crosses east to west across the southern half of the storage field (Figure 6-1).

For the Gavin Distribution Line Extension Project, new support structures and electric conductor would be installed from east to west within the northern half of the storage field. The project would not impact the alignment of the existing 16-kV Gavin Distribution Line. SCE expects that the Gavin Distribution Line Extension Project would be completed prior to starting construction of the proposed Natural Substation. Construction of the Gavin Distribution Line Extension Project would be dependent on obtaining additional right-of-way (ROW) within the storage field property.

According to California Public Utilities Commission (CPUC) General Order 131-D, the construction and operation of electric distribution line facilities under 50-kV (e.g., SCE's Gavin Distribution Line Extension Project) does not require the issuance of a Certificate of Public Convenience and Necessity or Permit to Construct from the CPUC nor discretionary permits or approvals by local governments. However, to ensure safety and compliance with local building standards, the utility must first communicate with and obtain the input of local authorities regarding land use matters and obtain any non-discretionary ministerial permits required by local jurisdictions for construction of the extended line.

Sunshine Canyon Landfill

An expansion of the Sunshine Canyon Landfill, which is located approximately 1 mile east of the storage field (Figure 6-1), was approved in 2009 (Cipley 2011). The landfill expansion requires the relocation of approximately 4,200 feet of SCE's Chatsworth–MacNeil–Newhall–San Fernando 66-kV Subtransmission Line, referred to as Segment C in this EIR (Figure 2-6). The 66-kV subtransmission line traverses the landfill from northeast to southwest adjacent to the boundary between the City of Los Angeles and the County of Los Angeles. The Sunshine Canyon Landfill Expansion Project EIR stated that expansion of the landfill would require relocation of the subtransmission line, but did not specify the route for the relocated line. The subtransmission line would be relocated from the current alignment within the landfill to a location that runs along the outer perimeter of the disturbed area of the landfill within unincorporated Los Angeles County.

The proposed subtransmission line relocation is under evaluation ~~would be evaluated~~ pursuant to CEQA by the CPUC separately from the Aliso Canyon Turbine Replacement Project EIR, under a separate application that SCE filed ~~would file~~ with the CPUC (application number A.12-11-007). SCE has stated that if the relocation project does not occur or if it occurs after construction of the Aliso Canyon Turbine Replacement Project, reconductoring and structure replacement for Segment C as part of the proposed project would follow the existing alignment across the landfill (SoCalGas 2011).

In addition, construction of the Sunshine Gas Producers Renewable Energy Project at the landfill began Spring 2013. This project includes ~~Sunshine Gas Producers, LLC proposes to develop and operate~~ a gas turbine electrical generation facility, and the relocation of a portion of the subtransmission line that crosses the landfill, as approved by the CPUC (CPUC 2012), to connect to the generation facility to SCE's subtransmission line. ~~at Sunshine Canyon Landfill.~~ Landfill gas would be combusted as fuel to generate electricity rather than being flared (combusted without harnessing the energy content of the gas). The ~~proposed~~ Sunshine Gas Producers Renewable Energy Project will~~would~~ be located within the boundaries of a northern area of the landfill within unincorporated Los Angeles County. A ~~Draft~~ Final Subsequent EIR for the project was ~~issued~~ certified in April 2012 ~~May 2011~~ by the South Coast Air Quality Management District (SCAQMD 2012).

6.1.3 Resource Areas

6.1.3.1 Aesthetics

Scope and Geographic Extent

The scope for considering cumulative impacts to aesthetics includes any project that would create impacts similar to those associated with the proposed project, that is, any project that would affect existing visual character or quality in the vicinity of the proposed project components. The geographic extent for considering cumulative impacts to aesthetics includes all projects within 2 miles of the proposed project components, which is a conservative estimate of the likely maximum distance from which project components would be visible.

Existing Cumulative Conditions

The landscapes in the project component areas are largely located in canyons, hills, and mountain ranges that provide an open space greenbelt, and generally have high aesthetic quality. The area of the proposed storage field project components is generally industrial, surrounded by open space and ridgelines.

No designated scenic vistas are located within the vicinity of the proposed project components; however, the General Plans for Los Angeles County and the Cities of Los Angeles and Santa Clarita indicate that a number of vistas that may be characterized as scenic occur in the vicinity of the proposed project components due to the presence of large open space areas and ridgelines, both of which are noted for their scenic and aesthetic values. Sesnon Boulevard and Interstate-5 have scenic value, as identified in local planning documents (City of Los Angeles, City of Santa Clarita, and Los Angeles County General Plans) and are similar in character to state scenic highways. Visual receptors in the vicinity of the proposed project components are considered to have low to high levels of both exposure and sensitivity.

Cumulative Impact Analysis

Reasonably foreseeable future projects within the cumulative scenario that are within the geographic extent for cumulative impacts related to aesthetics include residential, commercial, industrial, and infrastructure projects, including the Sunshine Canyon Landfill Expansion and Relocation of SCE 66-kV Subtransmission Line, the Hidden Creeks Estates residential development project, residential development within the Porter Ranch specific plan area, and the Gate King Industrial Park. The Gate King Industrial Park would result in a significant, unavoidable impact on aesthetics related to development on ridgelines, and would be within the vicinity of the 66-kV subtransmission line project component area.

The proposed project components that would be located in the storage field are more than 0.5 miles away from the nearest sensitive viewer and are otherwise buffered or obscured by topography and vegetation. The 66-kV subtransmission line reconductoring and telecommunications cable installation project components would be installed within ROWs with existing uses that would not differ substantially from the proposed uses. Construction impacts would be temporary.

In general, the proposed project components would result in a minor incremental effect on sensitive receptors in the area. Portions of the proposed project components, including the 66-kV subtransmission line reconductoring component and the telecommunications components, would be installed on ridgelines, which have been identified by local jurisdictions as sensitive aesthetic resources to be protected. The existing quality of ridgelines in the cumulative scenario has been affected by proposed and approved development, such as the Gate King Industrial Park. The contribution of the proposed project to aesthetic impacts related to development on ridgelines, however, would be minor, and would take place within an existing ROW with the same use. Local jurisdictions such as Los Angeles County and the City of Santa Clarita implement policies addressing the protection of ridgeline views, providing a means by which proposed development on ridgelines would be addressed and for impacts to be mitigated as necessary. Therefore, the proposed project would not result in a considerable contribution to cumulative impacts on aesthetic resources in the area of the proposed project components.

6.1.3.2 Agriculture and Forestry Resources

Scope and Geographic Extent

The scope for considering cumulative impacts to agriculture includes any project that would impact state-designated, important farmland (Prime Farmland, Unique Farmland, and/or Farmland of Statewide Importance). The geographic extent for cumulative impacts to agriculture is Los Angeles and Ventura Counties, because cumulative impacts on important farmland are recorded at the county level. Given that the proposed project components would not traverse land zoned as forest land or timberland, impacts related to these resources are not discussed here.

Existing Cumulative Conditions

In Los Angeles and Ventura Counties, urban and suburban uses can encroach on farmland, resulting in a loss of important farmland when land with agricultural uses or designation is converted to residential, commercial, and other development. Urban encroachment on farmland can also result in indirect impacts, including restrictions on typical farm activities, such as heavy equipment operation, and reductions in the productivity of crops related to air quality impacts. Growth in Los Angeles and Ventura Counties is expected to continue, resulting in more potential for such impacts to occur.

Much of the developed land in Los Angeles County is used for non-agricultural uses; approximately 42,000 acres of land in Los Angeles County (about 2 percent of the total area of Los Angeles County) is designated as important farmland by the state (CDC 2009a; California Association of Counties 2010). More land is used in Ventura County for agriculture or is designated as important farmland than in Los Angeles County, proportionate to total acreage: approximately 122,500 acres, or 10 percent of the total area of Ventura County, is designated as important farmland (CDC 2009b; California Association of Counties 2010).

Cumulative Impact Analysis

Although some ongoing development in Los Angeles and Ventura Counties would result in impacts on farmland and land designated for agricultural uses, this type of development tends to occur adjacent to or near areas developed with urban, suburban, and other non-agricultural uses, or as urban infill. Moreover, Los Angeles and Ventura Counties implement policies to address potential impacts on agricultural uses in their General Plans, including policies to protect farmland and review development in rural areas that could impact agricultural uses. Therefore, any impact from the cumulative projects on agricultural resources within the area of cumulative effect would be less than significant.

The proposed project would temporarily disturb up to ~~174.66~~ 175.86 acres of land zoned for Agriculture and up to ~~50.18~~ 50.22 acres of land zoned for Open Space in both Los Angeles and Ventura Counties; however, the proposed project components would not disturb land under active agricultural use. Therefore, the proposed project would not result in a considerable contribution to cumulative impacts on state-designated important farmland in Los Angeles or Ventura Counties.

6.1.3.3 Air Quality

Scope and Geographic Extent

Projects included in the cumulative analysis for air quality impacts include are limited to existing and reasonably foreseeable projects within 2 miles of the proposed project components.

Existing Cumulative Conditions

The proposed project and projects within the cumulative scenario are generally situated in the Los Angeles County portion of the South Coast Air Basin. This portion of the basin is in nonattainment for ozone, PM_{10}, and $PM_{2.5}$. Accordingly, the contribution of additional emissions of ozone precursors (i.e., NO_x, CO, and Reactive Organic Gases [ROGs]), PM_{10}, and $PM_{2.5}$ could result in a significant impact to air quality. Cumulative projects identified in Table 6.1, including the South Santa Clarita Sphere of Influence Amendment, Annexation and Prezone, Gate King Industrial Park, Hidden Creeks Estates, and Hummingbird Nest Ranch projects would all contribute to cumulative emissions. Appropriate mitigation would reduce many of the air quality impacts that would result from these projects; however, for some projects, unavoidable adverse impacts would result – the Hidden Creek Estates project, for example, would result in significant and unavoidable impacts related to particulates and NO_x.

Cumulative Impact Analysis

Construction

Construction of the proposed project would result in peak daily NO_x emissions in excess of the South Coast Air Quality Management District (SCAQMD) emissions thresholds of 100 pounds per day. In addition, ROG emissions are projected to temporarily exceed the SCAQMD significance threshold of 75 pounds per day during a portion of the project construction period. Both NO_x and ROG emissions levels will be mitigated to below the level of significance. Emissions of NO_x resulting from project construction will be reduced through the implementation of Applicant Proposed Measures (APMs) as described in Section 4.2, “Air Quality,” as well as other construction best practices. Emissions of NO_x will be mitigated further through the purchase of Regional Clean Air Incentive Market (RECLAIM) Trading Credits (RTCs) or Mobile Source Emission Reduction Credits (MSERCs) for every pound of NO_x emitted in excess of the SCAQMD daily significance threshold. Similarly, use of Tier-3 engines in the proposed project construction equipment will reduce construction-related ROG emissions levels below the SCAQMD threshold.

Operation

Upon commencing operation of the proposed project, the proposed Central Compressor Station would replace the existing natural gas driven jet turbines with electric compressors trains. As a result, operation of the proposed project would represent a large net decrease in air emissions from existing conditions, and an overall benefit to air quality. Furthermore, no increase in the number of employees on the storage field site or for maintenance of the other project elements (including the Natural Substation, transmission lines, and telecommunications lines) is planned and no increase in vehicular emissions is anticipated. Proposed project operations would provide a benefit to air quality from a reduction in emissions from the decommissioning of the jet turbines at the existing compressor site.

Therefore, the project’s potential to contribute to cumulative impacts related to air emissions would be less than considerable.

6.1.3.4 Biological Resources

Scope and Geographic Extent

The scope for considering cumulative impacts on biological resources includes cumulative projects that could have an adverse effect on special status species, as discussed in Section 4.4, "Biological Resources," including Plummer's mariposa lily and slender mariposa lily, coast range newt, western spadefoot, coast horned lizard, silvery legless lizard, two striped garter snake, western pond turtle, coastal California gnatcatcher, golden eagle, least Bell's vireo, loggerhead shrike, northern harrier, olive-sided flycatcher, ~~southwestern willow flycatcher,~~ western burrowing owl, white-tailed kite, yellow-breasted chat, yellow warbler, pallid bat, San Diego black-tailed jackrabbit, and San Diego desert woodrat). The scope also includes cumulative projects that could have an adverse effect on U.S. Fish and Wildlife (USFWS)-designated critical habitat, and sensitive habitat including critical habitat for coastal California gnatcatcher, Venturan coastal sage scrub, Coast Live Oak, California Walnut Woodland and wetlands or riparian habitat. Projects with these impacts are included because these are the potential biological impacts associated with the proposed project. The geographic extent for considering cumulative impacts to biological resources is a 5-mile radius from the proposed project components. This was selected as a reasonable representative range for populations of the sensitive species, such as nesting birds, identified in the individual impact analysis for the proposed project.

Existing Cumulative Conditions

Surrounding the project components are industrial uses, such as the storage field area, residential and suburban development, and large expanses of open space and wildlife habitat, including protected habitat areas. The areas surrounding the project components also include several designated wildlife areas, including USFWS-designated habitat for coastal California gnatcatcher and two Significant Ecological Areas (SEAs) as designated by Los Angeles County. Residential development in the area, while primarily confined to existing urbanized areas such as the City of Santa Clarita and the City of Los Angeles, can result in disturbance impacts on sensitive species, aquatic habitats, wetlands, and riparian areas.

Most of the projects within the geographic extent would not take place in the undeveloped portions of Los Angeles County. In addition, agency approvals for cumulative projects in the area including the Gate King Industrial Project, the South Santa Clarita Sphere of Influence Amendment, annexation and Prezone, and the Hidden Creeks Estates project, have included measures addressing impacts to sensitive species and habitats.

Two large residential development projects, the Landmark Village and Mission Village residential developments, are proposed for areas of Los Angeles County that are in or adjacent to critical habitat for coastal California gnatcatcher. The final USFWS Biological Opinion addressing the Landmark Village project concluded that the project with mitigation would not adversely modify critical habitat of any listed species in the project area (Los Angeles County 2006). The Mission Village project also includes mitigation to address sensitive species, including coastal California gnatcatcher, and habitat (Los Angeles County 2011). Nonetheless, these two projects have the potential to affect large areas of critical habitat for coastal California gnatcatcher; substantial mitigation is required for these projects in total, and continued agency (CPUC, ~~CDFG~~ CDFW and USFWS) review of the implementation of mitigation is required to ensure that mitigation is implemented effectively.

Cumulative Impact Analysis

As discussed in Section 4.4, "Biological Resources," impacts to biological resources from the proposed project would be mitigated through measures such as avoidance, specific construction techniques, and restoration as required. With the implementation of APMs and mitigation measures, project-level impacts on biological resources would be less than significant.

The scale and nature of development in the cumulative scenario, especially in undeveloped portions of Los Angeles County, indicate that these projects would contribute to a significant regional cumulative impact on habitat for special status species. After the implementation of APMs and mitigation measures, including continued consultation with the California Department of Fish and ~~Game~~ Wildlife and the USFWS, however, the project's potential to contribute to cumulative impacts on biological resources would be less than considerable.

6.1.3.5 Cultural Resources

Scope and Geographic Extent

The scope for considering cumulative impacts on cultural resources includes projects that would potentially disturb unidentified subsurface human remains or historic, archaeological, or paleontological resources through excavation, as these were the type of potential impacts identified for the proposed project. No identified cultural resources would be impacted by the proposed project. As a result, the analysis of cumulative impacts on cultural resources is limited to construction impacts on previously unidentified cultural resources that could occur as a result of the proposed project, and where the same unidentified resources could also be affected by construction of other projects (i.e., within the footprint of the proposed project and within approximately 100 feet of this footprint).

Existing Cumulative Conditions

The areas surrounding the proposed project components represent a range of uses, from industrial (storage field) to suburban and electrical transmission, and correspondingly varied levels of ground disturbance. Ground-disturbing activities, such as those that would take place as part of the proposed project, could disturb unknown cultural resources.

During the project planning phase, SCE identified historic towers along the alignment of the proposed 66 kV-subtransmission line modification. The structures, known as "Kern River One" towers, were manufactured in 1908 using windmill parts of historic significance. An assessment of the line and these structures resource showed that they lacked the characteristics, including integrity, required for a significant historical resource (SCE 2011). SCE prepared California Department of Parks and Recreation forms to document this analysis.

Cumulative Impact Analysis

As discussed in Section 4.5, "Cultural Resources," the proposed project could disturb unknown subsurface human remains or historic, archaeological, or paleontological resources through excavation and ground disturbance that could take place in the area of the 66-kV subtransmission line reconductoring component and the telecommunications routes. Several other projects in the cumulative scenario—the Sunshine Canyon Landfill Expansion and Relocation of SCE 66-kV Subtransmission Line, the Lyons Canyon Ranch residential development, and the 16-kV Gavin Distribution Line Extension Project in unincorporated Los Angeles County; affordable housing development in the City of San Fernando; and the Hidden Creeks Estates residential development in the City of Los Angeles—could take place in the same location or within 100 feet of the proposed project components, and there is some potential that the proposed project and another project could affect the same unknown resource or result in cumulatively significant impacts on unknown resources. However, it is reasonable to assume that, similar to the proposed project, potential impacts on unknown cultural resources associated with other projects in the immediate vicinity, as well as with other development projects in the area, would be appropriately mitigated by construction monitoring and other standard mitigation measures (including recordation, avoidance, and relocation), as appropriate, because these other cumulative projects would also be subject to CEQA review. Therefore, the total impact of development projects on unknown cultural resources within the area of cumulative would be less than significant, and the proposed project would not result in a considerable contribution to cumulative impacts on cultural resources.

6.1.3.6 Geology, Soils, and Mineral Resources

Scope and Geographic Extent

The scope for considering cumulative impacts on geology, soils, and mineral resources includes projects that have the potential to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure, including liquefaction; projects that would result in substantial soil erosion or the loss of topsoil; projects that would be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the proposed project, and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse; or projects that would be located on expansive soil, creating substantial risks to life or property. The geographic extent for considering cumulative impacts to geology, soils, and minerals is a 1-mile radius from the footprint of the proposed project components, because areas more than 1 mile away would not be affected by ground-disturbing activities associated with the proposed project.

Existing Cumulative Conditions

Both the project component areas and cumulative projects are located in or near faults that are active, potentially active, conditionally active, and potentially inactive, including the Sylmar Fault and the Santa Susana Fault. Soils in the area include alluvium, which is potentially susceptible to liquefaction. Some area soils include those that have a very high potential for erosion.

Several projects, including the Hidden Creeks Estates project and numerous other residential developments, are located within the area of analysis for potential cumulative impacts to geology and soils.

Cumulative Impact Analysis

As discussed in Section 4.6, “Geology, Soils, and Mineral Resources,” the proposed project component areas are located in a seismically active region and active faults in the region are capable of causing damage to proposed project structures. In addition, there is the potential for soil instability-related impacts such as soil erosion, landslides, and collapse/settlement. The proposed project would result in the replacement of older structures that are more susceptible to seismic events, such as the obsolete compressor station. Furthermore, implementation of APMs, and the application of appropriate and required engineering design, including compliance with current building codes and regulations as required by local jurisdictions, would reduce any potential impacts related to geology and soils to a less than significant level.

Similar to the proposed project, any new development in the region would also be required to be constructed in a seismically sound manner, in compliance with the California Building Code and applicable local regulations. Therefore, the cumulative projects would include appropriate geotechnical engineering and design measures that would reduce any potential impacts related to geology and soils to a less than significant level.

Therefore, any cumulative impact related to geology and soils would be less than significant, and the proposed project would not result in a considerable contribution to cumulative impacts related to geology and soils.

6.1.3.7 Greenhouse Gas Emissions

Scope and Geographic Extent

The scope for considering cumulative impacts related to emissions of greenhouse gases (GHGs) includes projects that have the potential to generate GHG emissions during construction or operation. Because impacts related to GHG emissions are inherently global in nature (though they tend to be regulated on a regional or state level), the geographic extent for considering cumulative impacts related to GHGs is likewise global.

Existing Cumulative Conditions

Regional and global development patterns continue to rely on methods and practices that contribute large volumes of GHGs to the atmosphere, and impacts related to GHGs have widespread and potentially very harmful consequences. The increase in GHGs in the atmosphere caused in large part by human activity is now considered one of the key causes of global climate change. Current scientific research indicates that potential effects of climate change include variations in temperature and precipitation, sea-level rise, impacts on biodiversity and habitat, impacts on agriculture and forestry, and human health and social impacts (CNRA 2009). As described in the state's Climate Change Scoping Plan of 2008 (CARB 2008), GHG sources in the state collectively result in emissions that are higher than the targets established by Assembly Bill 32, which indicates that GHG emissions in the state continue to contribute to a total significant, state-wide cumulative impact.

All projects included in the cumulative scenario would generate GHGs during construction (equipment emissions) and operations (increased traffic trips to new development).

Cumulative Impact Analysis

The amended CEQA Guidelines (adopted in 2010) include revised provisions for assessing the cumulative impacts of projects with GHG emissions. According to these amendments, the lead agency "may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including, but not limited to, … plans or regulations for the reduction of GHG emissions) which provides specific requirements that will avoid or substantially lessen the cumulative problem" (Section 15064[h][3]). According to this section, if an adopted plan or program adequately addresses cumulative GHG emissions and would apply to proposed development, the determination may be made that the development would not result in a cumulatively considerable impact, as long as the plan or mitigation program being relied upon imposes requirements that adequately address cumulative GHG emissions. In addition, in order to appropriately determine and mitigate GHG impacts, the plan or mitigation program must provide specific requirements that will avoid or substantially lessen the cumulative impact, must be specified in law or adopted through a public review process, and must be enforceable.

The proposed project would generate direct emissions of GHGs from equipment/vehicle usage during construction and operation and from potential sulfur hexafluoride (SF_6) leakage from electrical equipment. In addition, GHG emissions would be generated indirectly at offsite electrical power plants used to supply power to the electrical grid, which in turn supplies electricity for the new electrical compressors proposed for the project. However, these emission increases would be offset by decreases in GHG emissions due to the removal of the existing gas turbine–driven compressors from use. The net GHG emission change associated with the proposed project would be less than the Southern California Air Quality Management District (SCAQMD) interim GHG significance threshold of 10,000 metric tons of carbon dioxide equivalency (CO_2e) per year for industrial facilities. It is estimated that the proposed project would result in a decrease of ~~70,441~~ 70,434 metric tons of CO_2e per year during operations, as discussed in Section 4.7, "Greenhouse Gas Emissions."

The total impact of development projects related to GHGs within the area of cumulative effect would be significant. However, the proposed project would include APMs, air quality and local agency permit conditions, and mitigation measures that would address and reduce the generation of GHGs during construction, and project construction emissions would be below SCAQMD's interim GHG significance threshold of 10,000 metric tons of CO_2e per year. In addition, project operation would result in net reduction of GHG emissions at the storage field, and therefore a beneficial impact. Although the overall cumulative context for GHG emissions in the state indicates a significant total cumulative impact, the proposed project would not result in a considerable contribution to cumulative impacts related to GHGs.

6.1.3.8 Hazards and Hazardous Materials

Scope and Geographic Extent

The scope for considering cumulative impacts related to hazards and hazardous materials includes projects that would have the potential to cause an accidental release to the pubic or environment during transport, use, or disposal of hazardous materials, and any project that would potentially expose sensitive receptors to an accidental release of hazardous materials. The geographic extent for considering project-related cumulative impacts related to hazards and hazardous materials would be limited to the project component areas and land directly adjacent to these areas for liquid hazards, because impacts resulting from incidents associated with hazardous materials during construction, operation, and maintenance of the proposed project would remain on or near the sites, due to the types and quantities of liquid materials involved. For natural gas release hazards, the geographic extent would be projects within 2,000 feet of the proposed Central Compressor Station site.

Existing Cumulative Conditions

Much of the cumulative area for hazards and hazardous materials is located in areas that have been identified by CAL FIRE as high, very high, and extreme in terms of fire hazard severity (CAL FIRE 2009). A search of relevant hazardous materials databases for potential sites in the vicinity of the proposed project indicated that there are numerous hazardous materials or waste sites within 0.5 miles of the proposed project components. No identified sites would be disturbed by project construction activities. The Sunshine Canyon landfill projects, Gavin Distribution Line Extension Project, and Boeing Santa Susana Field Laboratory cleanup site are located within the scope and geographic extent for cumulative impacts related to liquid hazards associated with the project. No projects within the scope and geographic extent for cumulative impacts would contribute to a hazard associated with natural gas.

Cumulative Impact Analysis

As discussed in Section 4.8, "Hazards and Hazardous Materials," with the applicant's and SCE's implementation of APMs, mitigation measures, plans, and measures addressing safety and hazards materials, and compliance with existing local, state, and federal regulations, the proposed project would have less than significant impacts in relation to hazards and hazardous materials. Hazards related to fire would be addressed in existing plans currently implemented by the applicant and SCE, and would be further addressed in project-specific plans addressing such hazards, which would be reviewed by local fire department jurisdictions for adequacy and efficacy. Consistent with applicable federal and state laws, SCE would maintain an area of cleared brush around energized electrical equipment, minimizing the potential for fire. Other projects that would be built in the project area and region, such as large residential projects, places of worship, commercial and retail developments, and the 16-kV Gavin Distribution Line Extension Project, would likewise be subject to design and operational measures and state and local regulations that would address fire hazards. Although the cumulative area has been mapped as one of high to extreme fire risk, impacts related to fire would be addressed by the proposed project and other projects on a project-specific basis, and the overall cumulative impact would not be significant.

The Sunshine Canyon landfill projects and the Boeing Santa Susana Field Laboratory cleanup site (described in Table 6.1) have the potential to result in similar impacts related to possible hazardous spills and contact with previously undiscovered soil contamination. These projects are subject to discretionary review by local planning agencies as well as the local Certified Uniform Program Agency, and state agencies including the Department of Toxic Substances Control. These agencies would oversee and require measures similar to those that would reduce impacts associated with the proposed project, ensuring that impacts would be less than significant for those projects.

Projects within the cumulative scenario would not contribute to a significant cumulative impact related to hazards and hazardous materials, and the project's potential to contribute to cumulative impacts related to hazards and hazardous materials would be less than considerable.

6.1.3.9 Hydrology and Water Quality

Scope and Geographic Extent

The scope for considering cumulative impacts on hydrology is any project that would have the same or similar impacts as the proposed project, which includes effects related to water quality, drainage patterns, or flooding. Therefore, the geographic extent for considering project-related cumulative impacts on hydrology and water quality is the area containing water resources that would be directly affected by construction activities, and is therefore limited to an area up to 0.5 miles from the proposed project components.

Existing Cumulative Conditions

Washes and creeks in regional watersheds tend to be intermittent to ephemeral, with surface flow typically present only during or after storm events. Significant surface water bodies in the region include the Santa Clara River, Castaic Lake, and Bouquet Reservoir. Many of the tributaries in the region, especially within the Los Angeles River basin, have been channelized for flood control. Significant surface flow does not typically occur until major storm events, during which the soil underlying non-channelized washes becomes saturated. Water quality in the region varies from good in areas that are less developed or undeveloped to impaired in urbanized areas. Water quality issues include erosion and runoff from increasing development within the floodplains, and pollution related to urban runoff and discharge, illegal dumping, and wastewater effluent. Federal Emergency Management Agency-designated Flood Hazard Zones are present throughout the proposed project region.

Several projects, including the Hidden Creeks Estates project and numerous other residential developments, are located within the geographic extent for potential cumulative impacts on hydrology and water quality.

Cumulative Impact Analysis

As discussed in Section 4.9, "Hydrology and Water Quality," impacts on hydrology and water resources would be less than significant after application of APMs and mitigation measures, and with compliance with National Pollutant Discharge Elimination System and other permitting requirements, including the preparation of Storm Water Pollution Prevention Plans and implementation of best management practices. Activities related to cumulative projects would likewise be less than significant, because the project developers would be required to implement similar measures; therefore, the project's potential contribution to cumulative hydrology impacts would be less than significant.

6.1.3.10 Land Use and Planning

Scope and Geographic Extent

The scope and geographic extent for considering cumulative land use impacts includes any project within local jurisdictions that would conflict with the General Plan or other land use regulations of any of these jurisdictions.

Existing Cumulative Conditions

The proposed project regional area includes unincorporated Los Angeles County (Santa Clarita Valley Planning Area), the City of Santa Clarita (community of Newhall), the City of Los Angeles (communities of Chatsworth, Porter Ranch, Granada Hills, Mission Hills, and Sylmar), the City of San Fernando, portions of unincorporated Ventura County, and the City of Simi Valley. The proposed project components are generally located in the Santa Susana Mountains, Santa Clarita Valley, and San Fernando Valley regions of northern Los Angeles County and southeastern Ventura County. These areas vary in character from wild and undeveloped to heavily urbanized, and uses include rural, agricultural, residential, commercial, landfill, open space, parkland, rail lines, and major roads and highways.

Cumulative Impact Analysis

As discussed in Section 4.10, "Land Use and Planning," the proposed project components would be consistent with local general plan and zoning designations. No reasonably foreseeable future projects were identified that would conflict with local general plans and regulations; however, it is reasonable to assume that some future projects in the region could present such conflicts, such as proposed development that conflicts with General Plan policies intended to prevent conversion of land from agricultural to other uses. Such impacts would not necessarily be determined to be significant, depending on the circumstances of the development. In addition, because these other cumulative projects would also be subject to discretionary and CEQA review, it is reasonable to assume that other projects' conflicts with applicable land use plans and policies would be addressed via the local agency planning and approval process, such that cumulative impacts related to conflicts with land use plans and policies would be less than significant. The proposed project would therefore not result in a cumulatively considerable impact in relation to consistency with land use plans and policies in the area.

6.1.3.11 Noise

Scope and Geographic Extent

The scope for considering cumulative noise impacts includes any project that would result in an increase in ambient and daytime noise levels. The geographic extent for considering cumulative noise impacts is any project within 1 mile of the nearest sensitive noise receptor to the project component areas, because any project operating within the noise standards established by the applicable local jurisdictions at this distance would not contribute to increases in ambient noise levels at these receptors.

Existing Cumulative Conditions

Existing land uses within the proposed project component areas include industrial (storage field), residential, commercial, solid waste disposal (landfill), open space preserve areas and parkland, agricultural, public transportation, and major roads and highways; noise generated in the area originates from these uses. The ambient noise survey conducted by the applicant at several locations of the proposed project components, including one location at the Newhall Substation site, five locations along the existing 66-kV subtransmission route east of I-5, and one location south of the proposed Central Compressor Station site indicated ambient noise levels between 48 and 67 dBA L_{eq}, as discussed in Section 4.11, "Noise."

Multiple projects are located within the cumulative impact study area, including the Lyons Canyon Ranch Residential Development; Sunshine Canyon Landfill projects; Gavin Distribution Line project; affordable housing development in the City of San Fernando; a wireless telecommunications facility; the Hidden Creek Estates project; an elderly care facility proposed for the City of Los Angeles; and the Boeing Santa Susana Field Laboratory cleanup site.

Cumulative Impact Analysis

As discussed in Section 4.11, "Noise," the proposed project could result in short-term increases in noise levels during construction. Implementation of APMs and appropriate mitigation would ensure that these impacts would be less than significant.

Other projects within the cumulative study area would also contribute to increases in noise levels during their construction periods, which may overlap; such increases would take place in compliance with policies and regulations of applicable local jurisdictions for noise from such sources. Because the contribution of the proposed project to ambient noise levels at the nearest sensitive receptor would be less than significant, and because all such noise impacts from other projects within the cumulative analysis area would be required to comply with policies and regulations of applicable local jurisdictions, the proposed project would not result in a cumulatively considerable impact in relation to noise.

6.1.3.12 Population and Housing

As discussed in Section 4.12, "Population and Housing," although some construction workers may travel to the region during the construction period, the proposed project would not induce population growth in the area, either directly or indirectly. It would also not displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere, and it would not disrupt the balance between employment opportunities and available housing in the area. Given that the proposed project's impact on this resource area would be minor at most, the proposed project would not result in a considerable contribution to cumulative impacts related to population and housing.

6.1.3.13 Public Services and Utilities

As discussed in Section 4.13, "Public Services and Utilities," the proposed project is not expected to result in additional use of public services in local jurisdictions that would result in substantial adverse physical impacts associated with provision of new or physically altered governmental facilities. The expansion would not result in the need for new or physically altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services. Given that the proposed project's impact on this resource area would be minor at most, the proposed project would not result in a considerable contribution to cumulative impacts related to public services and utilities.

6.1.3.14 Recreation

As discussed in Section 4.14, "Recreation," the proposed project is not expected to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of such facilities would occur or be accelerated; nor does the proposed project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. Given that the proposed project's impact on this resource area would be minor at most, the proposed project would not result in a considerable contribution to cumulative impacts related to recreation resources.

6.1.1.15 Transportation and Traffic

As discussed in Section 4.15, "Transportation and Traffic," traffic generated by other development projects in the region ("cumulative projects") was included in preparation of traffic forecasts. As shown in Table 4.15-4, a total of 14 projects were identified that were likely to contribute traffic to area roadways. The traffic analysis with the cumulative projects is presented in Section 4.15.3.3.

As discussed in Section 4.15.3.3, implementation of the proposed project in combination with the cumulative projects identified would not result in an unacceptable level of service in exceedance of established thresholds of significance at any of the intersections evaluated as part of the analysis. Consequently, the project's potential to contribute to cumulative impacts related to transportation and traffic would be less than considerable.

6.2 Growth-inducing Impacts

A project could induce growth if it results in additional development, such as an increase in population, employment and/or housing above and beyond what is already assumed will occur in local and regional land use plans or in projections made by regional planning authorities, irrespective of the proposed project. Under CEQA (Section 15126.2[d]), a project would be growth inducing if it:

- Directly or indirectly fosters economic or population growth or the construction of additional housing;
- Taxes community facilities to the extent that the construction of new facilities would be necessary;
- Removes obstacles to population growth; or
- Encourages or facilitates other activities that cause significant environmental effects.

Typical growth-inducing factors might include the extension of urban services or transportation infrastructure to a previously unserved or under-served area or the removal of major barriers to development. This section evaluates the proposed project's potential to create such growth inducements. It should also be noted that growth inducement can be positive or negative depending on the resulting effects and the development objectives of the planning authorities in the proposed project area. Negative impacts associated with growth inducement would occur only where growth associated with the proposed project would result in significant/adverse environmental impacts.

The proposed project would retrofit existing infrastructure to increase the storage field's natural gas injection ~~capacity~~rate. Increasing the injection rate~~capacity~~ would allow the applicant to purchase and store a greater amount of natural gas during periods of low demand when natural gas is less expensive. This, in turn, would lower the cost of natural gas services provided by the storage field. Withdrawal ~~capacity~~ rate would not be affected by the proposed project. The applicant would hire a local construction workforce, and outside contractors would only be required if local contractors were not available. Because the proposed project component areas are adjacent to the Los Angeles metropolitan area—one of the most densely populated regions in the country—and considering the relatively high rates of unemployment in the area, workers are not expected to relocate to the area in numbers that would result in a significant impact (Section 4.12, "Population and Housing"). In the event that a small number of workers did relocate to the area, the number would be very minor compared to the area's total population, and numerous temporary lodging facilities, such as hotels and motels, would be available. New housing facilities would not be required.

During operations, no additional staff would be required for operation of the storage field or for operation or periodic maintenance of the proposed electrical and telecommunications systems. Both the applicant's and SCE's staff levels would remain the same as required for current operations and maintenance activities. In addition, operation and maintenance of the proposed project would not create long-term demands for emergency response services, schools, drinking water, parks, libraries, hospitals, or solid waste and wastewater facilities that could not be met by existing services and facilities (Section 4.13, "Public Services and Utilities").

The proposed project would not induce growth. The proposed Natural Substation is a "dedicated substation" supplying electricity only for operation of the gas storage field facility. SCE does not anticipate that the Natural Substation would support any customers other than the gas storage field facility. Space would be available at the proposed Natural Substation for the installation of up to two additional, spare 28-megavolt-ampere (MVA) transformers ~~(for a total of 112 MVA)~~ if needed for reliability. ~~to accommodate a future increase in the demand for electrical power if such an increase should occur. At this time, SCE does not anticipate that future demand for electrical power would dictate the need for expansion of the proposed substation. Any expansion of the proposed Natural Substation would be conducted in response to future growth rather than as an inducement to it.~~ New compressors would increase injection rate at the gas storage facility, but both storage capacity and withdrawal rates would remain unchanged. Therefore, because the proposed project would not result in increases in employment, housing, or demands for community facilities and services nor result in the removal of existing constraints to growth or the creation of factors that encourage or otherwise facilitate development that would not otherwise have occurred, its implementation would not have growth inducing impacts.

6.3 Significant and Unavoidable Adverse Impacts

No significant and unavoidable environmental adverse impacts have been identified that would result from construction or operation of the proposed project. All of the impacts identified in Chapter 4, "Environmental Analysis," would be either less than significant or, with mitigation, reduced to less than significant levels.

6.4 Significant and Irreversible Environmental Changes

CEQA Guidelines (Section 15126.2[c]) require that an EIR identify significant irreversible environmental changes that would be caused by the proposed project. These changes may include, for example, uses of nonrenewable resources as well as accidents that could change the environment in the long term. Significant irreversible changes to and irretrievable commitments of resources could occur from construction and operation of the proposed project as a result of energy and materials consumption, damage from fire, land disturbance (and associated habitat loss for sensitive biological resources), and damage to or the loss of cultural or paleontological resources.

Construction of the proposed project would require a permanent commitment of natural resources from the direct consumption of fossil fuels, construction materials, and energy required for the production of materials as well as the manufacture of new components that largely cannot be recycled at the end of the proposed project's useful lifetime (Chapter 2, "Project Description"). Additionally, the risk of fire and impacts on cultural and paleontological resources would increase (Sections 4.8, "Hazards and Hazardous Materials," and 4.5, "Cultural Resources").

During operations, the proposed compressors would increase the storage field's natural-gas maximum injection rate ~~capacity~~ from approximately 300 million standard cubic feet (scf) per day to approximately 450 million scf ~~cubic feet~~ per day, but the storage field's withdrawal capacity would not change. Increasing the injection rate ~~capacity~~ would allow the applicant to purchase ~~and store~~ a greater amount of natural gas during periods of low demand when natural gas is less expensive. This, in turn, would lower the cost of natural gas services provided by the storage field. Although increasing the injection rate ~~capacity~~ would not have a direct effect on the withdrawal of natural gas, the proposed compressors would use electricity instead of combusting natural gas. Therefore, a local reduction of natural gas consumption would result from operation of the proposed project. Given that natural gas is one of the nonrenewable resources combusted to produce electricity, however, a net reduction in natural gas combustion is not anticipated from operation of the proposed project. Approximately 8 acres of coastal California gnatcatcher critical habitat would be permanently disturbed by the proposed new and modified electrical and telecommunications facilities (Section 4.4, "Biological Resources").

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Appendix B
Revised Air Emissions Calculations

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Revised Appendix H

Air Quality and Greenhouse Gas Calculations

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Revised Appendix H - Worksheet Index		
Revised March 2013		
Table No.	Title	Revisions
1	Peak Daily Emissions	Updated Off-road Emission Factors
2	Compressor Station Survey	
3	Compressor Station Site Clearing	Updated Off-road Emission Factors
4	Compressor Station Site Preparation	Updated Off-road Emission Factors
5	Compressor Station Civil	Updated Off-road Emission Factors
6	Compressor Station Mechanical	Updated Off-road Emission Factors
7	Compressor Station Electrical	Updated Off-road Emission Factors
8	Compressor Station Paving	Updated Off-road Emission Factors
9	Compressor Station Fencing	Updated Off-road Emission Factors
10	Compressor Station Landscaping	Updated Off-road Emission Factors
11	Plant Power Line Construction	Updated Off-road Emission Factors
12	Guard House and Office Trailer Relocation	Updated Off-road Emission Factors
13	Substation Survey	
14	Substation Grading	Updated Off-road Emission Factors
15	Substation Civil	Updated Off-road Emission Factors
16	Substation MEER	
17	Substation Electrical	Updated Off-road Emission Factors
18	Substation Wiring	Updated Off-road Emission Factors
19	Substation Transformer	Updated Off-road Emission Factors
20	Substation Testing	
21	Substation Maintenance	
22	Substation Paving	Updated Off-road Emission Factors
23	Substation Fencing	Updated Off-road Emission Factors
24	Substation Landscaping	Updated Off-road Emission Factors
25	Subtransmission Guard Structure Install	Updated Off-road Emission Factors; Table re-numbered
26	Subtransmission Line Survey	Updated Off-road Emission Factors
27	Subtrans Marshalling Yard	Updated Off-road Emission Factors
28a	Subtrans RW Clearing	Updated Off-road Emission Factors
28b	Subtrans RW Clearing - LST Analysis	Updated Off-road Emission Factors
29	Subtransmission Line Roadway	Updated Off-road Emission Factors
30	Subtransmission Pole Frame&Set	Updated Off-road Emission Factors
31	Subtransmission Line TSP Footing Installation	Updated Off-road Emission Factors
32	Subtransmission Line Conductor Installation	Updated Off-road Emission Factors
33a	Subtransmission Line Assembly	Updated Off-road Emission Factors
33b	Subtransmission Line Assembly - LST Analysis	Updated Off-road Emission Factors
34	Subtransmission Line Restoration	Updated Off-road Emission Factors
35	Fiber Optic Installation	
36	Subtransmission Guard Structure Removal	Updated Off-road Emission Factors
37	Worker Shuttle	
38	Construction GHG	Updated Off-road Emission Factors
39	Operational Emissions	Updated Off-road Emission Factors
40	Operational GHG Emissions	Updated Off-road Emission Factors
41	Total GHG Emissions Summary	Updated Off-road Emission Factors
	Offroad Emission Factors	Removed; duplicate
42	Offroad Emission Factors	Updated Off-road Emission Factors
43	Onroad Emission Factors	Table re-numbered
44	Motor Vehicle Entrained Road Dust Emission Factors	Table re-numbered
45	Fugitive Dust Emission Factors	Table re-numbered
46	Localized Significance Threshold Analysis	Table re-numbered
47	Turbine Decommissioning	Table re-numbered
48-A	Peak Daily Compressor Site Construction Emissions	Updated Emfacs
48-B	Peak Daily Substation Site Construction Emissions	Updated Emfacs
48-C	Peak Daily Guard House Construction Emissions	Updated Emfacs

Table 1

Peak Daily Construction Emissions						
Scenario[1]	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
1	29.16	165.20	256.97	0.60	32.66	16.68
2	44.63	218.56	360.59	0.73	82.37	26.04
3	47.19	259.65	377.13	0.71	75.81	26.31
4	49.56	290.59	376.83	0.73	80.56	26.97
5	57.86	309.47	371.70	0.73	76.17	25.70
6	27.82	123.31	203.93	0.38	18.67	21.55
7	7.00	0.24	1.68	1.29	0.10	0.07
Peak Daily	**57.86**	**309.47**	**377.13**	**1.29**	**82.37**	**26.97**

[1] Emissions were calculated for six scenarios, listed below. Each scenario includes a combination of construction activities that could occur at the same time.

Scenario 1 Daily Emissions						
Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Guard House and Office Trailer Relocation	12.83	71.18	108.06	0.19	10.47	7.19
Substation Survey	0.15	0.18	0.19	0.15	0.23	0.15
Marshalling Yard	1.13	7.06	8.73	0.02	0.75	0.61
ROW Clearing	7.17	39.90	66.86	0.12	8.73	4.09
Subtransmission Line Survey	0.15	1.36	0.19	0.00	0.91	0.10
Subtransmission Line Roadway	7.56	44.40	71.71	0.12	11.49	4.50
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**29.16**	**165.20**	**256.97**	**0.60**	**32.66**	**16.68**

Scenario 2 Daily Emissions						
Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Compressor Station Survey	0.09	0.17	0.18	0.07	0.12	0.08
Substation Grading	5.21	22.15	42.05	0.06	6.01	2.09
Subtransmission Line Survey	0.15	1.36	0.19	0.00	2.24	0.22
Subtransmission Line Roadway	7.56	44.40	71.71	0.12	11.49	4.50
Subtransmission Pole Framing and Setting	7.55	42.07	66.93	0.13	4.74	4.24
Subtransmission Line TSP Footing Installation	10.59	59.88	97.25	0.18	49.15	9.89
Subtransmission Line Assembly	8.31	39.69	76.02	0.14	5.06	4.50
Subtransmission Line Restoration	5.02	8.85	6.26	0.02	3.55	0.52
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**44.63**	**218.56**	**360.59**	**0.73**	**82.37**	**26.04**

Table 1

Scenario 3 Daily Emissions						
Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Compressor Station Site Clearing	5.96	34.91	33.81	0.06	6.78	1.70
Compressor Station Site Preparation	5.92	35.11	37.20	0.06	4.40	1.99
Substation Civil	2.41	13.13	10.95	0.02	1.13	0.76
Substation Fencing	0.60	3.54	2.46	0.00	0.25	0.14
Subtransmission Guard Structure Installation	5.69	29.98	52.33	0.10	3.39	3.00
Subtransmission Line Survey	0.15	1.36	0.19	0.00	0.91	0.10
Subtransmission Pole Framing and Setting	7.55	42.07	66.93	0.13	4.74	4.24
Subtransmission Line TSP Footing Installation	10.59	59.88	97.25	0.18	49.15	9.89
Subtransmission Line Assembly	8.31	39.69	76.02	0.14	5.06	4.50
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**47.19**	**259.65**	**377.13**	**0.71**	**75.81**	**26.31**

Scenario 4 Daily Emissions						
Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Compressor Station Civil	10.35	71.91	41.49	0.11	6.68	2.37
Substation MEER	0.18	1.44	0.53	0.00	0.12	0.02
Substation Electrical	1.44	7.44	5.25	0.01	0.63	0.35
Substation Wiring	0.25	1.88	0.56	0.00	0.14	0.03
Substation Transformer	1.28	6.78	6.77	0.01	0.66	0.44
Substation Testing	0.12	1.03	0.49	0.00	0.07	0.02
Substation Maintenance	0.18	1.37	1.27	0.00	0.10	0.04
Substation Paving	1.22	8.84	7.04	0.01	0.62	0.41
Substation Landscaping	0.37	2.51	1.34	0.00	0.20	0.06
Subtransmission Line Survey	0.15	1.36	0.19	0.00	0.91	0.10
Subtransmission Line Roadway	7.56	44.40	71.71	0.12	11.49	4.50
Subtransmission Pole Framing and Setting	7.55	42.07	66.93	0.13	4.74	4.24
Subtransmission Line TSP Footing Installation	10.59	59.88	97.25	0.18	49.15	9.89
Subtransmission Line Assembly	8.31	39.69	76.02	0.14	5.06	4.50
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**49.56**	**290.59**	**376.83**	**0.73**	**80.56**	**26.97**

Table 1

Scenario 5 Daily Emissions						
Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Compressor Station Mechanical	11.35	75.88	43.27	0.11	6.41	2.66
Compressor Station Electrical	7.08	37.58	44.35	0.08	3.01	1.69
Substation MEER	0.18	1.44	0.53	0.00	0.12	0.02
Substation Electrical	1.44	7.44	5.25	0.01	0.63	0.35
Substation Wiring	0.25	1.88	0.56	0.00	0.14	0.03
Substation Transformer	1.28	6.78	6.77	0.01	0.66	0.44
Substation Testing	0.12	1.03	0.49	0.00	0.07	0.02
Substation Maintenance	0.18	1.37	1.27	0.00	0.10	0.04
Compressor Paving	3.12	16.48	19.99	0.03	1.35	1.11
Substation Landscaping	1.09	6.65	1.34	0.00	0.20	0.06
Subtransmission Line Survey	0.15	1.36	0.19	0.00	0.91	0.10
Subtransmission Pole Framing and Setting	7.55	42.07	66.93	0.13	4.74	4.24
Subtransmission Line TSP Footing Installation	10.59	59.88	97.25	0.18	49.15	9.89
Subtransmission Line Assembly	8.31	39.69	76.02	0.14	5.06	4.50
Subtransmission Line Restoration	5.02	8.85	6.26	0.02	3.55	0.52
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**57.86**	**309.47**	**371.70**	**0.73**	**76.17**	**25.70**

Scenario 6 Daily Emissions						
Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
PPL Installation	13.45	57.51	100.39	0.12	9.24	4.92
Subtransmission Line Conductor Installation	11.19	50.22	107.01	0.20	8.70	5.84
Subtransmission Line Restoration	5.02	8.85	6.26	0.02	3.55	0.52
Fiber Optic Installation	0.32	2.17	2.09	0.00	0.22	0.09
Subtransmission Guard Structure Removal	6.57	35.45	60.62	0.12	4.01	3.57
Compressor Station Paving	3.12	16.48	19.99	0.03	1.35	1.11
Compressor Station Fencing	0.36	2.39	1.85	0.00	0.19	0.09
Compressor Station Landscaping	1.09	6.65	4.87	0.01	0.57	10.30
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**27.82**	**123.31**	**203.93**	**0.38**	**18.67**	**21.55**

Scenario 7 Daily Emissions						
Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Turbine Dismantling, Hauling and Site Clearing and Grading	7.00	0.24	1.68	1.29	0.10	0.07
Total	**7.0**	**0.2**	**1.7**	**1.3**	**0.1**	**0.1**

Notes =

Hi-lited cells indicate change in emissions compared to those presented in Appendix H of the DEIR. Emissions have changed due to the use of updated emission factors and travel on unpaved roadways during subtransmission work. Emission factors have been updated in efforts to charaterize recommended mitigation measures including requirements for use of Tier 3 off-road equipment. Emission factors by equipment tier level are not readily available; therefore, emission factors representative of model years 2006-2011 have been utilized to estimate project-related emissions.

Table 2
Compressor Station Survey

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle Exhaust	0.09	0.17	0.18	0.07	0.08	0.08
Vehicle Fugitive	--	--	--	--	0.04	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**0.09**	**0.17**	**0.18**	**0.07**	**0.12**	**0.08**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				0.00	0.00	0.00	0.00	0.00	0.00
Total Equipment Exhaust				**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	5	1	0.01	0.09	0.10	0.00	0.00	0.00
Worker Commuting	40	2	0.07	0.07	0.07	0.07	0.07	0.07
Total Vehicle Exhaust			**0.09**	**0.17**	**0.18**	**0.07**	**0.08**	**0.08**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	Paved	5	1	0.00	0.00
Pickup Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	2	0.04	0.00
Worker Commuting	Unpaved	0	2	0.00	0.00
Total Vehicle Fugitive				**0.04**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 3
Compressor Station Site Clearing

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	3.82	17.10	28.05	0.04	1.55	1.43
Vehicle Exhaust	2.15	17.81	5.76	0.03	0.36	0.27
Vehicle Fugitive	--	--	--	--	1.08	0.00
Earthwork Fugitive	--	--	--	--	3.78	0.00
Total	**5.96**	**34.91**	**33.81**	**0.06**	**6.78**	**1.70**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
D6 Dozer		5	1	0.67	2.72	5.97	0.01	0.25	0.23
Grader		5	1	0.72	3.16	5.83	0.01	0.30	0.27
Backhoe/Loader		5	2	1.15	5.38	6.86	0.01	0.51	0.47
Sheep's Foot Vibrator Compactor (10 yards)		5	2	0.05	0.26	0.31	0.00	0.01	0.01
Forklift		5	2	1.22	5.58	9.07	0.01	0.48	0.44
Total Equipment Exhaust				**3.82**	**17.10**	**28.05**	**0.04**	**1.55**	**1.43**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Dump Truck	10	6	0.18	0.72	2.29	0.00	0.11	0.10
6 Ton Truck	10	2	0.06	0.24	0.76	0.00	0.04	0.03
Water Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03
Pickup Truck	5	1	0.01	0.09	0.10	0.00	0.00	0.00
Worker Commuting	40	50	1.83	16.53	1.84	0.02	0.17	0.11
Total Vehicle Exhaust			**2.15**	**17.81**	**5.76**	**0.03**	**0.36**	**0.27**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Dump Truck	Paved	10	6	0.03	0.00
Dump Truck	Unpaved	0	6	0.00	0.00
6 Ton Truck	Paved	10	2	0.01	0.00
6 Ton Truck	Unpaved	0	2	0.00	0.00
Water Truck	Paved	20	1	0.01	0.00
Water Truck	Unpaved	0	1	0.00	0.00
Pickup Truck	Paved	5	1	0.00	0.00
Pickup Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	50	1.03	0.00
Worker Commuting	Unpaved	0	50	0.00	0.00
Total Vehicle Fugitive				**1.08**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Bulldozing	Hours/Day	5	0.70	0.10
Grading[b]	VMT/Day	5	3.09	0.16
Total Earthwork Fugitive			**3.78**	**0.26**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[b.] Average vehicle speed assumed at 1 miles per hour for grading.

Emission factors are in Table 48

Table 4
Compressor Station Site Preparation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	2.69	11.85	19.58	0.03	1.10	1.01
Vehicle Exhaust	3.23	23.26	17.62	0.04	0.89	0.74
Vehicle Fugitive	--	--	--	--	1.27	0.00
Earthwork Fugitive	--	--	--	--	1.14	0.24
Total	**5.92**	**35.11**	**37.20**	**0.06**	**4.40**	**1.99**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
D6 Dozer		5	1	0.67	2.72	5.97	0.01	0.25	0.23
Grader		5	1	0.72	3.16	5.83	0.01	0.30	0.27
Excavator		5	2	0.10	0.34	0.60	0.00	0.03	0.03
Backhoe/Loader		5	2	1.15	5.38	6.86	0.01	0.51	0.47
Sheep's Foot Vibrator Compactor (10 yards)		5	2	0.05	0.26	0.31	0.00	0.01	0.01
Total Equipment Exhaust				**2.69**	**11.85**	**19.58**	**0.03**	**1.10**	**1.01**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	10	15	0.39	2.77	3.09	0.00	0.11	0.10
Dump Truck (20 yards)	24	12	0.88	3.44	11.01	0.01	0.53	0.46
Dump Truck (10 yards)	24	1	0.07	0.29	0.92	0.00	0.04	0.04
Water Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03
Worker Commuting	40	50	1.83	16.53	1.84	0.02	0.17	0.11
Total Vehicle Exhaust			**3.23**	**23.26**	**17.62**	**0.04**	**0.89**	**0.74**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	Paved	10	15	0.08	0.00
Pickup Truck	Unpaved	0	15	0.00	0.00
Water Truck	Paved	20	1	0.01	0.00
Water Truck	Unpaved	0	1	0.00	0.00
Dump Truck (20 yards)	Paved	24	12	0.15	0.00
Dump Truck (10 yards)	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	50	1.03	0.00
Worker Commuting	Unpaved	0	50	0.00	0.00
Total Vehicle Fugitive				**1.27**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	1,150	1.14	0.24
Bulldozing	Hours/Day	5	0.70	0.10
Scraping and Grading[c]	VMT/Day	15	9.26	0.48
Storage Pile Wind Erosion[d]	Acres	0.5	8.80	1.83
Total Earthwork Fugitive			**19.89**	**2.64**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[b] Peak daily estimated from total of 100,000 CY over 4 months (87 working); i.e., 1150 CY per day

[c.] Average vehicle speed assumed at 1 mile per hour for grading and scraping.

[d.] Assumed for 0.5 acre storage pile area

Emission factors are in Table 45

Table 5
Compressor Station Civil

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	3.99	17.65	26.77	0.03	1.71	1.57
Vehicle Exhaust	6.36	54.25	14.72	0.08	0.93	0.68
Vehicle Fugitive	--	--	--	--	3.25	0.00
Earthwork Fugitive	--	--	--	--	0.79	0.12
Total	**10.35**	**71.91**	**41.49**	**0.11**	**6.68**	**2.37**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Drilling Rig		5	1	0.46	1.81	3.03	0.00	0.22	0.20
Backhoe/Loader		5	2	1.15	5.38	6.86	0.01	0.51	0.47
Forklift		5	1	0.61	2.79	4.54	0.01	0.24	0.22
30 Ton Hydraulic Crane		5	1	0.50	2.14	2.79	0.00	0.23	0.21
D6 Dozer		5	1	0.67	2.72	5.97	0.01	0.25	0.23
Front End Loader		5	1	0.57	2.69	3.43	0.00	0.25	0.23
Sheep's Foot Vibrator Compactor (10 yards)		5	1	0.03	0.13	0.16	0.00	0.01	0.01
Total Equipment Exhaust				**3.99**	**17.65**	**26.77**	**0.03**	**1.71**	**1.57**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Water Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03
Pickup Truck	10	15	0.39	2.77	3.09	0.00	0.11	0.10
6 Ton Truck	20	7	0.43	1.67	5.35	0.01	0.26	0.22
Worker Commuting	40	150	5.48	49.58	5.51	0.06	0.52	0.33
Total Vehicle Exhaust			**6.36**	**54.25**	**14.72**	**0.08**	**0.93**	**0.68**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Water Truck	Paved	20	1	0.01	0.00
Water Truck	Unpaved	0	1	0.00	0.00
Pickup Truck	Paved	10	15	0.08	0.00
Pickup Truck	Unpaved	0	15	0.00	0.00
6 Ton Truck	Paved	20	7	0.07	0.00
6 Ton Truck	Unpaved	0	7	0.00	0.00
Worker Commuting	Paved	40	150	3.09	0.00
Worker Commuting	Unpaved	0	150	0.00	0.00
Total Vehicle Fugitive				**3.25**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	100	0.10	0.02
Bulldozing	Hours/Day	5	0.70	0.10
Total Earthwork Fugitive			**0.79**	**0.12**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[b] Estimate

Table 6
Compressor Station Mechanical

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	5.05	21.86	29.31	0.04	2.18	2.01
Vehicle Exhaust	6.30	54.02	13.95	0.07	0.89	0.65
Vehicle Fugitive	--	--	--	--	3.24	0.00
Earthwork Fugitive	--	--	--	--	0.10	0.00
Total	**11.35**	**75.88**	**43.27**	**0.11**	**6.41**	**2.66**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
30 Ton Hydraulic Crane		5	1	0.50	2.14	2.79	0.00	0.23	0.21
50 Ton Hydraulic Crane		5	1	0.50	2.14	2.79	0.00	0.23	0.21
200 Ton Crawler Crane		5	2	1.00	4.27	5.57	0.01	0.45	0.42
Forklift		5	1	0.61	2.79	4.54	0.01	0.24	0.22
Front End Loader		5	3	1.72	8.07	10.29	0.01	0.76	0.70
Welders		5	1	0.71	2.45	3.34	0.00	0.27	0.25
Total Equipment Exhaust				**5.05**	**21.86**	**29.31**	**0.04**	**2.18**	**2.01**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	10	15	0.39	2.77	3.09	0.00	0.11	0.10
6 Ton Truck	20	7	0.43	1.67	5.35	0.01	0.26	0.22
Worker Commuting	40	150	5.48	49.58	5.51	0.06	0.52	0.33
Total Vehicle Exhaust			**6.30**	**54.02**	**13.95**	**0.07**	**0.89**	**0.65**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	Paved	10	15	0.08	0.00
Pickup Truck	Unpaved	0	15	0.00	0.00
6 Ton Truck	Paved	20	7	0.07	0.00
6 Ton Truck	Unpaved	0	7	0.00	0.00
Worker Commuting	Paved	40	150	3.09	0.00
Worker Commuting	Unpaved	0	150	0.00	0.00
Total Vehicle Fugitive				**3.24**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	**100**	0.10	0.00
Total Earthwork Fugitive			**0.10**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[b] Estimate

Emission factors are in Table 45

Table 7
Compressor Station Electrical

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	4.86	18.29	39.42	0.06	1.61	1.48
Vehicle Exhaust	2.22	19.29	4.93	0.03	0.29	0.21
Vehicle Fugitive	--	--	--	--	1.11	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**7.08**	**37.58**	**44.35**	**0.08**	**3.01**	**1.69**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Front End Loader		5	1	0.57	2.69	3.43	0.00	0.25	0.23
Generators		8	2	0.87	3.71	6.32	0.01	0.33	0.30
Other Construction Equipment		8	2	3.43	11.89	29.67	0.04	1.03	0.95
Total Equipment Exhaust				**4.86**	**18.29**	**39.42**	**0.06**	**1.61**	**1.48**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	10	15	0.39	2.77	3.09	0.00	0.11	0.10
Worker Commuting	40	50	1.83	16.53	1.84	0.02	0.17	0.11
Total Vehicle Exhaust			**2.22**	**19.29**	**4.93**	**0.03**	**0.29**	**0.21**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	Paved	10	15	0.08	0.00
Pickup Truck	Unpaved	0	15	0.00	0.00
Worker Commuting	Paved	40	50	1.03	0.00
Worker Commuting	Unpaved	0	50	0.00	0.00
Total Vehicle Fugitive				**1.11**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 8
Compressor Station Paving

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	2.81	11.39	18.97	0.02	1.16	1.07
Vehicle Exhaust	0.30	2.47	1.02	0.00	0.05	0.04
Vehicle Fugitive	--	--	--	--	0.14	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Asphaltic Paving	--	2.62	--	--	--	--
Total	**3.1**	**16.5**	**20.0**	**0.0**	**1.4**	**1.1**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Paving Roller		5	2	0.75	3.10	4.71	0.01	0.32	0.30
Asphalt Paver		5	1	0.74	2.78	6.57	0.01	0.28	0.26
Asphalt Curb Machine		5	1	0.76	2.82	4.27	0.00	0.30	0.28
Tractor		5	1	0.57	2.69	3.43	0.00	0.25	0.23
Total Equipment Exhaust				**2.81**	**11.39**	**18.97**	**0.02**	**1.16**	**1.07**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	10	2	0.05	0.37	0.41	0.00	0.02	0.01
Dump Truck	10	1	0.03	0.12	0.38	0.00	0.02	0.02
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01
Total Vehicle Exhaust			**0.30**	**2.47**	**1.02**	**0.00**	**0.05**	**0.04**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	Paved	10	2	0.01	0.00
Pickup Truck	Unpaved	0	2	0.00	0.00
Dump Truck	Paved	10	1	0.01	0.00
Dump Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Total Vehicle Fugitive				**0.14**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Asphaltic Paving VOC Emissions

Area Paved (acre/day)[a]	Emission Factor (lb/acre)[b]	ROG (lb/day)[c]
1.0	2.62	2.62

[a] Assumed a maximum of 1 acre paved in a day for worst-case emission estimation

[b] From URBEMISS 2007 User's Guide, Appendix A

[c] Emissions [lb/day] = Emission factor [lb/acre] x Area paved [acre/day]

Table 9
Compressor Station Fencing

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.15	0.76	1.12	0.00	0.06	0.06
Vehicle Exhaust	0.20	1.63	0.74	0.00	0.04	0.03
Vehicle Fugitive	--	--	--	--	0.09	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**0.36**	**2.39**	**1.85**	**0.00**	**0.19**	**0.09**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Skid Steer Loader		8	1	0.15	0.76	1.12	0.00	0.06	0.06
Total Equipment Exhaust				**0.15**	**0.76**	**1.12**	**0.00**	**0.06**	**0.06**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Flatbed Truck	10	1	0.03	0.12	0.38	0.00	0.02	0.02
Pickup Truck	10	1	0.03	0.18	0.21	0.00	0.01	0.01
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01
Total Vehicle Exhaust			**0.20**	**1.63**	**0.74**	**0.00**	**0.04**	**0.03**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Flatbed Truck	Paved	10	1	0.01	0.00
Flatbed Truck	Unpaved	0	1	0.00	0.00
Pickup Truck	Paved	10	1	0.01	0.00
Pickup Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	4	0.08	0.00
Worker Commuting	Unpaved	0	4	0.00	0.00
Total Vehicle Fugitive				**0.09**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 10
Compressor Station Landscaping

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.69	3.23	4.12	0.01	0.31	0.28
Vehicle Exhaust	0.40	3.42	0.75	0.00	0.05	10.02
Vehicle Fugitive	--	--	--	--	0.21	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**1.09**	**6.65**	**4.87**	**0.01**	**0.57**	**10.30**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Tractor		6	1	0.69	3.23	4.12	0.01	0.31	0.28
Total Equipment Exhaust				**0.69**	**3.23**	**4.12**	**0.01**	**0.31**	**0.28**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Dump Truck	10	1	0.03	0.12	0.38	0.00	0.02	0.02
Worker Commuting	40	10	0.37	3.31	0.37	0.00	0.03	10.00
Total Vehicle Exhaust			**0.40**	**3.42**	**0.75**	**0.00**	**0.05**	**10.02**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Dump Truck	Paved	10	1	0.01	0.00
Dump Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	10	0.21	0.00
Worker Commuting	Unpaved	0	10	0.00	0.00
Total Vehicle Fugitive				**0.21**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 11
Plant Power Line Construction

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	12.91	52.55	99.84	0.12	5.08	4.67
Vehicle Exhaust	0.55	4.96	0.55	0.01	0.05	0.03
Vehicle Fugitive	--	--	--	--	0.31	0.00
Earthwork Fugitive	--	--	--	--	3.80	0.21
Total	**13.45**	**57.51**	**100.39**	**0.12**	**9.24**	**4.92**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Backhoe		6	2	1.38	6.46	8.23	0.01	0.61	0.56
Hauler		4	1	0.83	3.35	6.82	0.01	0.33	0.30
Skid Steer Loader		4	2	0.15	0.76	1.12	0.00	0.06	0.06
Water Truck		6	1	1.25	5.03	10.24	0.01	0.49	0.45
Concrete Truck		4	1	0.83	3.35	6.82	0.01	0.33	0.30
Ditch Witch		6	1	1.25	5.03	10.24	0.01	0.49	0.45
Batch Plant		8	1	1.71	5.94	14.83	0.02	0.52	0.47
Drill Rig		6	2	1.10	4.34	7.28	0.01	0.52	0.48
Truck with Trailer		2	2	0.83	3.35	6.82	0.01	0.33	0.30
Compressor		2	1	0.43	1.49	3.71	0.01	0.13	0.12
Construction Fork		6	1	0.73	3.35	5.44	0.01	0.29	0.27
980 Loader		4	1	0.46	2.15	2.74	0.00	0.20	0.19
Boom Truck		4	1	0.83	3.35	6.82	0.01	0.33	0.30
Bucket Truck		4	1	0.83	3.35	6.82	0.01	0.33	0.30
Vibrating Roller		4	1	0.30	1.24	1.88	0.00	0.13	0.12
Total Equipment Exhaust				**12.91**	**52.55**	**99.84**	**0.12**	**5.08**	**4.67**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Emission factors based on equipment composite where BHP unknown.

Motor Vehicle Exhaust Emissions

Table 11
Plant Power Line Construction

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	15	0.55	4.96	0.55	0.01	0.05	0.03
Total Vehicle Exhaust			**0.55**	**4.96**	**0.55**	**0.01**	**0.05**	**0.03**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	15	0.31	0.00
Worker Commuting	Unpaved	0	15	0.00	0.00
Total Vehicle Fugitive				**0.31**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	100	0.10	0.02
Ditch Witch (Grading)[c]	VMT/Day	6	3.70	0.19
Total Earthwork Fugitive			**3.80**	**0.21**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[b] Estimate

[c.] Average vehicle speed assumed at 1 miles per hour for grading.

Emission factors are in Table 45

Table 12
Guard House and Office Trailer Relocation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	12.29	66.22	107.50	0.18	7.64	7.03
Vehicle Exhaust	0.55	4.96	0.55	0.01	0.05	0.03
Vehicle Fugitive	--	--	--	--	0.31	0.00
Earthwork Fugitive	--	--	--	--	2.47	0.13
Total	**12.83**	**71.18**	**108.06**	**0.19**	**10.47**	**7.19**

Construction Equipment Exhaust Emissions

Equipment	Hours/ Day Used[b]	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
3/4-Ton Pickup	4	4	2.46	11.89	23.69	0.04	1.40	1.29
10-Ton Hydraulic Crane	4	1	0.40	2.17	3.60	0.01	0.26	0.24
Backhoe/Loader	4	2	0.71	4.06	5.72	0.01	0.52	0.48
Water Truck	4	2	1.23	5.94	11.85	0.02	0.70	0.64
Grader	4	1	0.43	2.53	3.56	0.01	0.30	0.28
D6 Dozer	4	2	1.68	11.30	14.83	0.02	1.03	0.95
Dump Truck	4	4	2.46	11.89	23.69	0.04	1.40	1.29
Sheep's Foot Vibrator Compactor (10 yards)	4	2	1.07	5.81	7.14	0.01	0.75	0.69
Front End Loader	4	2	0.71	4.06	5.72	0.01	0.52	0.48
Drill Rig	4	1	0.26	2.06	2.81	0.01	0.20	0.18
Paver/Sealer	4	2	0.88	4.52	4.89	0.01	0.57	0.52
Total Equipment Exhaust			**12.29**	**66.22**	**107.50**	**0.18**	**7.64**	**7.03**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Emission factors based on equipment composite where BHP unknown.

[b] Hours estimated based on 8 hour work day

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]

Table 12
Guard House and Office Trailer Relocation

Worker Commuting	40	15	0.55	4.96	0.55	0.01	0.05	0.03
Total Vehicle Exhaust			**0.55**	**4.96**	**0.55**	**0.01**	**0.05**	**0.03**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	15	0.31	0.00
Worker Commuting	Unpaved	0	15	0.00	0.00
Total Vehicle Fugitive				**0.31**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	100	0.10	0.02
Grading	VMT/Day	4	2.47	0.13
Bulldozing	Hours/Day	8	1.11	0.16
Total Earthwork Fugitive			**3.68**	**0.30**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

[b] Estimate

[c.] Assumes 1 mile of grader travel for the office trailers and Guard House.

Table 13
Substation Survey

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle Exhaust	0.15	0.18	0.19	0.15	0.15	0.15
Vehicle Fugitive	--	--	--	--	0.08	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**0.15**	**0.18**	**0.19**	**0.15**	**0.23**	**0.15**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				0.00	0.00	0.00	0.00	0.00	0.00
Total Equipment Exhaust				**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	1	2	0.01	0.04	0.04	0.00	0.00	0.00
Worker Commuting	40	4	0.15	0.15	0.15	0.15	0.15	0.15
Total Vehicle Exhaust			**0.15**	**0.18**	**0.19**	**0.15**	**0.15**	**0.15**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	Paved	1	2	0.00	0.00
Pickup Truck	Unpaved	0	2	0.00	0.00
Worker Commuting	Paved	40	4	0.08	0.00
Worker Commuting	Unpaved	0	4	0.00	0.00
Total Vehicle Fugitive				**0.08**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 14
Substation Grading

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	3.89	13.98	32.19	0.04	1.33	1.22
Vehicle Exhaust	1.31	8.17	9.86	0.02	0.49	0.42
Vehicle Fugitive	--	--	--	--	0.44	0.00
Earthwork Fugitive	--	--	--	--	3.75	0.45
Total	**5.21**	**22.15**	**42.05**	**0.06**	**6.01**	**2.09**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Off-Highway Truck	500	8	1	1.74	6.03	14.29	0.02	0.51	0.47
Grader	350	3	1	0.43	1.89	3.50	0.00	0.18	0.16
Backhoe	350	2	1	0.24	0.81	2.33	0.00	0.07	0.07
Dozer	350	4	1	0.97	3.10	8.33	0.01	0.35	0.32
Scraper		3	1	0.36	1.52	2.80	0.00	0.15	0.14
Tamper		2	1	0.15	0.62	0.94	0.00	0.06	0.06
Total Equipment Exhaust				**3.89**	**13.98**	**32.19**	**0.04**	**1.33**	**1.22**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number
Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Water Truck	10	1	0.03	0.12	0.38	0.00	0.02	0.02
Tool Truck	5	1	0.01	0.09	0.10	0.00	0.00	0.00
Pickup Truck	20	1	0.05	0.37	0.41	0.00	0.02	0.01
Dump Truck	5	44	0.67	2.63	8.41	0.01	0.40	0.35
Worker Commuting	40	15	0.55	4.96	0.55	0.01	0.05	0.03
Total Vehicle Exhaust			**1.31**	**8.17**	**9.86**	**0.02**	**0.49**	**0.42**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number
Emission factors are in Table 43
No. dump trucks = 440 CY/day / 10 CY/truck

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Water Truck	Paved	10	1	0.01	0.00
Water Truck	Unpaved	0	1	0.00	0.00
Tool Truck	Paved	5	1	0.00	0.00
Tool Truck	Unpaved	0	1	0.00	0.00
Pickup Truck	Paved	20	1	0.01	0.00
Pickup Truck	Unpaved	0	1	0.00	0.00
Dump Truck	Paved	5	44	0.11	0.00
Dump Truck	Unpaved	0	44	0.00	0.00
Worker Commuting	Paved	40	15	0.31	0.00
Worker Commuting	Unpaved	0	15	0.00	0.00
Total Vehicle Fugitive				**0.44**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number
Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	1,000	0.99	0.21
Storage Pile Wind Erosion[c]	Acres	0.02	0.35	0.07
Bulldozing	Hours/Day	4	0.56	0.08
Scraping and Grading[d]	VMT/Day	3	1.85	0.10
Total Earthwork Fugitive			**3.75**	**0.45**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[b] Peak daily estimated from total of 40,000 CY over 45 days
[c] Substation footprint is approx. 1 acre; storage pile area assumed to be 1,000 ft
[d.] Assumes 0.5 mile of grader and scraper travel per hour.
Emission factors are in Table 45

Table 15
Substation Civil

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	1.97	9.49	9.72	0.01	0.74	0.68
Vehicle Exhaust	0.44	3.64	1.23	0.01	0.08	0.06
Vehicle Fugitive	--	--	--	--	0.22	0.00
Earthwork Fugitive	--	--	--	--	0.10	0.02
Total	**2.41**	**13.13**	**10.95**	**0.02**	**1.13**	**0.76**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Excavator	152	4	1	0.43	2.13	2.72	0.00	0.23	0.22
Foundation Auger	79	6	1	0.17	1.50	1.54	0.00	0.07	0.07
Backhoe	79	3	2	0.54	2.13	1.74	0.00	0.14	0.13
Skip Loader	75	3	1	0.16	0.75	0.68	0.00	0.05	0.04
Skid Steer Loader	75	3	2	0.31	1.50	1.37	0.00	0.09	0.09
Forklift	83	4	1	0.18	0.73	0.57	0.00	0.05	0.04
17 Ton Crane	125	2	1	0.18	0.74	1.10	0.00	0.10	0.09
Total Equipment Exhaust				**1.97**	**9.49**	**9.72**	**0.01**	**0.74**	**0.68**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Water Truck	10	1	0.03	0.12	0.38	0.00	0.02	0.02
Tool Truck	5	1	0.01	0.09	0.10	0.00	0.00	0.00
Dump Truck	10	1	0.03	0.12	0.38	0.00	0.02	0.02
Worker Commuting	40	10	0.37	3.31	0.37	0.00	0.03	0.02
Total Vehicle Exhaust			**0.44**	**3.64**	**1.23**	**0.01**	**0.08**	**0.06**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Water Truck	Paved	10	1	0.01	0.00
Water Truck	Unpaved	0	1	0.00	0.00
Tool Truck	Paved	5	1	0.00	0.00
Tool Truck	Unpaved	0	1	0.00	0.00
Dump Truck	Paved	10	1	0.01	0.00
Dump Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	10	0.21	0.00
Worker Commuting	Unpaved	0	10	0.00	0.00
Total Vehicle Fugitive				**0.22**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	100	0.10	0.02
Total Earthwork Fugitive			**0.10**	**0.02**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

[b] Estimate

Table 16
Substation MEER

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.0	0.0	0.0	0.0	0.0	0.0
Vehicle Exhaust	0.2	1.4	0.5	0.0	0.0	0.0
Vehicle Fugitive	--	--	--	--	0.1	0.0
Earthwork Fugitive	--	--	--	--	0.0	0.0
Total	**0.2**	**1.4**	**0.5**	**0.0**	**0.1**	**0.0**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				0.0	0.0	0.0	0.0	0.0	0.0
Total Equipment Exhaust				**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Carry-all Truck	5	1	0.02	0.06	0.19	0.00	0.01	0.01
Stake Truck	5	1	0.02	0.06	0.19	0.00	0.01	0.01
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01
Total Vehicle Exhaust			**0.2**	**1.4**	**0.5**	**0.0**	**0.0**	**0.0**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Carry-all Truck	Paved	5	1	0.0	0.0
Carry-all Truck	Unpaved	0	1	0.0	0.0
Stake Truck	Paved	5	1	0.0	0.0
Stake Truck	Unpaved	0	1	0.0	0.0
Worker Commuting	Paved	40	4	0.1	0.0
Worker Commuting	Unpaved	0	4	0.0	0.0
Total Vehicle Fugitive				**0.1**	**0.0**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.0	0.0
Total Earthwork Fugitive			**0.0**	**0.0**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 17
Substation Electrical

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.97	3.40	4.05	0.01	0.33	0.31
Vehicle Exhaust	0.47	4.04	1.19	0.01	0.06	0.05
Vehicle Fugitive	--	--	--	--	0.23	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**1.44**	**7.44**	**5.25**	**0.01**	**0.63**	**0.35**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Scissor Lift	87	3	2	0.35	1.16	1.10	0.00	0.09	0.09
Manlift	43	3	2	0.10	0.35	0.56	0.00	0.03	0.03
Reach Manlift	87	4	1	0.24	0.77	0.74	0.00	0.06	0.06
15 Ton Crane	125	3	1	0.28	1.12	1.65	0.00	0.15	0.14
Total Equipment Exhaust				**0.97**	**3.40**	**4.05**	**0.01**	**0.33**	**0.31**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	20	2	0.10	0.74	0.82	0.00	0.03	0.03
Worker Commuting	40	10	0.37	3.31	0.37	0.00	0.03	0.02
Total Vehicle Exhaust			**0.47**	**4.04**	**1.19**	**0.01**	**0.06**	**0.05**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	20	2	0.02	0.00
Crew Truck	Unpaved	0	2	0.00	0.00
Worker Commuting	Paved	40	10	0.21	0.00
Worker Commuting	Unpaved	0	10	0.00	0.00
Total Vehicle Fugitive				**0.23**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 18
Substation Wiring

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.07	0.23	0.37	0.00	0.02	0.02
Vehicle Exhaust	0.18	1.65	0.18	0.00	0.02	0.01
Vehicle Fugitive	--	--	--	--	0.10	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**0.25**	**1.88**	**0.56**	**0.00**	**0.14**	**0.03**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Manlift	43	4	1	0.07	0.23	0.37	0.00	0.02	0.02
Total Equipment Exhaust				**0.07**	**0.23**	**0.37**	**0.00**	**0.02**	**0.02**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	5	0.18	1.65	0.18	0.00	0.02	0.01
Total Vehicle Exhaust			**0.18**	**1.65**	**0.18**	**0.00**	**0.02**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	5	0.10	0.00
Worker Commuting	Unpaved	0	5	0.00	0.00
Total Vehicle Fugitive				**0.10**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 19
Substation Transformer

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.82	3.33	4.16	0.00	0.37	0.34
Vehicle Exhaust	0.47	3.45	2.60	0.01	0.12	0.10
Vehicle Fugitive	--	--	--	--	0.17	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**1.28**	**6.78**	**6.77**	**0.01**	**0.66**	**0.44**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Forklift	83	1	6	0.27	1.09	0.86	0.00	0.07	0.07
Crane	125	1	6	0.55	2.23	3.30	0.00	0.30	0.27
Total Equipment Exhaust				**0.82**	**3.33**	**4.16**	**0.00**	**0.37**	**0.34**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	30	2	0.16	1.11	1.24	0.00	0.05	0.04
Low Bed Truck	30	1	0.09	0.36	1.15	0.00	0.05	0.05
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01
Total Vehicle Exhaust			**0.47**	**3.45**	**2.60**	**0.01**	**0.12**	**0.10**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	30	2	0.03	0.00
Crew Truck	Unpaved	0	2	0.00	0.00
Low Bed Truck	Paved	30	1	0.02	0.00
Low Bed Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Total Vehicle Fugitive				**0.17**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 20
Substation Testing

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle Exhaust	0.12	1.03	0.49	0.00	0.02	0.02
Vehicle Fugitive	--	--	--	--	0.05	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**0.12**	**1.03**	**0.49**	**0.00**	**0.07**	**0.02**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				0.00	0.00	0.00	0.00	0.00	0.00
Total Equipment Exhaust				**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number
Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	20	1	0.05	0.37	0.41	0.00	0.02	0.01
Worker Commuting	40	2	0.07	0.66	0.07	0.00	0.01	0.00
Total Vehicle Exhaust			**0.12**	**1.03**	**0.49**	**0.00**	**0.02**	**0.02**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number
Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	20	1	0.01	0.00
Crew Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	2	0.04	0.00
Worker Commuting	Unpaved	0	2	0.00	0.00
Total Vehicle Fugitive				**0.05**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number
Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
Emission factors are in Table 45

Table 21
Substation Maintenance

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle Exhaust	0.18	1.37	1.27	0.00	0.05	0.04
Vehicle Fugitive	--	--	--	--	0.05	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**0.18**	**1.37**	**1.27**	**0.00**	**0.10**	**0.04**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				0.00	0.00	0.00	0.00	0.00	0.00
Total Equipment Exhaust				**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Maintenance Truck	30	2	0.16	1.11	1.24	0.00	0.05	0.04
Worker Commuting	32	1	0.03	0.26	0.03	0.00	0.00	0.00
Total Vehicle Exhaust			**0.18**	**1.37**	**1.27**	**0.00**	**0.05**	**0.04**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Maintenance Truck	Paved	30	2	0.03	0.00
Maintenance Truck	Unpaved	0	2	0.00	0.00
Worker Commuting	Paved	32	1	0.02	0.00
Worker Commuting	Unpaved	0	1	0.00	0.00
Total Vehicle Fugitive				**0.05**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 22
Substation Paving

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.79	2.89	4.82	0.01	0.35	0.32
Vehicle Exhaust	0.44	3.33	2.22	0.01	0.10	0.08
Vehicle Fugitive	--	--	--	--	0.16	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Asphaltic Paving	--	2.62	--	--	--	--
Total	**1.2**	**8.8**	**7.0**	**0.0**	**0.6**	**0.4**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Paving Roller	46	4	2	0.13	0.44	0.82	0.00	0.03	0.03
Asphalt Paver	152	4	1	0.55	2.09	3.34	0.00	0.29	0.27
Asphalt Curb Machine	35	3	1	0.05	0.16	0.29	0.00	0.01	0.01
Tractor	45	3	1	0.06	0.20	0.37	0.00	0.02	0.02
Total Equipment Exhaust				**0.79**	**2.89**	**4.82**	**0.01**	**0.35**	**0.32**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number
Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	30	2	0.16	1.11	1.24	0.00	0.05	0.04
Stake Truck	10	1	0.03	0.12	0.38	0.00	0.02	0.02
Dump Truck	10	1	0.03	0.12	0.38	0.00	0.02	0.02
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01
Total Vehicle Exhaust			**0.44**	**3.33**	**2.22**	**0.01**	**0.10**	**0.08**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number
Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Paved	30	2	0.03	0.00
Crew Truck	Unpaved	0	2	0.00	0.00
Stake Truck	Paved	10	1	0.01	0.00
Stake Truck	Unpaved	0	1	0.00	0.00
Dump Truck	Paved	10	1	0.01	0.00
Dump Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Total Vehicle Fugitive				**0.16**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number
Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
Emission factors are in Table 45

Asphaltic Paving VOC Emissions

Area Paved (acre/day)[a]	Emission Factor (lb/acre)[b]	ROG (lb/day)[c]
1.0	2.62	2.6

[a] Assumed one acre to be paved (worst-case)
[b] From URBEMISS 2007 User's Guide, Appendix A,
http://www.urbemis.com/software/download.html
[c] Emissions [lb/day] = Emission factor [lb/acre] x Area paved [acre/day]

Table 23
Substation Fencing

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.41	2.01	1.82	0.00	0.13	0.12
Vehicle Exhaust	0.19	1.53	0.63	0.00	0.04	0.03
Vehicle Fugitive	--	--	--	--	0.09	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**0.60**	**3.54**	**2.46**	**0.00**	**0.25**	**0.14**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Skid Steer Loader	75	8	1	0.41	2.01	1.82	0.00	0.13	0.12
Total Equipment Exhaust				**0.41**	**2.01**	**1.82**	**0.00**	**0.13**	**0.12**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Flatbed Truck	10	1	0.03	0.12	0.38	0.00	0.02	0.02
Pickup Truck	5	1	0.01	0.09	0.10	0.00	0.00	0.00
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01
Total Vehicle Exhaust			**0.19**	**1.53**	**0.63**	**0.00**	**0.04**	**0.03**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Flatbed Truck	Paved	10	1	0.01	0.00
Flatbed Truck	Unpaved	0	1	0.00	0.00
Pickup Truck	Paved	5	1	0.00	0.00
Pickup Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	4	0.08	0.00
Worker Commuting	Unpaved	0	4	0.00	0.00
Total Vehicle Fugitive				**0.09**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 24
Substation Landscaping

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.12	0.41	0.74	0.00	0.03	0.03
Vehicle Exhaust	0.25	2.10	0.60	0.00	0.04	0.03
Vehicle Fugitive	--	--	--	--	0.13	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**0.37**	**2.51**	**1.34**	**0.00**	**0.20**	**0.06**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Tractor	45	6	1	0.12	0.41	0.74	0.00	0.03	0.03
Total Equipment Exhaust				**0.12**	**0.41**	**0.74**	**0.00**	**0.03**	**0.03**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Dump Truck	10	1	0.03	0.12	0.38	0.00	0.02	0.02
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01
Total Vehicle Exhaust			**0.25**	**2.10**	**0.60**	**0.00**	**0.04**	**0.03**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Dump Truck	Paved	10	1	0.01	0.00
Dump Truck	Unpaved	0	1	0.00	0.00
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Total Vehicle Fugitive				**0.13**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 25
Subtransmission Guard Structure Installation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	5.47	28.00	52.11	0.10	3.25	2.99
Vehicle Exhaust	0.22	1.98	0.22	0.00	0.02	0.01
Vehicle Fugitive	--	--	--	--	0.12	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**5.69**	**29.98**	**52.33**	**0.10**	**3.39**	**3.00**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
3/4-Ton Pick-up	300	6	2	1.22	5.16	12.02	0.02	0.69	0.63
1-Ton Crew Cab Flat Bed, 4x4	500	6	1	0.61	2.58	6.01	0.01	0.34	0.32
Compressor Trailer	120	6	1	0.27	2.89	2.29	0.01	0.27	0.25
Auger Truck	500	6	1	0.93	4.52	8.63	0.02	0.52	0.48
Extendable Flat Bed Pole Truck	500	6	1	0.93	4.52	8.63	0.02	0.52	0.48
30-Ton Crane Truck	500	8	1	0.90	5.30	8.79	0.01	0.55	0.50
80ft. Hydraulic Man-lift Bucket Truck	500	4	1	0.62	3.02	5.75	0.01	0.35	0.32
Total Equipment Exhaust				**5.47**	**28.00**	**52.11**	**0.10**	**3.25**	**2.99**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01
Total Vehicle Exhaust			**0.22**	**1.98**	**0.22**	**0.00**	**0.02**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Total Vehicle Fugitive				**0.12**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 26
Subtransmission Line Survey

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day) Uncontrolled	$PM_{2.5}$ (lb/day) Uncontrolled	PM_{10} (lb/day) Controlled	$PM_{2.5}$ (lb/day) Controlled
Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle Exhaust	0.15	1.36	0.19	0.00	0.02	0.01	0.02	0.01
Vehicle Fugitive	--	--	--	--	2.23	0.21	0.89	0.09
Earthwork Fugitive	--	--	--	--	0.00	0.00	0.00	0.00
Total	**0.15**	**1.36**	**0.19**	**0.00**	**2.24**	**0.22**	**0.91**	**0.10**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				0.00	0.00	0.00	0.00	0.00	0.00
Total Equipment Exhaust				**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	1	2	0.01	0.04	0.04	0.00	0.00	0.00
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01
Total Vehicle Exhaust			**0.15**	**1.36**	**0.19**	**0.00**	**0.02**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a] Uncontrolled	$PM_{2.5}$ (lb/day)[a] Uncontrolled	PM_{10} (lb/day)[a] Controlled	$PM_{2.5}$ (lb/day)[a] Controlled
Pickup Truck	Paved	0.5	2	0.00	0.00	0.00	0.00
Pickup Truck	Unpaved	0.5	2	2.14	0.21	0.86	0.09
Worker Commuting	Paved	40	4	0.08	0.00	0.03	0.00
Worker Commuting	Unpaved	0	4	0.00	0.00	0.00	0.00
Total Vehicle Fugitive				**2.23**	**0.21**	**0.89**	**0.09**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 27
Subtransmission Marshalling Yard

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.98	5.74	8.59	0.01	0.66	0.60
Vehicle Exhaust	0.15	1.32	0.15	0.00	0.01	0.01
Vehicle Fugitive	--	--	--	--	0.08	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**1.13**	**7.06**	**8.73**	**0.02**	**0.75**	**0.61**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	250	2	1	0.203	0.860	2.003	0.004	0.115	0.106
30-Ton Crane Truck	250	2	1	0.154	0.693	1.534	0.003	0.094	0.086
10,000 lb Rough Terrain	250	5	1	0.508	3.651	3.991	0.007	0.374	0.344
Truck, Semi, Tractor	500	1	1	0.12	0.53	1.06	0.00	0.07	0.07
Total Equipment Exhaust				**0.98**	**5.74**	**8.59**	**0.01**	**0.66**	**0.60**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01
Total Vehicle Exhaust			**0.15**	**1.32**	**0.15**	**0.00**	**0.01**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	4	0.08	0.00
Worker Commuting	Unpaved	0	4	0.00	0.00
Total Vehicle Fugitive				**0.08**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 28a
Subtransmission ROW Clearing

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	7.03	38.58	66.71	0.12	4.10	3.77
Vehicle Exhaust	0.15	1.32	0.15	0.00	0.01	0.01
Vehicle Fugitive	--	--	--	--	0.08	0.00
Earthwork Fugitive	--	--	--	--	4.54	0.31
Total	**7.17**	**39.90**	**66.86**	**0.12**	**8.73**	**4.09**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	500	8	1	0.81	3.44	8.01	0.01	0.46	0.42
Road Grader	500	6	1	0.80	4.51	7.89	0.01	0.48	0.45
Water Truck	350	8	2	2.47	12.07	23.00	0.04	1.39	1.28
Backhoe/Loader	500	6	1	0.98	5.10	10.13	0.02	0.59	0.54
Track Type Dozer	350	6	1	1.35	10.45	11.93	0.02	0.82	0.76
Lowboy Truck/Trailer	500	4	1	0.62	3.02	5.75	0.01	0.35	0.32
Total Equipment Exhaust				**7.03**	**38.58**	**66.71**	**0.12**	**4.10**	**3.77**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01
Total Vehicle Exhaust			**0.15**	**1.32**	**0.15**	**0.00**	**0.01**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	4	0.08	0.00
Worker Commuting	Unpaved	0	4	0.00	0.00
Total Vehicle Fugitive				**0.08**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Grading[b]	VMT/Day	6	3.70	0.19
Bulldozing	Hours/Day	6	0.83	0.12
Total Earthwork Fugitive			**4.54**	**0.31**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[b.] Assumes 1 mile of grader travel per hour.

Table 28b
Subtransmission ROW Clearing - LST Analysis

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	2.95	17.25	27.97	0.05	1.74	1.60
Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle Fugitive	--	--	--	--	0.00	0.00
Earthwork Fugitive	--	--	--	--	1.17	0.11
Total	**2.95**	**17.25**	**27.97**	**0.05**	**2.91**	**1.71**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	500	2	1	0.20	0.86	2.00	0.00	0.11	0.11
Road Grader	500	2	1	0.27	1.50	2.63	0.00	0.16	0.15
Water Truck	350	2	1	0.31	1.51	2.88	0.01	0.17	0.16
Backhoe/Loader	500	4	1	0.65	3.40	6.76	0.02	0.39	0.36
Track Type Dozer	350	4	1	0.90	6.96	7.95	0.01	0.55	0.50
Lowboy Truck/Trailer	500	4	1	0.62	3.02	5.75	0.01	0.35	0.32
Total Equipment Exhaust				**2.95**	**17.25**	**27.97**	**0.05**	**1.74**	**1.60**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Onsite Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Total Vehicle Exhaust			**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	0	0	0.00	0.00
Worker Commuting	Unpaved	0	0	0.00	0.00
Total Vehicle Fugitive				**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Grading[b]	VMT/Day	1	0.62	0.03
Bulldozing	Hours/Day	4	0.56	0.08
Total Earthwork Fugitive			**1.17**	**0.11**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[b.] Assumes 0.5 miles of grader travel per hour.

Table 29
Subtransmission Line Roadway

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	7.45	43.41	71.60	0.12	4.42	4.06
Vehicle Exhaust	0.11	0.99	0.11	0.00	0.01	0.01
Vehicle Fugitive	--	--	--	--	0.06	0.00
Earthwork Fugitive	--	--	--	--	7.00	0.44
Total	**7.56**	**44.40**	**71.71**	**0.12**	**11.49**	**4.50**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	500	2	2	0.41	1.72	4.01	0.01	0.23	0.21
Road Grader	500	4	1	0.53	3.01	5.26	0.01	0.32	0.30
Water Truck	350	8	2	2.47	12.07	23.00	0.04	1.39	1.28
Backhoe/Front Loader	500	6	1	1.29	9.81	12.65	0.02	0.82	0.76
Drum Type Compactor		4	1	0.56	2.49	6.32	0.01	0.34	0.31
Track Type Dozer	350	6	1	1.35	10.45	11.93	0.02	0.82	0.76
Excavator	500	6	1	0.54	2.36	5.56	0.01	0.31	0.29
Lowboy Truck/Trailer	500	2	1	0.31	1.51	2.88	0.01	0.17	0.16
Total Equipment Exhaust				**7.45**	**43.41**	**71.60**	**0.12**	**4.42**	**4.06**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	3	0.11	0.99	0.11	0.00	0.01	0.01
Total Vehicle Exhaust			**0.11**	**0.99**	**0.11**	**0.00**	**0.01**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	3	0.06	0.00
Worker Commuting	Unpaved	0	3	0.00	0.00
Total Vehicle Fugitive				**0.06**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Bulldozing	Hours/Day	6	0.83	0.12
Excavating and Grading[b]	VMT/Day	10	6.17	0.32
Total Earthwork Fugitive			**7.00**	**0.44**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[b.] Assumes 1 mile of grader and excavator travel per hour.

Emission factors are in Table 45

Table 30
Subtransmission Pole Framing and Setting

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	7.33	40.08	66.71	0.13	4.59	4.23
Vehicle Exhaust	0.22	1.98	0.22	0.00	0.02	0.01
Vehicle Fugitive	--	--	--	--	0.12	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**7.55**	**42.07**	**66.93**	**0.13**	**4.74**	**4.24**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	300	5	3	1.52	6.45	15.02	0.03	0.86	0.79
10,000 lb/ Rough Terrain Forklift	200	4	1	0.41	2.92	3.19	0.01	0.30	0.28
30-Ton Crane	300	6	2	0.92	4.16	9.20	0.02	0.56	0.52
Compressor Trailer	120	6	3	1.93	13.73	14.28	0.03	1.39	1.28
Flat Bed Truck/Trailer	350	4	1	0.62	3.02	5.75	0.01	0.35	0.32
10-cu yd. Dump Truck	350	4	1	0.62	3.02	5.75	0.01	0.35	0.32
Backhoe/Front Loader	350	8	1	1.30	6.80	13.51	0.03	0.78	0.72
Total Equipment Exhaust				**7.33**	**40.08**	**66.71**	**0.13**	**4.59**	**4.23**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01
Total Vehicle Exhaust			**0.22**	**1.98**	**0.22**	**0.00**	**0.02**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Total Vehicle Fugitive				**0.12**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 31a
Subtransmission Line TSP Footing Installation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	9.79	53.79	93.62	0.17	5.91	5.44
Vehicle Exhaust	0.80	6.08	3.63	0.01	0.19	0.15
Vehicle Fugitive	--	--	--	--	43.02	4.29
Earthwork Fugitive	--	--	--	--	0.02	0.00
Total	**10.59**	**59.88**	**97.25**	**0.18**	**49.15**	**9.89**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab Flat Bed, 4x4	300	2	4	1.24	6.03	11.50	0.02	0.70	0.64
30-Ton Crane Truck	300	5	2	1.13	6.62	10.99	0.02	0.68	0.63
Backhoe	200	8	2	1.21	9.41	9.57	0.02	0.90	0.83
Auger Truck	500	6	2	1.85	9.05	17.25	0.03	1.05	0.96
4000 Gallon Water Truck	350	4	2	1.24	6.03	11.50	0.02	0.70	0.64
10-cu. yd. Dump Truck	350	5	2	1.55	7.54	14.38	0.03	0.87	0.80
10-cu. yd. Concrete Mixer Truck	425	5	3	1.59	9.10	18.43	0.04	1.02	0.94
Total Equipment Exhaust				**9.79**	**53.79**	**93.62**	**0.17**	**5.91**	**5.44**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Water Truck	20	2	0.12	0.48	1.53	0.00	0.07	0.06
Crew Truck	20	2	0.10	0.74	0.82	0.00	0.03	0.03
Concrete Truck	20	1	0.06	0.24	0.76	0.00	0.04	0.03
Worker Commuting	40	14	0.51	4.63	0.51	0.01	0.05	0.03
Total Vehicle Exhaust			**0.80**	**6.08**	**3.63**	**0.01**	**0.19**	**0.15**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
				Controlled	
Water Truck	Paved	10	2	0.00	0.00
Water Truck	Unpaved	10	2	17.16	1.72
Crew Truck	Paved	10	2	0.00	0.00
Crew Truck	Unpaved	10	2	17.16	1.72
Concrete Truck	Paved	10	1	0.00	0.00
Concrete Truck	Unpaved	10	1	8.58	0.86
Worker Commuting	Paved	40	14	0.12	0.00
Worker Commuting	Unpaved	0	14	0.00	0.00
Total Vehicle Fugitive				**43.02**	**4.29**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	22	0.02	0.00
Total Earthwork Fugitive			**0.02**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 31b
Subtransmission Line TSP Footing Installation - LST Analysis

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	4.32	23.87	40.86	0.08	2.61	2.40
Vehicle Exhaust	0.09	0.42	0.97	0.00	0.04	0.04
Vehicle Fugitive	--	--	--	--	0.78	0.08
Earthwork Fugitive	--	--	--	--	0.02	0.00
Total	**4.41**	**24.30**	**41.83**	**0.08**	**3.46**	**2.52**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab Flat Bed, 4x4	300	2	1	0.31	1.51	2.88	0.01	0.17	0.16
30-Ton Crane Truck	300	5	1	0.56	3.31	5.49	0.01	0.34	0.32
Backhoe	200	8	1	0.60	4.70	4.78	0.01	0.45	0.41
Auger Truck	500	6	1	0.93	4.52	8.63	0.02	0.52	0.48
4000 Gallon Water Truck	350	4	1	0.62	3.02	5.75	0.01	0.35	0.32
10-cu. yd. Dump Truck	350	5	1	0.77	3.77	7.19	0.01	0.44	0.40
10-cu. yd. Concrete Mixer Truck	425	5	1	0.53	3.03	6.14	0.01	0.34	0.31
Total Equipment Exhaust				**4.32**	**23.87**	**40.86**	**0.08**	**2.61**	**2.40**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Onsite Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Water Truck	10	1	0.03	0.12	0.38	0.00	0.02	0.02
Crew Truck	10	1	0.03	0.18	0.21	0.00	0.01	0.01
Concrete Truck	10	1	0.03	0.12	0.38	0.00	0.02	0.02
Total Vehicle Exhaust			**0.09**	**0.42**	**0.97**	**0.00**	**0.04**	**0.04**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Onsite Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per	Number	PM_{10} (lb/day)[b]	$PM_{2.5}$ (lb/day)[b]
Water Truck	Paved	10	1	2.06E-03	0.00E+00
Water Truck	Unpaved	0.3	1	0.26	0.03
Crew Truck	Paved	10	1	0.00	0.00
Crew Truck	Unpaved	0.3	1	0.26	0.03
Concrete Truck	Paved	10	1	2.06E-03	0.00E+00
Concrete Truck	Unpaved	0.3	1	0.26	0.03
Total Vehicle Fugitive				**0.78**	**0.08**

[a] Onsite vehicle travel on unpaved roads is based on approximate distance of unpaved access road, from the paved access road to TSP installation location. The approximate roundtrip distance on unpaved access roads is 300-ft (Google Earth, 2013). Daily vehicle transport on unpaved roads is estimated to equal 1,800-ft or 0.3 miles per day.

[b] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	22	0.02	0.00
Total Earthwork Fugitive			**0.02**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 32
Subtransmission Line Conductor Installation

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	10.59	44.83	106.31	0.19	6.03	5.55
Vehicle Exhaust	0.60	5.39	0.70	0.01	0.06	0.04
Vehicle Fugitive	--	--	--	--	2.60	0.25
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**11.19**	**50.22**	**107.01**	**0.20**	**8.70**	**5.84**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
3/4-Ton Pick-up	300	8	2	1.63	6.88	16.02	0.03	0.92	0.85
1-Ton Crew Cab Flat Bed, 4x4	300	8	4	3.25	13.76	32.04	0.06	1.84	1.69
Wire Truck/Trailer	350	2	2	0.41	1.72	4.01	0.01	0.23	0.21
Dump Truck	350	2	1	0.20	0.86	2.00	0.00	0.11	0.11
Bucket Truck	350	8	2	1.63	6.88	16.02	0.03	0.92	0.85
22-Ton Manitex	350	8	2	1.39	5.88	14.90	0.02	0.81	0.75
Splicing Rig	350	2	1	0.17	0.74	1.86	0.00	0.10	0.09
Splicing Lab	300	2	1	0.17	0.74	1.86	0.00	0.10	0.09
3 Drum Straw line Puller	300	6	1	0.52	2.21	5.59	0.01	0.31	0.28
Static Truck/Tensioner	350	6	2	1.22	5.16	12.02	0.02	0.69	0.63
Total Equipment Exhaust				**10.59**	**44.83**	**106.31**	**0.19**	**6.03**	**5.55**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	0.35	16	0.01	0.10	0.12	0.00	0.00	0.00
Worker Commuting	40	16	0.58	5.29	0.59	0.01	0.06	0.04
Total Vehicle Exhaust			**0.60**	**5.39**	**0.70**	**0.01**	**0.06**	**0.04**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crew Truck	Unpaved	0.18	16	2.47	0.25
Worker Commuting	Paved	40	16	0.13	0.00
Worker Commuting	Unpaved	0	16	0.00	0.00
Total Vehicle Fugitive				**2.60**	**0.25**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 33a
Subtransmission Line Assembly

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	8.02	37.04	75.73	0.14	4.87	4.48
Vehicle Exhaust	0.29	2.64	0.29	0.00	0.03	0.02
Vehicle Fugitive	--	--	--	--	0.16	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**8.31**	**39.69**	**76.02**	**0.14**	**5.06**	**4.50**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
3/4-Ton Pick-up Truck, 4x4	300	5	5	2.54	10.75	25.03	0.05	1.44	1.32
1-Ton Crew Cab Flat Bed, 4x4	300	5	4	2.03	8.60	20.03	0.04	1.15	1.06
Compressor Trailer	120	5	2	0.82	5.42	5.36	0.01	0.74	0.68
80-Ton Rough Terrain Crane	350	6	3	1.39	6.23	13.81	0.02	0.85	0.78
40' Flat Bed Truck/Trailer	350	4	2	1.24	6.03	11.50	0.02	0.70	0.64
Total Equipment Exhaust				**8.02**	**37.04**	**75.73**	**0.14**	**4.87**	**4.48**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	8	0.29	2.64	0.29	0.00	0.03	0.02
Total Vehicle Exhaust			**0.29**	**2.64**	**0.29**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	8	0.16	0.00
Worker Commuting	Unpaved	0	8	0.00	0.00
Total Vehicle Fugitive				**0.16**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 33b
Subtransmission Line Assembly - LST Analysis

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	2.51	12.11	23.05	0.04	1.58	1.45
Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle Fugitive	--	--	--	--	0.00	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**2.51**	**12.11**	**23.05**	**0.04**	**1.58**	**1.45**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
3/4-Ton Pick-up Truck, 4x4	300	5	1	0.51	2.15	5.01	0.01	0.29	0.26
1-Ton Crew Cab Flat Bed, 4x4	300	5	1	0.51	2.15	5.01	0.01	0.29	0.26
Compressor Trailer	120	5	1	0.41	2.71	2.68	0.00	0.37	0.34
80-Ton Rough Terrain Crane	350	6	1	0.46	2.08	4.60	0.01	0.28	0.26
40' Flat Bed Truck/Trailer	350	4	1	0.62	3.02	5.75	0.01	0.35	0.32
Total Equipment Exhaust				**2.51**	**12.11**	**23.05**	**0.04**	**1.58**	**1.45**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Onsite Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	0	0	0.00	0.00	0.00	0.00	0.00	0.00
Total Vehicle Exhaust			**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Onsite Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None		0	0	0.00	0.00
Total Vehicle Fugitive				**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 34
Subtransmission Line Restoration

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	4.84	7.20	6.08	0.02	2.88	0.43
Vehicle Exhaust	0.18	1.65	0.18	0.00	0.02	0.01
Vehicle Fugitive	--	--	--	--	0.10	0.00
Earthwork Fugitive	--	--	--	--	0.56	0.08
Total	**5.02**	**8.85**	**6.26**	**0.02**	**3.55**	**0.52**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
1-Ton Crew Cab, 4x4	300	2	2	0.41	0.56	0.14	0.00	0.23	0.04
Road Grader	350	6	1	0.80	0.97	0.63	0.00	0.48	0.06
Water Truck	350	4	1	0.62	0.75	0.41	0.00	0.35	0.05
Backhoe/Front Loader	350	6	1	0.98	1.34	1.37	0.00	0.59	0.09
Drum Type Compactor	250	6	1	0.83	0.84	0.68	0.00	0.50	0.06
Track Type Dozer	350	4	1	0.90	2.52	2.79	0.01	0.55	0.11
Lowboy Truck/Trailer	300	3	1	0.30	0.21	0.04	0.00	0.17	0.02
Total Equipment Exhaust				**4.84**	**7.20**	**6.08**	**0.02**	**2.88**	**0.43**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	5	0.18	1.65	0.18	0.00	0.02	0.01
Total Vehicle Exhaust			**0.18**	**1.65**	**0.18**	**0.00**	**0.02**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	5	0.10	0.00
Worker Commuting	Unpaved	0	5	0.00	0.00
Total Vehicle Fugitive				**0.10**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Grading[b]	VMT/Day	6	3.70	0.19
Bulldozing	Hours/Day	4	0.56	0.08
Total Earthwork Fugitive			**4.26**	**0.27**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[b.] Assumes 1 mile of grader travel per hour.

Emission factors are in Table 48

Table 35
Fiber Optic Installation

Emissions Summary[1]

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle Exhaust	0.32	2.17	2.09	0.00	0.10	0.09
Vehicle Fugitive	--	--	--	--	0.11	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**0.32**	**2.17**	**2.09**	**0.00**	**0.22**	**0.09**

1. Emissions may be generated within counties under SCAQMD or VCAPCD jurisdiction. Fiber optic installation associated with Telecom Route #4 is the only construction activity that would occur outside of SCAQMD jurisdiction. Therefore, emissions generated in VCAPCD are compared to VCAPCD thresholds below. SCAQMD thresholds are used to compare emissions generated from concurrent activities within the SCAB, as presented in Table 1.

Emissions Summary - Ventura County

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle Exhaust	0.32	2.17	2.09	0.00	0.10	0.09
Vehicle Fugitive	--	--	--	--	0.00	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**0.32**	**2.17**	**2.09**	**0.00**	**0.10**	**0.09**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				0.00	0.00	0.00	0.00	0.00	0.00
Total Equipment Exhaust				**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	20	1	0.05	0.37	0.41	0.00	0.02	0.01
Heavy Duty Truck	20	2	0.12	0.48	1.53	0.00	0.07	0.06
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01
Total Vehicle Exhaust			**0.32**	**2.17**	**2.09**	**0.00**	**0.10**	**0.09**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Pickup Truck	Paved	20	1	0.01	0.00
Pickup Truck	Unpaved	0	1	0.00	0.00
Heavy Duty Truck	Paved	20	2	0.02	0.00
Heavy Duty Truck	Unpaved	0	2	0.00	0.00
Worker Commuting	Paved	40	4	0.08	0.00
Worker Commuting	Unpaved	0	4	0.00	0.00
Total Vehicle Fugitive				**0.11**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 36
Subtransmission Guard Structure Removal

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	6.35	33.46	60.40	0.11	3.87	3.56
Vehicle Exhaust	0.22	1.98	0.22	0.00	0.02	0.01
Vehicle Fugitive	--	--	--	--	0.12	0.00
Earthwork Fugitive	--	--	--	--	0.00	0.00
Total	**6.57**	**35.45**	**60.62**	**0.12**	**4.01**	**3.57**

Construction Equipment Exhaust Emissions

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
3/4-Ton Pick-up	300	6	2	1.22	5.16	12.02	0.02	0.69	0.63
1-Ton Crew Cab Flat Bed	300	6	2	1.22	5.16	12.02	0.02	0.69	0.63
Compressor Trailer	120	6	2	0.54	5.77	4.58	0.01	0.55	0.50
Extendable Flat Bed Pole	350	6	2	1.85	9.05	17.25	0.03	1.05	0.96
30-Ton Crane Truck	500	8	1	0.90	5.30	8.79	0.01	0.55	0.50
80ft. Hydraulic Man-lift Bu	350	4	1	0.62	3.02	5.75	0.01	0.35	0.32
Total Equipment Exhaust				**6.35**	**33.46**	**60.40**	**0.11**	**3.87**	**3.56**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	40	6	0.22	1.98	0.22	0.00	0.02	0.01
Total Vehicle Exhaust			**0.22**	**1.98**	**0.22**	**0.00**	**0.02**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	40	6	0.12	0.00
Worker Commuting	Unpaved	0	6	0.00	0.00
Total Vehicle Fugitive				**0.12**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None			0.00	0.00
Total Earthwork Fugitive			**0.00**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

Table 37
Worker Shuttle

Emissions Summary

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Vehicle Exhaust	0.16	1.11	1.24	0.00	0.05	0.04
Vehicle Fugitive	--	--	--	--	0.03	0.00
Total	**0.16**	**1.11**	**1.24**	**0.00**	**0.08**	**0.04**

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Shuttle	60	1	0.16	1.11	1.24	0.00	0.05	0.04
Total Vehicle Exhaust			**0.16**	**1.11**	**1.24**	**0.00**	**0.05**	**0.04**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Shuttle	Paved	60	1	0.03	0.00
Worker Shuttle	Unpaved	0	1	0.00	0.00
Total Vehicle Fugitive				**0.03**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Table 38
Construction Greenhouse Gas Emissions

Emissions Summary

Construction Activity	**CO_2e (MT)[a]**
Substation	**335**
66 kV Subtransmission Line	**1657**
Compressor Station	**2279**
Worker Shuttle	**37**
Plant Power Line	**430**
Guard House and Office Trailer Relocation	**170**
Turbine Decommissioning and Dismantling	**85**
Project Total	**4994**

Source	**CO_2e (MT)[a]**
Equipment Exhaust	3,292
Motor Vehicle Exhaust	1,702
Project Total	***4,994***

Construction Equipment Exhaust - Substation Site

Equipment	**Horse-Power**	**Hours/ Day Used**	**Number**	**Days Used**	**CO_2 (MT)[a]**	**CH4 (MT)[a]**	**CO_2e (MT)[a]**
Substation Grading							
Off-Highway Truck	500	8	1	90	88.9	0.006	89.08
Grader	350	3	1	90	16.3	0.002	16.29
Backhoe	350	2	1	90	14.0	0.001	14.04
Dozer	350	4	1	90	30.0	0.004	30.04
Scraper	0	3	1	90	13.3	0.001	13.33
Tamper	0	2	1	90	4.1	0.001	4.06
Substation Civil							
Excavator	152	4	1	60	8.0	0.001	8.04
Foundation Auger	79	6	1	15	1.3	0.000	1.27
Backhoe	79	3	2	15	1.2	0.000	1.25
Skip Loader	75	3	1	60	2.1	0.000	2.09
Skid Steer Loader	75	3	2	60	4.2	0.001	4.18
Forklift	83	4	1	60	1.6	0.000	1.61
17 Ton Crane	125	2	1	60	2.7	0.000	2.74
Substation Electrical							
Scissor Lift	87	3	2	70	3.7	0.001	3.76
Manlift	43	3	2	70	2.1	0.000	2.09
Reach Manlift	87	4	1	70	2.5	0.001	2.51
15 Ton Crane	125	3	1	35	2.4	0.000	2.40
Substation Wiring							
Manlift	43	4	1	25	0.5	0.00	0.50
Substation Transformer							
Forklift	83	1	6	30	1.2	0.00	1.20
Crane	125	1	6	10	1.4	0.00	1.37
Substation Paving							
Paving Roller	46	4	2	15	0.7	0.00	0.73
Asphalt Paver	152	4	1	15	1.9	0.00	1.89
Asphalt Curb Machine	35	3	1	15	0.3	0.00	0.26
Tractor	45	3	1	15	0.3	0.00	0.32
Substation Fencing							
Skid Steer Loader	75	8	1	10	0.9	0.00	0.93
Substation Landscaping							
Tractor	45	6	1	15	0.6	0.000	0.65
TOTAL							**206.62**

[a] Emissions [metric tons, MT] = Emission factor [lb/mi] x Distance per vehicle [mi/day] x Number vehicles x Days used *453.6 [g/lb] / 1,000,000 [g/MT]

Motor Vehicle Exhaust - Substation Site

Table 38
Construction Greenhouse Gas Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	Days Used	CO_2 (MT)[a]	CH4 (MT)[a]	CO_2e (MT)[a]
Substation Survey						
Pickup Truck	1	2	10	0.02	0.00	0.02
Worker Commuting	40	4	10	0.80	0.00	0.80
Substation Grading						
Water Truck	10	1	90	1.72	0.00	1.72
Tool Truck	5	1	90	0.56	0.00	0.56
Pickup Truck	20	1	90	2.23	0.00	2.23
Dump Truck	5	44	90	37.82	0.00	37.85
Worker Commuting	40	15	90	26.84	0.00	26.88
Substation Civil						
Water Truck	10	1	60	1.15	0.00	1.15
Tool Truck	5	1	60	0.37	0.00	0.37
Dump Truck	10	1	60	1.15	0.00	1.15
Worker Commuting	40	10	60	11.93	0.00	11.95
Substation MEER						
Carry-all Truck	5	1	20	0.19	0.00	0.19
Stake Truck	5	1	20	0.19	0.00	0.19
Worker Commuting	40	4	20	1.59	0.00	1.59
Substation Electrical						
Crew Truck	20	2	70	3.47	0.00	3.47
Worker Commuting	40	10	70	13.92	0.00	13.94
Substation Wiring						
Worker Commuting	40	5	25	2.49	0.00	2.49
Substation Transformer						
Crew Truck	30	2	30	2.23	0.00	2.23
Low Bed Truck	30	1	30	1.72	0.00	1.72
Worker Commuting	40	6	30	3.58	0.00	3.58
Substation Testing						
Crew Truck	20	1	80	1.98	0.00	1.98
Worker Commuting	40	2	80	3.18	0.00	3.19
Substation Maintenance						
Maintenance Truck	30	2	30	2.23	0.00	2.23
Worker Commuting	32	1	31	0.49	0.00	0.49
Substation Paving						
Crew Truck	30	2	15	1.12	0.00	1.12
Stake Truck	10	1	15	0.29	0.00	0.29
Dump Truck	10	1	15	0.29	0.00	0.29
Worker Commuting	40	6	15	1.79	0.00	1.79
Substation Fencing						
Flatbed Truck	10	1	10	0.19	0.00	0.19
Pickup Truck	5	1	10	0.06	0.00	0.06
Worker Commuting	40	4	10	0.80	0.00	0.80
Substation Landscaping						
Dump Truck	10	1	15	0.29	0.00	0.29
Worker Commuting	40	6	15	1.79	0.00	1.79
TOTAL						**128.6**

[a] Emissions [metric tons, MT] = Emission factor [lb/mi] x Distance per vehicle [mi/day] x Number vehicles x Days used *453.6 [g/lb] / 1,000,000 [g/MT]

Construction Equipment Exhaust - 66kV Subtransmission

Equipment	Horse-Power	Hours/ Day Used	Number	Days Used	CO_2 (MT)[a]	CH4 (MT)[a]	CO_2e (MT)[a]
Subtransmission Marshalling Yard							
1-Ton Crew Cab, 4x4	250	2	1	660	99.7	0.008	99.88
30-Ton Crane Truck	250	2	1	660	99.7	0.008	99.88
10,000 lb Rough Terrain Fork Lift	250	5	1	660	81.4	0.007	81.58
Truck, Semi, Tractor	500	1	1	660	81.5	0.006	81.65
Subtransmission ROW Clearing							
1-Ton Crew Cab, 4x4	500	8	1	1	1.0	0.000	0.99
Road Grader	500	6	1	1	0.4	0.000	0.36
Water Truck	350	8	2	1	0.8	0.000	0.77

Table 38
Construction Greenhouse Gas Emissions

Backhoe/Loader	500	6	1	1	0.9	0.000	0.94
Track Type Dozer	350	6	1	1	0.5	0.000	0.50
Lowboy Truck/Trailer	500	4	1	1	0.5	0.000	0.46
Subtransmission Line Roadway							
1-Ton Crew Cab, 4x4	500	2	2	35	17.3	0.001	17.32
Road Grader	500	4	1	35	8.4	0.001	8.45
Water Truck	350	8	2	35	27.1	0.002	27.10
Backhoe/Front Loader	500	6	1	35	32.8	0.002	32.89
Drum Type Compactor	0	4	1	35	0.3	0.000	0.27
Track Type Dozer	350	6	1	35	17.5	0.002	17.52
Excavator	500	6	1	18	5.9	0.001	5.87
Lowboy Truck/Trailer	500	2	1	18	4.2	0.000	4.16
Subtransmission Guard House Installation							
3/4-Ton Pickup		6	2	6	4.9	0.001	4.96
1-Ton Crew Cab Flat Bed, 4x4	500	6	1	6	4.4	0.000	4.45
Compressor Trailer	120	6	1	6	1.3	0.000	1.32
Auger Truck	500	6	1	6	4.4	0.000	4.45
Extendable Flat Bed Pole Truck	500	6	1	6	4.4	0.000	4.45
30-Ton Crane Truck	500	8	1	6	5.9	0.000	5.94
80ft. Hydraulic Man-lift Bucket Truck	500	4	1	6	2.0	0.000	1.96
Subtransmission Pole Framing and Setting							
1-Ton Crew Cab, 4x4	300	5	3	19	21.5	0.002	21.56
10,000 lb/ Rough Terrain Forklift	200	4	1	2	0.2	0.000	0.20
30-Ton Crane	300	6	2	2	1.2	0.000	1.22
Compressor Trailer	120	6	3	19	12.5	0.001	12.57
Flat Bed Truck/Trailer	350	4	1	2	0.6	0.000	0.61
10-cu yd. Dump Truck	350	4	1	17	5.1	0.000	5.15
Backhoe/Front Loader	350	8	1	17	10.6	0.001	10.61
Subtransmission Line TSP Footing Installation							
1-Ton Crew Cab Flat Bed, 4x4	300	2	4	111	67.1	0.005	67.19
30-Ton Crane Truck	300	5	2	111	56.5	0.005	56.57
Backhoe	200	8	2	111	81.7	0.007	81.83
Auger Truck	500	6	2	75	111.2	0.008	111.35
4000 Gallon Water Truck	350	4	2	111	67.1	0.005	67.19
10-cu. yd. Dump Truck	350	5	2	111	83.9	0.006	83.99
10-cu. yd. Concrete Mixer Truck	425	5	3	75	85.0	0.006	85.12
Subtransmission Line Conductor Installation							
3/4-Ton Pick-up	300	8	2	38	45.9	0.003	46.00
1-Ton Crew Cab Flat Bed, 4x4	300	8	4	38	91.9	0.007	92.01
Wire Truck/Trailer	350	2	2	26	7.9	0.001	7.87
Dump Truck	350	2	1	38	5.7	0.000	5.75
Bucket Truck	350	8	2	38	45.9	0.003	46.00
22-Ton Manitex	350	8	2	38	29.4	0.002	29.42
Splicing Rig	350	2	1	10	1.7	0.000	1.71
Splicing Lab	300	2	1	10	1.0	0.000	0.97
3 Drum Straw line Puller	300	6	1	20	5.8	0.000	5.81
Static Truck/Tensioner	350	6	2	20	11.6	0.001	11.62
Subtransmission Assembly							
3/4-Ton Pick-up Truck, 4x4	300	5	5	37	69.9	0.005	69.99
1-Ton Crew Cab Flat Bed, 4x4	300	5	4	37	55.9	0.004	55.99
Compressor Trailer	120	5	2	37	13.6	0.002	13.60
80-Ton Rough Terrain Crane	350	6	3	37	33.9	0.003	33.94
40' Flat Bed Truck/Trailer	350	4	2	25	15.1	0.001	15.13
Subtransmission Guard House Removal							
3/4-Ton Pick-up	300	6	2	4	3.6	0.000	3.63
1-Ton Crew Cab Flat Bed, 4x4	300	6	2	4	3.6	0.000	3.63
Compressor Trailer	120	6	2	4	1.8	0.000	1.76
Extendable Flat Bed Pole Truck	350	6	2	4	3.6	0.000	3.63
30-Ton Crane Truck	500	8	1	4	4.0	0.000	3.96
80ft. Hydraulic Man-lift Bucket Truck	350	4	1	4	1.2	0.000	1.21
TOTAL							**1,566.9**

[a] Emissions [metric tons, MT] = Emission factor [lb/hr] x Operating time [hr/day] x Number x Days used [days] x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 42

Table 38
Construction Greenhouse Gas Emissions

Motor Vehicle Exhaust - 66kV Subtransmission						
Vehicle Type	**Miles/ Day per Vehicle**	**Number**	**Days Used**	**CO_2 (MT)[a]**	**CH4 (MT)[a]**	**CO_2e (MT)[a]**
Subtransmission Marshalling Yards						
Worker Commuting	40	4	660	52.48	0.00	52.57
Subtransmission ROW Clearing						
Worker Commuting	40	4	1	0.08	0.00	0.08
Subtransmission Guard House Installation						
Worker Commuting	40	6	6	0.72	0.00	0.72
Subtransmission Line Survey						
Pickup Truck	1	2	10	0.02	0.00	0.02
Worker Commuting	40	4	10	0.80	0.00	0.80
Subtransmission Line Roadway						
Worker Commuting	40	3	5	0.30	0.00	0.30
Subtransmission Pole Framing and Setting						
Worker Commuting	40	6	113	13.48	0.00	13.50
Subtransmission Line TSP Footing Installation						
Water Truck	20	2	33	2.52	0.00	2.52
Crew Truck	20	2	33	1.64	0.00	1.64
Concrete Truck	20	1	33	1.26	0.00	1.26
Worker Commuting	40	14	33	9.18	0.00	9.20
Subtransmission Line Conductor Installation						
Crew Truck	0.35	16	7	0.05	0.00	0.05
Worker Commuting	40	16	7	2.23	0.00	2.23
Subtransmission Line Assembly						
Worker Commuting	40	8	6	0.95	0.00	0.96
Subtransmission Line Restoration						
Worker Commuting	40	5	4	0.40	0.00	0.40
Fiber Optic Installation						
Pickup Truck	20	1	20	0.50	0.00	0.50
Heavy Duty Truck	20	2	20	1.53	0.00	1.53
Worker Commuting	40	4	20	1.59	0.00	1.59
Subtransmission Guard House Removal						
Worker Commuting	40	6	4	0.48	0.00	0.48
TOTAL						**90.3**

[a] Emissions [metric tons, MT] = Emission factor [lb/mi] x Distance per vehicle [mi/day] x Number vehicles x Days used *453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 43

Table 38
Construction Greenhouse Gas Emissions

Construction Equipment Exhaust - Compressor Station Site							
Equipment	**Horse-Power**	**Hours/ Day Used**	**Number**	**Days Used**	**CO_2 (MT)[a]**	**CH4 (MT)[a]**	**CO_2e (MT)[a]**
Compressor Station Site Clearing							
D6 Dozer		5	1	21	6.1	0.0	6.14
Grader		5	1	21	6.3	0.0	6.34
Backhoe/Loader		5	2	21	7.5	0.0	7.50
Sheep's Foot Vibrator Compactor (10 yards)		5	2	21	0.4	0.0	0.41
Forklift		5	2	21	11.4	0.0	11.41
Compressor Station Site Preparation							
D6 Dozer		5	1	87	25.4	0.0	25.43
Grader		5	1	87	26.2	0.0	26.25
Excavator		5	2	87	3.0	0.0	3.02
Backhoe/Loader		5	2	87	31.0	0.0	31.08
Sheep's Foot Vibrator Compactor (10 yards)		5	2	87	1.7	0.0	1.71
Compressor Station Civil							
Drilling Rig		5	1	30	4.3	0.0	4.34
Backhoe/Loader		5	2	129	46.0	0.0	46.09
Forklift		5	1	129	35.0	0.0	35.05
30 Ton Hydraulic Crane		4	1	129	13.7	0.0	13.73
D6 Dozer		5	1	129	37.6	0.0	37.71
Front End Loader		5	1	129	23.0	0.0	23.04
Sheep's Foot Vibrator Compactor (10 yards)		5	1	129	1.3	0.0	1.26
Compressor Station Mechanical							
30 Ton Hydraulic Crane		5	1	198	26.3	0.0	26.34
50 Ton Hydraulic Crane		5	1	198	26.3	0.0	26.34
200 Ton Crawler Crane		5	2	198	52.5	0.0	52.68
Forklift		5	1	198	53.7	0.0	53.80
Front End Loader		5	3	198	105.8	0.0	106.11
Welders		5	1	198	26.4	0.0	26.49
Compressor Station Electrical							
Front End Loader		5	1	152	27.1	0.0	27.15
Generators		5	2	152	37.5	0.0	37.57
Other Construction Equipment		5	2	152	179.3	0.0	179.59
Compressor Station Paving							
Paving Roller		5	2	15	3.4	0.0	3.38
Asphalt Paver		5	1	15	4.8	0.0	4.81
Asphalt Curb Machine		5	1	15	2.7	0.0	2.66
Tractor		5	1	15	2.7	0.0	2.68
Compressor Station Fencing							
Skid Steer Loader		5	1	10	0.4	0.0	0.38
Compressor Station Landscaping							
Tractor		5	1	15	2.7	0.0	2.68
TOTAL							**833.18**

[a] Emissions [metric tons, MT] = Emission factor [lb/hr] x Operating time [hr/day] x Number x Days used [days] x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 42

Motor Vehicle Exhaust - Compressor Station Site						
Vehicle Type	**Miles/ Day per Vehicle**	**Number**	**Days Used**	**CO_2 (MT)[a]**	**CH4 (MT)[a]**	**CO_2e (MT)[a]**
Compressor Station Survey						
Pickup Truck	5	1	20	0.12	0.00	0.12
Worker Commuting	40	2	20	0.80	0.00	0.80
Compressor Station Site Clearing						
Dump Truck	10	6	21	2.41	0.00	2.41
6 Ton Truck	10	2	21	0.80	0.00	0.80
Water Truck	20	1	21	0.80	0.00	0.80
Pickup Truck	5	1	21	0.13	0.00	0.13
Worker Commuting	40	50	21	20.87	0.00	20.91
Compressor Station Site Preparation						
Dump Truck	10	6	87	9.97	0.00	9.98

Table 38
Construction Greenhouse Gas Emissions

6 Ton Truck	10	2	87	3.32	0.00	3.33
Water Truck	20	1	87	3.32	0.00	3.33
Pickup Truck	5	1	87	0.54	0.00	0.54
Worker Commuting	40	50	87	86.48	0.01	86.61
Compressor Station Civil						
Water Truck	20	1	129	4.93	0.00	4.93
Pickup Truck	10	15	129	23.98	0.00	24.00
6 Ton Truck	20	7	129	34.50	0.00	34.52
Worker Commuting	40	150	129	384.68	0.03	385.28
Compressor Station Mechanical						
Pickup Truck	10	15	198	36.81	0.00	36.84
6 Ton Truck	20	7	198	52.95	0.00	52.99
Worker Commuting	40	150	198	590.44	0.04	591.36
Compressor Station Electrical						
Pickup Truck	10	15	152	28.26	0.00	28.28
Worker Commuting	40	50	152	151.09	0.01	151.32
Compressor Station Paving						
Pickup Truck	10	2	15	0.37	0.00	0.37
Dump Truck	10	1	15	0.29	0.00	0.29
Worker Commuting	40	6	15	1.79	0.00	1.79
Compressor Station Fencing						
Flatbed Truck	10	1	10	0.19	0.00	0.19
Pickup Truck	10	1	10	0.12	0.00	0.12
Worker Commuting	40	4	10	0.80	0.00	0.80
Compressor Station Landscaping						
Dump Truck	10	1	15	0.29	0.00	0.29
Worker Commuting	40	10	15	2.98	0.00	2.99
TOTAL						**1,446.1**

[a] Emissions [metric tons, MT] = Emission factor [lb/mi] x Distance per vehicle [mi/day] x Number vehicles x Days used *453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 43

Table 38
Construction Greenhouse Gas Emissions

Worker Shuttle Exhaust						
Vehicle Type	**Miles/day**	**Number**	**Days Used**	**CO_2 (MT)**	**CH4 (MT)**	**CO_2e (MT)**
Worker Shuttle	60.00	1.00	492	36.59	0.00	36.62

[a] Emissions [metric tons, MT] = Emission factor [lb/mi] x Distance per vehicle [mi/day] x Number vehicles x Days used *453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 43

Table 39
Operational Emissions

Net Overall Change in Daily Operational Mass Emissions

Source	Daily Mass Emissions (lbs/day)					
	ROG	**CO**	**NO_x**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Vehicle Emissions	0.22	1.98	0.22	0.00	0.33	0.01
Decrease from removal of Jet Turbines	(8.55)	(334.04)	(1069.61)	(13.02)	(19.15)	(19.15)
Net Total	**(8.34)**	**(332.05)**	**(1069.39)**	**(13.02)**	**(18.82)**	**(19.13)**
Significance Threshold	*55*	*550*	*55*	*150*	*150*	*55*
Significant? (Yes/No)	***No***	***No***	***No***	***No***	***No***	***No***

Current Project Emissions Summary

Source	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Vehicle Exhaust	0.22	1.98	0.22	0.00	0.02	0.01
Vehicle Fugitive	--	--	--	--	0.31	0.00
Total	**0.22**	**1.98**	**0.22**	**0.00**	**0.33**	**0.01**

Motor Vehicle Exhaust Emissions

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	60	4	0.22	1.98	0.22	0.00	0.02	0.01
Total Vehicle Exhaust			**0.22**	**1.98**	**0.22**	**0.00**	**0.02**	**0.01**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

Motor Vehicle Entrained Particulate Matter Emissions

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Worker Commuting	Paved	60	10	0.31	0.00
Worker Commuting	Unpaved	0	10	0.00	0.00
Total Vehicle Fugitive				**0.31**	**0.00**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

Emissions Decrease from Decommissioning of the Existing Jet Turbines

Source	Average Daily Fuel Use (MMscf/day)[1]	Daily Mass Emissions (lbs/day)					
		ROG	**CO**	**NOx**	**PM_{10}**	**SO_X**	**CO_2**
Emission Factor (lb/MMscf)[2]		**2.16**	**84.21**	**--**	**4.83**	**3.28**	**112970.00**
D-14	1.38	2.98	116.28	358.56	6.66	4.53	155982.17
D-15	1.26	2.72	106.31	348.08	6.09	4.14	142611.47
D-16	1.32	2.85	111.45	362.97	6.39	4.34	149502.64
Decrease due to shutdown of Turbines[4]		**(8.55)**	**(334.04)**	**(1069.61)**	**(19.15)**	**(13.02)**	**(448,096.28)**

[1] Average Daily Fuel Use calculated from Annual Acutal Fuel Use from the CEMS data for years 2007 and 2008. Average Annual Fuel Use for the two years was divided by 365 for daily fuel use.

[2] Emission factors in lb/MMscf from AP42 - Chapter 3.1, Table 3.1-1 and Table 3.1-2a for all pollutants except NOx. NOx emissions are calculated from Annual NOx emissions 2007 and 2008 (CEMS data)

Turbine Fuel Data

Equipment	Acutal Fuel Use (MMscf/year)		Actual Nox Emissions (lbs/year)		Average Annual		Average Daily	
	2007	**2008**	**2007**	**2008**	**MMscf/year**	**lbs/year**	**MMscf/day**	**lbs/day**
D-14	500.34	507.60	130478.72	131269.05	503.97	130873.89	1.38	358.56
D-15	440.54	481.00	113772.60	140325.03	460.77	127048.82	1.26	348.08
D-16	502.37	463.70	139429.80	125539.50	483.04	132484.65	1.32	362.97

Source: Actuals from CEMS data provided by SCG. Peak daily from SCAQMD permit limit of 150 MMBtu/hour

Emissions Decrease from Decommissioning of the Existing Jet Turbines

Source	Peak Daily Fuel Use (MMscf/day)[1]	Daily Mass Emissions (lbs/day)					
		ROG	**CO**	**NOx**	**PM_{10}**	**SO_X**	**CO_2**
Emission Factor (lb/MMscf)[2]		**2.16**	**84.21**	**--**	**4.83**	**3.28**	**112970**
D-14	3.51	7.56	295.20	358.56	16.92	11.51	396000.00
D-15	3.51	7.56	295.20	348.08	16.92	11.51	396000.00
D-16	3.51	7.56	295.20	362.97	16.92	11.51	396000.00
Decrease due to shutdown of Turbines[4]		**(22.68)**	**(885.60)**	**(1069.61)**	**(50.76)**	**(34.52)**	**(1,188,000.00)**

[1] Peak Daily Fuel Use is based on SCAQMD permit limit of 150 MMBtu/hour. Fuel use is calculated for natural gas heating value of 1027 btu/scf per SCG recommendation.

[2] Emission factors in lb/MMscf from AP42 - Chapter 3.1, Table 3.1-1 and Table 3.1-2a for all pollutants except NOx. NOx emissions are calculated from Annual NOx emissions 2007 and 2008 (CEMS data)

Emission Factors		
Pollutant	**Emission Factor**	**Units**
ROG	0.0021	lb/MMBTU
CO	0.082	lb/MMBTU
SO2[1]	0.003196	lb/MMBTU
PM (Condensable)[2]	0.0047	lb/MMBTU
CO2	110	lb/MMBTU

Inputs	
Natural Gas Heating Value	Units
1027	but/scf

1. SO2 = 0.94*(S); Where S = Sulfure Content of Fuel; Defualt value for S = 3.4E-03, per Table 3.1-2a, Footnote h.
2. PM factors based on combustion from gas turbine with steam injection.

Table 40
Operational Greenhouse Gas Emissions

Net GHG Emissions Summary

Source	CO2 Equivalents, metric tons/year
SF_6 Leakage	54
Motor Vehicle Exhaust	4
Compressor Electricity Use	138,709
Potential GHG Emissions from Current Project	**138,766**
Jet Turbine D14	(28,105)
Jet Turbine D15	(25,696)
Jet Turbine D16	(26,938)
Decrease in GHG due to Removal of Turbines	***(80,739)***
Net Total GHG Emissions	**58,027**

GHG emissions from the new electric driven compressors and exisitng jet turbines are based on maximum potential to emit for 8760 hours per year.

Current Project GHG Emissions Summary

Source	CO_2e (MT/year)
SF_6 Leakage	54
Motor Vehicle Exhaust	4
Compressor Electricity Use	138,709
TOTAL	**138,766**

SF_6 Leakage

Item	Value	Units
SF_6 per Breaker	30	pounds
No. Breakers	17	
Total SF_6	510	pounds
Annual Leakage Rate	1	percent
Annual Emissions	5.1	pounds
Global Warming Potential[a]	23,200	
CO_2e Emissions[b]	**54**	**MT/year**

[a] Table C.7, California Climate Action Registry General Reporting Protocol, Version 3.1, January 2009
[b] CO_2e emissions [metric tons] per year = SF_6 emissions [lb] x Global warming potential [lb CO2e/lb SF6] x 453.6 [g/lb] /1,000,000 [g/MT]

Table 40
Operational Greenhouse Gas Emissions

Motor Vehicle Exhaust

Vehicle Type	Miles/ Day per Vehicle	Number	Annual Use (days)	CO_2 (MT)[a]	CH_4 (MT)[a]	CO_2e (MT)[b]
Worker Commuting	40	4	48	3.82	0.00	3.82
TOTAL						3.82

[a] Emissions [metric tons, MT] = Emission factor [lb/mi] x Distance per vehicle [mi/day] x Number vehicles x Annual Use x 453.6 [g/lb] / 1,000,000 [g/MT]

[b] CO2e = CO2 + (21*CH4); where 21 is the GWP of methane.

Emission factors are in Table 43

GHG Emissions from New Electric VFD Motors - PTE (8760 hours)

		Emission Factor (lb/MWh)[b]			Emissions (MT/yr)			
Source	Annual Electricity Usage, MWh/yr[a]	CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2 e
VFD motor 1	140,160	724.12	0.0302	0.0081	46,036	2	1	46,236
VFD motor 2	140,160	724.12	0.0302	0.0081	46,036	2	1	46,236
VFD motor 3	140,160	724.12	0.0302	0.0081	46,036	2	1	46,236
							Total	**138,709**

[a] Annual electricity usage for each of the 16 MW VFD motors for a 24 hour operation for 365 days per year.

[b] Table C.2, California Climate Action Registry General Reporting Protocol, Version 3.1, January 2009

Global warming potential of CH_4, Table C.1, California Climate Action Registry General Reporting Protocol, Version 3.1, January 2009	21	
Global warming potential of N_2O, Table C.1, California Climate Action Registry General Reporting Protocol, Version 3.1, January 2009	310	

GHG Emissions Decrease from Removal of Exisitng Jet Turbines - AER

		Emission Factor (kg/MMBtu)			Emissions (MT/yr)			
Source	Annual Usage, MMBTU/yr[1]	CO_2[b]	CH_4[c]	N_2O[c]	CO_2	CH_4	N_2O	CO_2 e
Jet Turbine D14	529,169	53.06	0.001	0.0001	28,077.68	0.53	0.05	(28,105)
Jet Turbine D15	483,809	53.06	0.001	0.0001	25,670.88	0.48	0.05	(25,696)
Jet Turbine D16	507,187	53.06	0.001	0.0001	26,911.33	0.51	0.05	(26,938)
							Total Emission Decrease	**80,739**

[a] Annual Fuel suage per year was calculated from annual acutal fuel use from the CEMS data for years 2007 and 2008 and using a natural gas heating value 1027.

[b] Table C.7, California Climate Action Registry General Reporting Protocol, Version 3.1, January 2009

[c] Table C.8, Industrial Sector, California Climate Action Registry General Reporting Protocol, Version 3.1, January 2009

Global warming potential of CH_4, Table C.1, California Climate Action Registry General Reporting Protocol, Version 3.1, January 2009	21	
Global warming potential of N_2O, Table C.1, California Climate Action Registry General Reporting Protocol, Version 3.1, January 2009	310	

Table 41
Project Total GHG Emissions Summary

Source	CO_2e
Construction	
Equipment Exhaust (MT)	3,292
Motor Vehicle Exhaust (MT)	1,702
Total Construction Emissions (MT)	***4,994***
Total Construction Emissions Amortized over 30 years (MT/year)	***166***
Operation	
SF6 Leakage (MT/year)	54
Motor Vehicle Exhaust (MT/year)	4
Compressor Electricity Use (MT/year)	138,709
Potential GHG Emissions from Current Project (MT/year)	***138,766***
Jet Turbine D14 Operation (MT/year)	(28,105)
Jet Turbine D15 Operation (MT/year)	(25,696)
Jet Turbine D16 Operation (MT/year)	(26,938)
Decrease in GHG due to Removal of Turbines (MT/year)	***(80,739)***
Net Operational GHG Emissions (MT/year)	***58,194***
Total Project GHG Emissions (MT/year)	**58,360**
SCAQMD Interim Threshold (MT/year)	10,000
Significant (Yes/No)?	**No**

maximum potential to emit for 8760 hours per year.

Table 42
Off-road Exhaust Emission Factors - Tier 3 (MY 2006-2011)

Equipment Type	ROG (lb/hr)[a]	CO (lb/hr)[a]	NO_X (lb/hr)[a]	SO_X (lb/hr)[a]	PM_{10} (lb/hr)[a]	$PM_{2.5}$ (lb/hr)[b]	CO_2 (lb/hr)[a]	CH_4 (lb/hr)[a]
Dozer	0.244	0.776	2.082	0.002	0.088	0.081	183.487	0.022
Track Type Dozer	0.244	0.776	2.082	0.002	0.088	0.081	183.487	0.022
Loader	0.069	0.362	0.456	0.001	0.038	0.035	51.728	0.006
980 Loader	0.115	0.538	0.686	0.001	0.051	0.047	78.543	0.010
Scraper	0.225	0.737	2.048	0.002	0.079	0.073	209.470	0.020
Grader	0.145	0.631	1.166	0.001	0.059	0.055	132.743	0.013
Grader	0.145	0.631	1.166	0.001	0.059	0.055	132.743	0.013
Backhoe	0.089	0.355	0.289	0.000	0.024	0.022	30.347	0.008
Backhoe	0.120	0.404	1.166	0.002	0.037	0.034	171.737	0.011
Backhoe/Front Loader	0.120	0.404	1.166	0.002	0.037	0.034	171.737	0.011
Backhoe	0.099	0.588	0.770	0.001	0.043	0.039	101.387	0.009
Tamper	0.099	0.418	0.625	0.001	0.053	0.049	58.989	0.009
Excavator	0.109	0.532	0.679	0.001	0.059	0.054	73.623	0.010
Foundation Auger	0.029	0.250	0.257	0.000	0.012	0.011	31.037	0.003
Skip Loader	0.052	0.251	0.228	0.000	0.016	0.014	25.519	0.005
Skid Steer Loader	0.052	0.251	0.228	0.000	0.016	0.014	25.519	0.005
Forklift	0.045	0.182	0.143	0.000	0.012	0.011	14.672	0.004
10,000 lb Rough Terrain Fork Lif	0.054	0.232	0.395	0.001	0.020	0.019	54.396	0.005
10,000 lb/ Rough Terrain Forklift	0.054	0.232	0.395	0.001	0.020	0.019	54.396	0.005
Construction Fork	0.122	0.558	0.907	0.001	0.048	0.044	119.581	0.011
17 Ton Crane	0.092	0.372	0.551	0.001	0.049	0.045	50.148	0.008
Scissor Lift	0.059	0.194	0.184	0.000	0.016	0.014	19.613	0.005
Manlift	0.017	0.058	0.094	0.000	0.005	0.005	10.960	0.002
Reach Manlift	0.059	0.194	0.184	0.000	0.016	0.014	19.613	0.005
15 Ton Crane	0.092	0.372	0.551	0.001	0.049	0.045	50.148	0.008
Crane	0.092	0.372	0.551	0.001	0.049	0.045	50.148	0.008
Paving Roller	0.016	0.055	0.102	0.000	0.004	0.004	13.343	0.001
Vibrating Roller	0.075	0.310	0.471	0.001	0.032	0.030	49.607	0.007
Asphalt Paver	0.139	0.522	0.836	0.001	0.073	0.067	69.196	0.013
Asphalt Curb Machine	0.015	0.052	0.097	0.000	0.004	0.004	12.628	0.001
Tractor	0.020	0.068	0.124	0.000	0.006	0.005	15.863	0.002
Dozer, D6	0.129	0.502	0.769	0.001	0.068	0.062	65.811	0.012
Dozer, D8	0.176	0.574	1.595	0.002	0.061	0.056	166.132	0.016
Truck Mounted Crane	0.103	0.488	0.777	0.001	0.045	0.041	80.345	0.009
Conductor Pulling Machine	0.101	0.542	0.703	0.001	0.057	0.052	80.859	0.009
Conductor Tensioner	0.101	0.542	0.703	0.001	0.057	0.052	80.859	0.009
Conductor Pulling Machine	0.214	0.743	1.854	0.003	0.064	0.059	260.073	0.019
Conductor Tensioner	0.214	0.743	1.854	0.003	0.064	0.059	260.073	0.019
30 Ton Crane	0.092	0.372	0.551	0.001	0.049	0.045	50.148	0.008
31 Ton Crane	0.104	0.346	0.995	0.001	0.035	0.032	112.159	0.009
Drilling Rig	0.070	0.754	0.693	0.002	0.030	0.028	141.076	0.006
Drill Rig	0.091	0.361	0.606	0.001	0.043	0.040	63.607	0.008
Splicing Rig	0.079	0.346	0.763	0.002	0.022	0.020	188.102	0.007
Water Truck	0.094	0.590	0.801	0.001	0.042	0.039	106.516	0.008
50 Ton Hydraulic Crane	0.100	0.427	0.557	0.001	0.045	0.042	58.464	0.009
30 Ton Hydraulic Crane	0.100	0.427	0.557	0.001	0.045	0.042	58.464	0.009
200 Ton Crawler Crane	0.100	0.427	0.557	0.001	0.045	0.042	58.464	0.009
Forklift	0.122	0.558	0.907	0.001	0.048	0.044	119.581	0.011
Backhoe/Loader	0.115	0.538	0.686	0.001	0.051	0.047	78.543	0.010
Backhoe/Loader	0.229	0.849	2.066	0.004	0.070	0.064	344.853	0.021
Grader	0.145	0.631	1.166	0.001	0.059	0.055	132.743	0.013
Road Grader	0.145	0.631	1.166	0.001	0.059	0.055	132.743	0.013
D6 Dozer	0.135	0.543	1.193	0.001	0.051	0.047	128.640	0.012
Sheep's Foot Vibrator Compactor (10 yards)	0.005	0.026	0.031	0.000	0.001	0.001	4.314	0.000

Table 42
Off-road Exhaust Emission Factors - Tier 3 (MY 2006-2011)

Equipment Type	ROG (lb/hr)[a]	CO (lb/hr)[a]	NO_X (lb/hr)[a]	SO_X (lb/hr)[a]	PM_{10} (lb/hr)[a]	$PM_{2.5}$ (lb/hr)[b]	CO_2 (lb/hr)[a]	CH_4 (lb/hr)[a]
Drum Type Compactor	0.005	0.026	0.031	0.000	0.001	0.001	4.314	0.000
Excavators	0.010	0.034	0.060	0.000	0.003	0.003	7.624	0.001
Excavator	0.122	0.558	0.907	0.001	0.048	0.044	119.581	0.011
Front End Loader	0.115	0.538	0.686	0.001	0.051	0.047	78.543	0.010
Backhoe/Front Loader	0.229	0.849	2.066	0.004	0.070	0.064	344.853	0.021
Drilling Rig	0.091	0.361	0.606	0.001	0.043	0.040	63.607	0.008
Paver/Sealer	0.147	0.556	1.313	0.002	0.056	0.052	141.194	0.013
Welders	0.143	0.491	0.668	0.001	0.055	0.051	58.717	0.013
Generators	0.054	0.232	0.395	0.001	0.020	0.019	54.396	0.005
Other Construction Equipment	0.214	0.743	1.854	0.003	0.064	0.059	260.073	0.019
Off-Highway Trucks	0.214	0.743	1.854	0.003	0.064	0.059	260.073	0.019
1-Ton Crew Cab, 4x4	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
1-Ton Crew Cab, 4x4	0.217	0.754	1.787	0.003	0.063	0.058	272.334	0.020
1-Ton Crew Cab, 4x4	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
30-Ton Crane Truck	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
Truck, Semi, Tractor	0.217	0.754	1.787	0.003	0.063	0.058	272.334	0.020
Lowboy Truck/Trailer	0.145	0.607	1.519	0.002	0.049	0.045	254.239	0.013
Forklift	0.122	0.558	0.907	0.001	0.048	0.044	119.581	0.011
Compressor Trailer	0.101	0.542	0.703	0.001	0.057	0.052	80.859	0.009
Compressor Trailer	0.101	0.542	0.703	0.001	0.057	0.052	80.859	0.009
Compressor	0.214	0.743	1.854	0.003	0.064	0.059	260.073	0.019
22-Ton Manitex	0.094	0.590	0.801	0.001	0.042	0.039	106.516	0.008
Splicing Lab	0.094	0.590	0.801	0.001	0.042	0.039	106.516	0.008
3 Drum Straw line Puller	0.094	0.590	0.801	0.001	0.042	0.039	106.516	0.008
Static Truck/Tensioner	0.094	0.590	0.801	0.001	0.042	0.039	106.516	0.008
1-Ton Crew Cab Flat Bed, 4x4	0.217	0.754	1.787	0.003	0.063	0.058	272.334	0.020
Auger Truck	0.217	0.754	1.787	0.003	0.063	0.058	272.334	0.020
Extendable Flat Bed Pole Truck	0.217	0.754	1.787	0.003	0.063	0.058	272.334	0.020
Hauler	0.208	0.839	1.706	0.002	0.082	0.075	151.434	0.019
Water Truck	0.208	0.839	1.706	0.002	0.082	0.075	151.434	0.019
Ditch Witch	0.208	0.839	1.706	0.002	0.082	0.075	151.434	0.019
Batch Plant	0.214	0.743	1.854	0.003	0.064	0.059	260.073	0.019
Truck with Trailer	0.208	0.839	1.706	0.002	0.082	0.075	151.434	0.019
Boom Truck	0.208	0.839	1.706	0.002	0.082	0.075	151.434	0.019
Bucket Truck	0.208	0.839	1.706	0.002	0.082	0.075	151.434	0.019
Dump Truck	0.208	0.839	1.706	0.002	0.082	0.075	151.434	0.019
Concrete Truck	0.208	0.839	1.706	0.002	0.082	0.075	151.434	0.019
3/4-Ton Pickup	0.208	0.839	1.706	0.002	0.082	0.075	151.434	0.019
3/4-Ton Pick-up	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
3/4-Ton Pick-up Truck, 4x4	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
Off-Highway Truck	0.208	0.839	1.706	0.002	0.082	0.075	151.434	0.019
Off-Highway Truck	0.217	0.754	1.787	0.003	0.063	0.058	272.334	0.020
Flat Bed Truck/Trailer	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
10-cu yd. Dump Truck	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
4000 Gallon Water Truck	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
10-cu. yd. Dump Truck	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
10-cu. yd. Concrete Mixer Truck	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
1-Ton Crew Cab Flat Bed, 4x4	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013

Table 42
Off-road Exhaust Emission Factors - Tier 3 (MY 2006-2011)

Equipment Type	ROG (lb/hr)[a]	CO (lb/hr)[a]	NO_X (lb/hr)[a]	SO_X (lb/hr)[a]	PM_{10} (lb/hr)[a]	$PM_{2.5}$ (lb/hr)[b]	CO_2 (lb/hr)[a]	CH_4 (lb/hr)[a]
Auger Truck	0.217	0.754	1.787	0.003	0.063	0.058	272.334	0.020
Wire Truck/Trailer	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
Dump Truck	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
Bucket Truck	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
Extendable Flat Bed Pole Truck	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
30-Ton Crane Truck	0.217	0.754	1.787	0.003	0.063	0.058	272.334	0.020
80ft. Hydraulic Man-lift Bucket Tr	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
40' Flat Bed Truck/Trailer	0.140	0.430	1.237	0.002	0.041	0.038	166.545	0.013
Dozer	0.101	0.477	0.653	0.001	0.053	0.049	70.281	0.009
Loader	0.115	0.538	0.686	0.001	0.051	0.047	78.543	0.010
Scraper	0.120	0.508	0.935	0.001	0.051	0.047	108.612	0.011
Grader	0.145	0.631	1.166	0.001	0.059	0.055	132.743	0.013
Backhoe	0.115	0.538	0.686	0.001	0.051	0.047	78.543	0.010
Tamper	0.075	0.310	0.471	0.001	0.032	0.030	49.607	0.007
Excavator	0.010	0.034	0.060	0.000	0.003	0.003	7.624	0.001
Foundation Auger	0.091	0.361	0.606	0.001	0.043	0.040	63.607	0.008
Skip Loader	0.019	0.095	0.140	0.000	0.008	0.007	16.698	0.002
Skid Steer Loader	0.019	0.095	0.140	0.000	0.008	0.007	16.698	0.002
Forklift	0.122	0.558	0.907	0.001	0.048	0.044	119.581	0.011
30-Ton Crane	0.104	0.346	0.995	0.001	0.035	0.032	112.159	0.009
17 Ton Crane	0.100	0.427	0.557	0.001	0.045	0.042	58.464	0.009
30-Ton Crane Truck	0.104	0.346	0.995	0.001	0.035	0.032	112.159	0.009
80-Ton Rough Terrain Crane	0.104	0.346	0.995	0.001	0.035	0.032	112.159	0.009
80ft. Hydraulic Man-lift Bucket Tr	0.155	0.662	1.423	0.002	0.052	0.048	180.101	0.014
Scissor Lift	0.119	0.580	1.531	0.002	0.045	0.041	212.856	0.011
Manlift	0.119	0.580	1.531	0.002	0.045	0.041	212.856	0.011
Reach Manlift	0.119	0.580	1.531	0.002	0.045	0.041	212.856	0.011
15 Ton Crane	0.100	0.427	0.557	0.001	0.045	0.042	58.464	0.009
Crane	0.100	0.427	0.557	0.001	0.045	0.042	58.464	0.009
10-Ton Hydraulic Crane	0.100	0.427	0.557	0.001	0.045	0.042	58.464	0.009
Paving Roller	0.075	0.310	0.471	0.001	0.032	0.030	49.607	0.007
Asphalt Paver	0.147	0.556	1.313	0.002	0.056	0.052	141.194	0.013
Asphalt Curb Machine	0.151	0.564	0.854	0.001	0.060	0.055	77.934	0.014
Tractor	0.115	0.538	0.686	0.001	0.051	0.047	78.543	0.010
Dozer, D6	0.135	0.543	1.193	0.001	0.051	0.047	128.640	0.012
Dozer, D8	0.135	0.543	1.193	0.001	0.051	0.047	128.640	0.012
Truck Mounted Crane	0.100	0.427	0.557	0.001	0.045	0.042	58.464	0.009
30 Ton Crane	0.100	0.427	0.557	0.001	0.045	0.042	58.464	0.009
Drilling Rig	0.091	0.361	0.606	0.001	0.043	0.040	63.607	0.008
Air Compressors	0.053	0.209	0.306	0.000	0.020	0.019	34.722	0.005

[a] CARB OFFROAD2011 Offroad Mobile Source Emission Factors (MY 2006-2011); where bhp not available, SCAQMD composite emission factors were used

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Diesel Engin **0.920**

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Table 43

Onroad Emission Factor Summary

Vechile Type	SCAQMD EF Classification	ROG	CO	NO_x	SO_x	PM_{10}	$PM_{2.5}$	CO_2	CH_4
		2010							
Water Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Dump Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Carry-all Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Stake Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Low Bed Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Flatbed Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Line Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Concrete Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Heavy Duty Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
6 Ton Truck	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Dump Truck (10 yards)	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Dump Truck (20 yards)	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Water Truck (2000 gallons)	HHDT	0.00304	0.01195	0.03822	0.00004	0.00183	0.00160	4.21121	0.00014
Worker Shuttle	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Pickup Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Crew Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Maintenance Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Tool Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Light Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Bucket Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Framing Truck	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
3/4-Ton Pickup	MHDT	0.00259	0.01844	0.02062	0.00003	0.00075	0.00064	2.73222	0.00013
Worker Commuting	Passenger	0.00091	0.00826	0.00092	0.00001	0.00009	0.00005	1.09568	0.00008

[a] SCAQMD CEQA Air Quality Guidance Handbook - Onroad - EMFAC 2007 Emission Factors

PM10 and PM2.5 includes exhaust + tire and brake wear emissions

Table 44
Motor Vehicle Entrained Road Dust Emission Factors

Vehicle Type	Surface		Silt Loading (sL, g/m2) or Silt Content (s, %)[a]	Average Weight (W) (tons)[b]	PM10 Emission Factor (lb/VMT)[c]	PM2.5 Emission Factor (lb/VMT)[c]	PM10 Emission Factor (lb/VMT)[c]	PM2.5 Emission Factor (lb/VMT)[c]
					Uncontrolled		Controlled	
Water Truck	Paved	Water TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Water Truck	Unpaved	Water TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Tool Truck	Paved	Tool TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Tool Truck	Unpaved	Tool TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Pickup Truck	Paved	Pickup TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Pickup Truck	Unpaved	Pickup TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Dump Truck	Paved	Dump TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Dump Truck	Unpaved	Dump TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Dump Truck (10 yards)	Paved	ump Truck (10 yards)Pave	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Dump Truck (10 yards)	Unpaved	mp Truck (10 yards)Unpav	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Dump Truck (20 yards)	Paved	ump Truck (20 yards)Pave	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Dump Truck (20 yards)	Unpaved	mp Truck (20 yards)Unpav	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
6 Ton Truck	Paved	6 Ton TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
6 Ton Truck	Unpaved	6 Ton TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Carry-all Truck	Paved	Carry-all TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Carry-all Truck	Unpaved	Carry-all TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Stake Truck	Paved	Stake TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Stake Truck	Unpaved	Stake TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Crew Truck	Paved	Crew TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Crew Truck	Unpaved	Crew TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Low Bed Truck	Paved	Low Bed TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Low Bed Truck	Unpaved	Low Bed TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Maintenance Truck	Paved	Maintenance TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Maintenance Truck	Unpaved	/laintenance TruckUnpave	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Tractor	Paved	TractorPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Tractor	Unpaved	TractorUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Flatbed Truck	Paved	Flatbed TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Flatbed Truck	Unpaved	Flatbed TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Light Truck	Paved	Light TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Light Truck	Unpaved	Light TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Line Truck	Paved	Line TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Line Truck	Unpaved	Line TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Bucket Truck	Paved	Bucket TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Bucket Truck	Unpaved	Bucket TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Concrete Truck	Paved	Concrete TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Concrete Truck	Unpaved	Concrete TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Heavy Duty Truck	Paved	Heavy Duty TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Heavy Duty Truck	Unpaved	Heavy Duty TruckUnpaved	7.5	17	2.14E+00	2.14E-01	8.58E-01	8.58E-02
Worker Commuting	Paved	Worker CommutingPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Worker Commuting	Unpaved	Vorker CommutingUnpave	7.5	2.7	9.37E-01	9.37E-02	3.75E-01	3.75E-02
Worker Shuttle	Paved	Worker ShuttlePaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Worker Shuttle	Unpaved	Worker ShuttleUnpaved	7.5	2.7	9.37E-01	9.37E-02	3.75E-01	3.75E-02
Framing Truck	Paved	Framing TruckPaved	0.035	2.7	5.15E-04	0.00E+00	2.06E-04	0.00E+00
Framing Truck	Unpaved	Framing TruckUnpaved	7.5	2.7	9.37E-01	9.37E-02	3.75E-01	3.75E-02

[a] Paved road silt loading from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997) for collector roads,
http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9.pdf
Unpaved road silt content from SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden

[b] Average paved on-road vehicle weight in Ventura County from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997)
Unpaved worker commuting weight on access road assumed to be same as paved road weight
Unpaved weight for other trucks is based on upper limit of 33,000 lbs (16.5 tons) for heavy-duty trucks (SCAQMD CEQA Handbook, (1993) Table A9-9-D-3)

[c] Equations:

$EF(paved) = k_p\ (sL/2)^{0.65}\ (W/3)^{1.5} - C$ Ref: AP-42, Section 13.2.1, "Paved Roads," November 2006

$EF\ (unpaved) = k_u\ (s/12)^a\ (W/3)^b$ Ref: AP-42, Section 13.2.2, "Unpaved Roads," November 2006

Constants:

k_p =	0.016	(Particle size multiplier for PM10)
	0.0024	(Particle size multiplier for PM2.5)
C =	0.00047	(Exhaust, brake wear and tire wear adjustment, PM10)
	0.00036	(Exhaust, brake wear and tire wear adjustment, PM2.5)
k_u =	1.5	(Particle size multiplier for PM)
	0.15	(Particle size multiplier for PM2.5)
a =	0.9	for PM10
	0.9	for PM2.5
b =	0.45	for PM10
	0.45	for PM2.5
	60%	control efficiency, watering 3 x per day

Table 45
Fugitive Dust Emission Factors

Soil Dropping During Excavation

Emission Factor [lb/cu. yd] = 0.0011 x (mean wind speed [mi/hr] / 5)$^{1.3}$ / (moisture [%] / 2)$^{1.4}$ x (number drops per ton) x (density [ton/cu. yd])
Reference: AP-42, Equation (1), Section 13.2.4, November 2006

Parameter	Value	Basis
Mean Wind Speed	12	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G, default
Moisture	15	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G-1, moist soil
Number Drops	4	Assumption
Soil Density	1.215	Table 2.46, Handbook of Solid Waste Management

PM10 Emission Factor (Uncontrolled)	9.94E-04	lb/cu. yd
Reduction from Watering Twice/Day[b]	0%	
Controlled PM10 Emission Factor	9.94E-04	lb/cu. yd
Controlled PM2.5 Emission Factor[a]	2.07E-04	lb/cu. yd

[a] PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

[b] Watering is assumed to be used to maintain moist conditions, so no further reduction from watering is included.

Emissions [pounds per day] = Controlled emission factor [pounds per cubic yard] x Volume soil handled [cubic yards per day]

Table 45
Fugitive Dust Emission Factors

Storage Pile Wind Erosion

Emission Factor [lb/day-acre] = 0.85 x (silt content [%] / 1.5) x (365 / 235) x (percentage of time unobstructed wind exceeds 12 mph / 15)
Reference: SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-E

Parameter	Value	Basis
Silt Content	7.5	SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden
Pct. time wind > 12 mph	100	Worst-case assumption

PM10 Emission Factor (Uncontrolled)	44.0	lb/day-acre
Reduction from Watering Continously throughout the Day	60%	
Controlled PM10 Emission Factor	17.6	lb/day-acre
Controlled PM2.5 Emission Factor[a]	3.7	lb/day-acre

[a] PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

Emissions [pounds per day] = Controlled emission factor [pounds per acre-day] x Storage pile surface area [acres]

Table 45
Fugitive Dust Emission Factors

Bulldozing

Emission Factor [lb/hr] = [1.0 x (silt content [%])$^{1.5}$ / (moisture)$^{1.4}$]*Scaling Factor
Reference: AP-42, Table 11.9-1, July 1998

Parameter	Value	Basis
Silt Content	7.5	SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden
Moisture	15	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G-1, moist soil
PM_{10} Scaling Factor	0.75	EPA AP-42 Chapter 11, Table 11.9-1, Bulldozing, Overburden
$PM_{2.5}$ Scaling Factor	0.105	EPA AP-42 Chapter 11, Table 11.9-1, Bulldozing, Overburden

PM10 Emission Factor (Uncontrolled)	0.348	lb/hr
PM2.5 Emission Factor (Uncontrolled)	0.049	
Reduction from Watering Continously throughout the Day[a]	60%	
Controlled PM10 Emission Factor[b]	0.139	lb/hr
Controlled PM2.5 Emission Factor[b]	0.019	lb/hr

Emissions [pounds per day] = Controlled emission factor [pounds per hour] x Bulldozing or grading time [hours/day]

Notes:
a. Watering is assumed to be applied at various intervals to disturbed areas within the construction sites, at a minimum of 2-1 hour intervals.
b. Control efficiency of site watering during construction obtained from 2006 WRAP Fugitive Dust Handbook. (WRAP 2006)

Grading and Scraping[d]

Emission Factor [lb/VMT] = [0.051 (S)^2.0*Scaling Factor
Reference: AP-42, Table 11.9-1, July 1998

Parameter	Value	Basis
Mean Vehicle Speed (S)[a] - Miles Per Hour (MPH)	7.1	EPA AP-42 Chapter 11, Table 11.9-3, Grading
PM_{10} Scaling Factor	0.6	EPA AP-42 Chapter 11, Table 11.9-1, Grading
$PM_{2.5}$ Scaling Factor	0.031	EPA AP-42 Chapter 11, Table 11.9-1, Grading

PM10 Emission Factor (Uncontrolled) 1.54 lb/VMT

Table 45
Fugitive Dust Emission Factors

PM2.5 Emission Factor (Uncontrolled)	0.08	lb/VMT
Reduction from Watering Twice/Day[b]	60%	
Controlled PM10 Emission Factor[c]	0.62	lb/VMT
Controlled PM2.5 Emission Factor[c]	0.03	lb/VMT

Notes:
a. Speed limit assumed for all graded areas.
b. Watering is assumed to be applied at various intervals to disturbed areas within the construction sites, at a minimum of 2-1 hour intervals.
c. Control efficiency of site watering during construction obtained from 2006 WRAP Fugitive Dust Handbook. (WRAP 2006)
d. Emissions from excavating and scraper unloading are accounted for under "Soil Dropping" emissions per activity.

Table 46
Turbine Dismantling, Hauling and Site Clearing and Grading

49: Emissions Summary - Dismantling, Hauling, and Site Clearing and Grading

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Dismantling	7.0	0.2	1.7	1.3	0.1	0.1
Hauling	7.0	0.6	3.4	5.0	0.2	0.3
Clearing and Grading	5.6	25.3	45.0	0.1	13.6	3.1
Total	**19.6**	**26.1**	**50.1**	**6.3**	**14.0**	**3.5**
Significance Threshold	75	550	100	150	150	55
Significant? (Yes/No)	No	No	No	No	No	No

49a: Emissions Summary - Dismantling

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.0	0.0	0.0	0.0	0.0	0.0
Vehicle Exhaust	7.0	0.2	1.7	1.3	0.0	0.1
Vehicle Fugitive	--	--	--	--	0.1	0.0
Earthwork Fugitive	--	--	--	--	0.0	0.0
Total	**7.0**	**0.2**	**1.7**	**1.3**	**0.1**	**0.1**

49a_1: Construction Equipment Exhaust Emissions - Dismantling

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None				0.0	0.0	0.0	0.0	0.0	0.0
Total Equipment Exhaust				**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number

Emission factors are in Table 42

49a_2: Motor Vehicle Exhaust Emissions - Dismantling

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Heavy Duty Truck	10	3	0.09	0.36	1.15	0.00	0.05	0.05
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01
Total Vehicle Exhaust			**7.0**	**0.2**	**1.7**	**1.3**	**0.0**	**0.1**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 43

49a_3: Motor Vehicle Entrained Particulate Matter Emissions - Dismantling

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Heavy Duty Truck	Paved	10	3	0.0	0.0
Heavy Duty Truck	Unpaved	0	3	0.0	0.0
Worker Commuting	Paved	40	4	0.1	0.0
Worker Commuting	Unpaved	0	4	0.0	0.0
Total Vehicle Fugitive				**0.1**	**0.0**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number

Emission factors are in Table 44

49a_4: Fugitive Particulate Matter Emissions - Dismantling

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day		0.00	0.00
Total Earthwork Fugitive			**0.0**	**0.0**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Emission factors are in Table 45

[b] Estimate

Table 46
Turbine Dismantling, Hauling and Site Clearing and Grading

49b: Emissions Summary - Hualing

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	0.0	0.0	0.0	0.0	0.0	0.0
Vehicle Exhaust	7.0	0.6	3.4	5.0	0.0	0.2
Vehicle Fugitive	--	--	--	--	0.1	0.0
Earthwork Fugitive	--	--	--	--	0.1	0.0
Total	**7.0**	**0.6**	**3.4**	**5.0**	**0.2**	**0.3**

49b_1: Construction Equipment Exhaust Emissions - Turbine Hauling

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
None		0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total Equipment Exhaust				**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number
Emission factors are in Table 42

49b_2: Motor Vehicle Exhaust Emissions - Turbine Hauling

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Heavy Duty Truck	50	2	0.30	1.20	3.82	0.00	0.18	0.16
3/4-Ton Pickup	50	1	0.13	0.92	1.03	0.00	0.04	0.03
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01
Total Vehicle Exhaust			**7.0**	**0.6**	**3.4**	**5.0**	**0.0**	**0.2**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number
Emission factors are in Table 43

49b_3: Motor Vehicle Entrained Particulate Matter Emissions - Turbine Hauling

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Heavy Duty Truck	Paved	50	2	0.1	0.0
Heavy Duty Truck	Unpaved	0	2	0.0	0.0
Worker Commuting	Paved	40	4	0.1	0.0
Worker Commuting	Unpaved	0	4	0.0	0.0
Total Vehicle Fugitive				**0.1**	**0.0**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number
Emission factors are in Table 44

49b_4: Fugitive Particulate Matter Emissions - Turbine Hauling

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	100	0.10	0.02
Total Earthwork Fugitive			**0.1**	**0.0**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
Emission factors are in Table 45
[b] Estimate

Table 46
Turbine Dismantling, Hauling and Site Clearing and Grading

Emissions Summary - Clearing and Grading

Source	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Equipment Exhaust	4.2	18.8	28.1	0.0	1.9	1.7
Vehicle Exhaust	1.5	6.6	16.9	0.0	0.8	0.7
Vehicle Fugitive	--	--	--	--	0.3	0.0
Earthwork Fugitive	--	--	--	--	10.6	0.7
Total	**5.6**	**25.3**	**45.0**	**0.1**	**13.6**	**3.1**

49c_1: Construction Equipment Exhaust Emissions - Clearing and Grading

Equipment	Horse-Power	Hours/ Day Used	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Crane		5	1	0.50	2.14	2.79	0.00	0.23	0.21
Excavator		5	1	0.05	0.17	0.30	0.00	0.01	0.01
Backhoe		5	2	1.15	5.38	6.86	0.01	0.51	0.47
Grader		5	2	1.45	6.31	11.66	0.01	0.59	0.55
Dozer		5	2	1.01	4.77	6.53	0.01	0.53	0.49
Total Equipment Exhaust				**4.2**	**18.8**	**28.1**	**0.0**	**1.9**	**1.7**

[a] Emissions [lb/day] = Emission factor [lb/hr] x Operating time [hr/day] x Number
Emission factors are in Table 42

49c_2: Motor Vehicle Exhaust Emissions - Clearing and Grading

Vehicle Type	Miles/ Day per Vehicle	Number	ROG (lb/day)[a]	CO (lb/day)[a]	NO_x (lb/day)[a]	SO_x (lb/day)[a]	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Heavy Duty Truck	10	15	0.46	1.79	5.73	0.01	0.27	0.24
Dump Truck	24	12	0.88	3.44	11.01	0.01	0.53	0.46
Worker Commuting	40	4	0.15	1.32	0.15	0.00	0.01	0.01
Total Vehicle Exhaust			**1.5**	**6.6**	**16.9**	**0.0**	**0.8**	**0.7**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number
Emission factors are in Table 43

49c_3: Motor Vehicle Entrained Particulate Matter Emissions - Clearing and Grading

Vehicle Type	Road Type	Miles/ Day per Vehicle	Number	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Heavy Duty Truck	Paved	10	15	0.1	0.0
Heavy Duty Truck	Unpaved	0	15	0.0	0.0
Dump Truck	Paved	24	12	0.1	0.0
Dump Truck	Unpaved	0	12	0.0	0.0
Worker Commuting	Paved	40	4	0.1	0.0
Worker Commuting	Unpaved	0	4	0.0	0.0
Total Vehicle Fugitive				**0.3**	**0.0**

[a] Emissions [lb/day] = Emission factor [lb/mi] x Distance per vehicle [lb/day] x Number
Emission factors are in Table 44

49c_4: Fugitive Particulate Matter Emissions - Clearing and Grading

Activity	Activity Units	Activity Level	PM_{10} (lb/day)[a]	$PM_{2.5}$ (lb/day)[a]
Soil Dropping[b]	CY/Day	100	0.00	0.02
Bulldozing	Hours/Day	10	1.39	0.19
Grading and Excavating[c]	VMT/Day	15	9.26	0.48
Total Earthwork Fugitive			**10.6**	**0.7**

[a] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
Emission factors are in Table 45
[b] Estimate
[c.] Assumes rate of grader and excavator travel at 1 mile per hour within the compressor station site.

Table 47
Localized Significance Threshold Analysis

LST Analysis for the Compressor Station Site
(2 acre site; Nearest Receptor at over 1,000 meters)

	CO	NOx	PM10	PM2.5
Peak Daily Construction Emissions	114.56	88.86	11.26	4.39
Peak Daily Operational Emissions	1.98	1.98	0.33	0.01
NOx and CO LST	***8933***	***291***	**--**	**--**
PM10 and PM2.5 Operational LST	**--**	**--**	***139***	***80***
PM10 and PM2.5 Construction LST	**--**	**--**	***34***	***20***
Significant (Yes/No)?	**NO**	**NO**	**NO**	**NO**

LST Analysis for the Substation Site
(2 acre site; Nearest Receptor at over 900 meters)

	CO	NOx	PM10	PM2.5
Peak Daily Construction Emissions	39.92	56.70	7.47	3.03
Peak Daily Operational Emissions	1.98	0.22	0.33	0.01
NOx and CO LST	***8933***	***291***	**--**	**--**
PM10 and PM2.5 Operational LST	**--**	**--**	***139***	***80***
PM10 and PM2.5 Construction LST	**--**	**--**	***34***	***20***
Significant (Yes/No)?	**NO**	**NO**	**NO**	**NO**

LST Analysis for the PPL
(2 acre site; Nearest Receptor at over 900 meters)

	CO	NOx	PM10	PM2.5
Peak Daily Construction Emissions	57.51	100.39	9.24	4.92
Peak Daily Operational Emissions	1.98	0.22	0.33	0.01
NOx and CO LST	***8933***	***291***	**--**	**--**
PM10 and PM2.5 Operational LST	**--**	**--**	***139***	***80***
PM10 and PM2.5 Construction LST	**--**	**--**	***34***	***20***
Significant (Yes/No)?	**NO**	**NO**	**NO**	**NO**

LST Analysis for the 66kV
(1 acre site; Nearest Receptor at 25 meters)[1]

	CO	NOx	PM10	PM2.5
Peak Daily Construction Emissions	24.55	42.58	3.46	2.59
Peak Daily Operational Emissions	1.98	0.22	0.33	0.01
NOx and CO LST	***590***	***114***	**--**	**--**
PM10 and PM2.5 Operational LST	**--**	**--**	***1***	***1***
PM10 and PM2.5 Construction LST	**--**	**--**	***4***	***3***
Significant (Yes/No)?	**NO**	**NO**	**NO**	**NO**

1. Receptor distance is within 25 meters of 12 poles to be replaced within the alignment.

Table 47
Localized Significance Threshold Analysis

LST Analysis for the San Fernando Substation
(1 acre site; Nearest Receptor at 25 meters)[1]

	CO	NOx	PM10	PM2.5
Peak Daily Construction Emissions	24.55	42.58	3.46	2.59
Peak Daily Operational Emissions	1.98	0.22	0.33	0.01
NOx and CO LST	***590***	***114***	**--**	**--**
PM10 and PM2.5 Operational LST	**--**	**--**	***1***	***1***
PM10 and PM2.5 Construction LST	**--**	**--**	***4***	***3***
Significant (Yes/No)?	**NO**	**NO**	**NO**	**NO**

1. Receptor distance is within 25 meters of 12 poles to be replaced within the alignment.
2. Emissions of PM10/PM2.5 include vehicle transport on paved/unpaved roads along the alignment, within proximity to residential receptors.

LST Analysis for the New Guardhouse and Office Trailers
(<1 acre site; Nearest Receptor at >50 meters)

	CO	NOx	PM10	PM2.5
Peak Daily Construction Emissions	35.50	47.44	6.33	3.38
Peak Daily Operational Emissions				
NOx and CO LST	***879***	***115***	**--**	**--**
PM10 and PM2.5 Operational LST	**--**	**--**	***3***	***1***
PM10 and PM2.5 Construction LST	**--**	**--**	***12***	***4***
Significant (Yes/No)?	**NO**	**NO**	**NO**	**NO**

LST Analysis for Turbine Dismantling, Hauling, Site Clearing and Grading
(2 acre site; Nearest Receptor at over 1,000 meters)

	CO	NOx	PM10	PM2.5
Peak Daily Construction Emissions	26.14	50.15	13.99	3.45
Peak Daily Operational Emissions	1.98	0.22	0.33	0.01
NOx and CO LST	***8933***	***291***	**--**	**--**
PM10 and PM2.5 Operational LST	**--**	**--**	***139***	***80***
PM10 and PM2.5 Construction LST	**--**	**--**	***34***	***20***
Significant (Yes/No)?	**NO**	**NO**	**NO**	**NO**

SCAQMD Localized Significance Threshold (LST) Values

	Allowable emissions (lb/day) as a function of receptor distance from Site Boundary														
Pollutant	**1 Acre**					**2 Acre**					**5 Acre**				
Receptor Distance (meters)	**25**	**50**	**100**	**200**	**500**	**25**	**50**	**100**	**200**	**500**	**25**	**50**	**100**	**200**	**500**
CO	590	879	1294	2500	8174	877	1256	1787	3108	8933	1644	2095	2922	4608	11049
NOx	114	115	133	173	273	163	159	172	204	291	246	236	251	275	345
PM_{10} Construction	4	12	25	51	131	6	19	32	59	139	12	38	52	79	161
PM_{10} Operation	1	3	6	13	32	2	5	8	15	34	3	10	13	19	39
$PM_{2.5}$ Construction	3	4	7	18	74	4	5	9	20	80	6	8	13	26	95
$PM_{2.5}$ Operation	1	1	2	5	18	1	2	2	5	20	2	2	3	7	23

Table 48-A

Peak Daily Compressor Site Construction Emissions						
Scenario[1]	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
1	0.24	1.27	1.41	0.07	0.20	0.11
2	12.03	71.13	72.24	0.13	11.26	1.55
3	10.50	73.01	42.73	0.11	6.76	2.41
4	18.59	114.56	88.86	0.20	9.50	4.39
5	1.87	11.21	9.09	0.02	1.00	0.53
Peak Daily	**18.59**	**114.56**	**88.86**	**0.20**	**11.26**	**4.39**

[1] Emissions were calculated for six scenarios, listed below. Each scenario includes a combination of construction activities that could occur at the same time.

Scenario 1 Daily Emissions

Activity	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
Compressor Station Survey	0.09	0.17	0.18	0.07	0.12	0.08
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**0.24**	**1.27**	**1.41**	**0.07**	**0.20**	**0.11**

Scenario 2 Daily Emissions

Activity	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
Compressor Station Site Clearing	5.96	34.91	33.81	0.06	6.78	0.76
Compressor Station Site Preparation	5.92	35.11	37.20	0.06	4.40	0.76
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**12.03**	**71.13**	**72.24**	**0.13**	**11.26**	**1.55**

Scenario 3 Daily Emissions

Activity	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
Compressor Station Civil	10.35	71.91	41.49	0.11	6.68	2.37
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**10.50**	**73.01**	**42.73**	**0.11**	**6.76**	**2.41**

Scenario 4 Daily Emissions

Activity	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
Compressor Station Mechanical	11.35	75.88	43.27	0.11	6.41	2.66
Compressor Station Electrical	7.08	37.58	44.35	0.08	3.01	1.69
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**18.59**	**114.56**	**88.86**	**0.20**	**9.50**	**4.39**

Scenario 5 Daily Emissions

Activity	**ROG (lb/day)**	**CO (lb/day)**	**NO_x (lb/day)**	**SO_x (lb/day)**	**PM_{10} (lb/day)**	**$PM_{2.5}$ (lb/day)**
Compressor Station Paving	0.18	1.44	0.53	0.00	0.12	0.02
Compressor Station Fencing	0.25	1.88	0.56	0.00	0.14	0.03
Compressor Station Landscaping	1.28	6.78	6.77	0.01	0.66	0.44
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**1.87**	**11.21**	**9.09**	**0.02**	**1.00**	**0.53**

Table 48-B

Peak Daily Substation Site Construction Emissions						
Scenario[1]	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
1	0.31	1.29	1.42	0.15	0.31	0.19
2	8.37	39.92	56.70	0.08	7.47	3.03
3	5.20	32.40	24.48	0.05	2.61	1.41
4	2.06	14.86	11.38	0.02	1.07	0.56
Peak Daily	**8.37**	**39.92**	**56.70**	**0.15**	**7.47**	**3.03**

[1] Emissions were calculated for four scenarios based on estimated schedule and activity that could occur concurrently, as listed below.

Scenario 1 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Substation Survey	0.15	0.18	0.19	0.15	0.23	0.15
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**0.31**	**1.29**	**1.42**	**0.15**	**0.31**	**0.19**

Scenario 2 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Substation Grading	5.21	22.15	42.05	0.06	6.01	2.09
Substation Fencing	0.60	3.54	2.46	0.00	0.25	0.14
Substation Civil	2.41	13.13	10.95	0.02	1.13	0.76
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**8.37**	**39.92**	**56.70**	**0.08**	**7.47**	**3.03**

Scenario 3 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Substation MEER	0.18	1.44	0.53	0.00	0.12	0.02
Substation Electrical	1.44	7.44	5.25	0.01	0.63	0.35
Substation Wiring	0.25	1.88	0.56	0.00	0.14	0.03
Substation Transformer	1.28	6.78	6.77	0.01	0.66	0.44
Substation Testing	0.12	1.03	0.49	0.00	0.07	0.02
Substation Maintenance	0.18	1.37	1.27	0.00	0.10	0.04
Substation Paving	1.22	8.84	7.04	0.01	0.62	0.41
Substation Landscaping	0.37	2.51	1.34	0.00	0.20	0.06
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**5.20**	**32.40**	**24.48**	**0.05**	**2.61**	**1.41**

Scenario 4 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Substation Testing	0.12	1.03	0.49	0.00	0.07	0.02
Substation Maintenance	0.18	1.37	1.27	0.00	0.10	0.04
Substation Paving	1.22	8.84	7.04	0.01	0.62	0.41
Substation Landscaping	0.37	2.51	1.34	0.00	0.20	0.06
Worker Shuttle	0.16	1.11	1.24	0.00	0.08	0.04
Total	**2.06**	**14.86**	**11.38**	**0.02**	**1.07**	**0.56**

Table 48-C

Peak Daily 66kV Substransmission Construction Emissions						
Scenario[1]	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
1	2.95	17.25	27.97	0.05	2.91	1.71
2	4.56	24.55	42.58	0.08	2.81	2.59
3	4.41	24.30	41.83	0.08	3.46	2.52
4	2.51	12.11	23.05	0.04	1.58	1.45
Peak Daily	**4.56**	**24.55**	**42.58**	**0.08**	**3.46**	**2.59**

[1] Emissions were calculated for four scenarios based on estimated schedule and activity that could occur concurrently, as listed below.

Scenario 1 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Subtransmission ROW Clearing	2.95	17.25	27.97	0.05	2.91	1.71
Total	**2.95**	**17.25**	**27.97**	**0.05**	**2.91**	**1.71**

Scenario 2 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Subtransmission Pole Framing and Setting	4.56	24.55	42.58	0.08	2.81	2.59
Total	**4.56**	**24.55**	**42.58**	**0.08**	**2.81**	**2.59**

Scenario 3 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
TSP Footing	4.41	24.30	41.83	0.08	3.46	2.52
Total	**4.41**	**24.30**	**41.83**	**0.08**	**3.46**	**2.52**

Scenario 4 Daily Emissions

Activity	ROG (lb/day)	CO (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)
Subtransmission Line Assembly	2.51	12.11	23.05	0.04	1.58	1.45
Total	**2.51**	**12.11**	**23.05**	**0.04**	**1.58**	**1.45**

Appendix C
Supplemental Information Provided by Applicant and SCE

C-1: Supplemental Biological Resources Information

C-2: Supplemental Cultural Resources and Paleontological Resources Information

C-3: Supplemental Geology, Soils, and Mineral Resources Information

C-4: Supplemental Noise Information

Appendix C-1
Supplemental Biological Resources Information

BIOLOGICAL HABITAT ASSESSMENT REPORT FOR TELECOMMUNICATION ROUTE #4, ALISO CANYON TURBINE REPLACEMENT PROJECT (ACTR)

Prepared for:

Southern California Gas Company
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Prepared by:

AECOM
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Orange, CA 92868

October 2012

TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

APPENDICES

1.0 Introduction

This Biological Assessment Report was prepared to evaluate the natural resources occurring within a five-mile radius of the proposed Telecommunication (Telecom) Route #4 alignment.

1.2 Telecom Route #4 Description

Telecom Route #4 is approximately 5.8 miles long and is located within the city of San Fernando, along San Fernando Road. The northern terminus of the alignment is located on the northwest corner of the intersection of Gentili Ranch Road and San Fernando Road. The alignment follows San Fernando Road, running parallel to the west side of Interstate 5, and then follows San Fernando Road to the southeast under Interstate 5. At Truman Street and San Fernando Road, the alignment switches to Truman Street for approximately 0.5-mile. The alignment then continues on South Workman Street where it heads west for 500 feet, then south on Celis Street for 550 feet, then west on South Kalisher Street for 2,300 feet. The alignment continues along Omelveny Avenue for 580 feet to San Fernando Mission Boulevard, where it terminates at the San Fernando Substation located on the north side of San Fernando Mission Boulevard. The location of Telecom Route #4 is presented on Figure 1.

Construction activities associated with Telecom Route #4 would consist of the installation of new fiber optic cable on new or existing overhead Southern California Edison and Los Angeles Department of Water and Power-owned poles and within new and existing underground conduit.

1.3 Methodology

This assessment includes a literature review, a habitat assessment utilizing results from a reconnaissance-level survey, and wetlands characterization utilizing GIS analysis.

1.3.1 Literature Review

A literature review was conducted for special-status plant and wildlife species and sensitive vegetation community occurrences within a five-mile radius of Telecom Route #4. This effort included reviewing occurrences recorded in the California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDB) for the U.S. Geological Survey (USGS) 7.5-minute San Fernando and Oat Mountain quadrangles (quads) dated September 1, 2012 and the California Native Plant Society's online *Inventory of Rare and Endangered Plants of California* (CNPS 2010). The location of U.S. Fish and Wildlife Service-designated Critical Habitat for federally-listed species (USFWS, 2012) (Figure 2), and CNDDB occurrences of sensitive vegetation communities (Figure 3), special-status plant species (Figure 4), and special-status wildlife species (Figure 5) follow.

Based on results of the literature review, eleven special-status plant species were evaluated for their potential to occur within a five-mile radius of Telecom Route #4, as presented in Table 1. Determinations of potential to occur were based on CNDDB records, and presence of suitable habitat within the alignment of Telecom Route #4, as determined through a reconnaissance survey.

Based on the results of the literature review, twelve special-status wildlife species were evaluated for their potential to occur within a five-mile radius of Telecom Route #4, as presented in Table 2. Based on the results of the reconnaissance evaluation, four Species of Special Concern (SSC) have the potential to utilize the habitat present in the undeveloped segment from Balboa Boulevard north to Sunshine Canyon landfill. No suitable habitat was found along the Telecom Route #4 alignment for state or federally-listed wildlife species.

Telecommunication Route #4

25-Meter Buffer

N

0 0.5 1 Miles

1 inch = 0.5 miles

Telecommunication Route 4

Date 10-08	Aliso Canyon DEIR Supplemental Evaluation	Figure 1 of 7

File: R:\Projects\ENSR\P060\06205 Sempra\134 - SCG Aliso Canyon PEA\Maps\Telecom Line\mxd\Fig1of7_Telecomm_Route_4.mxd
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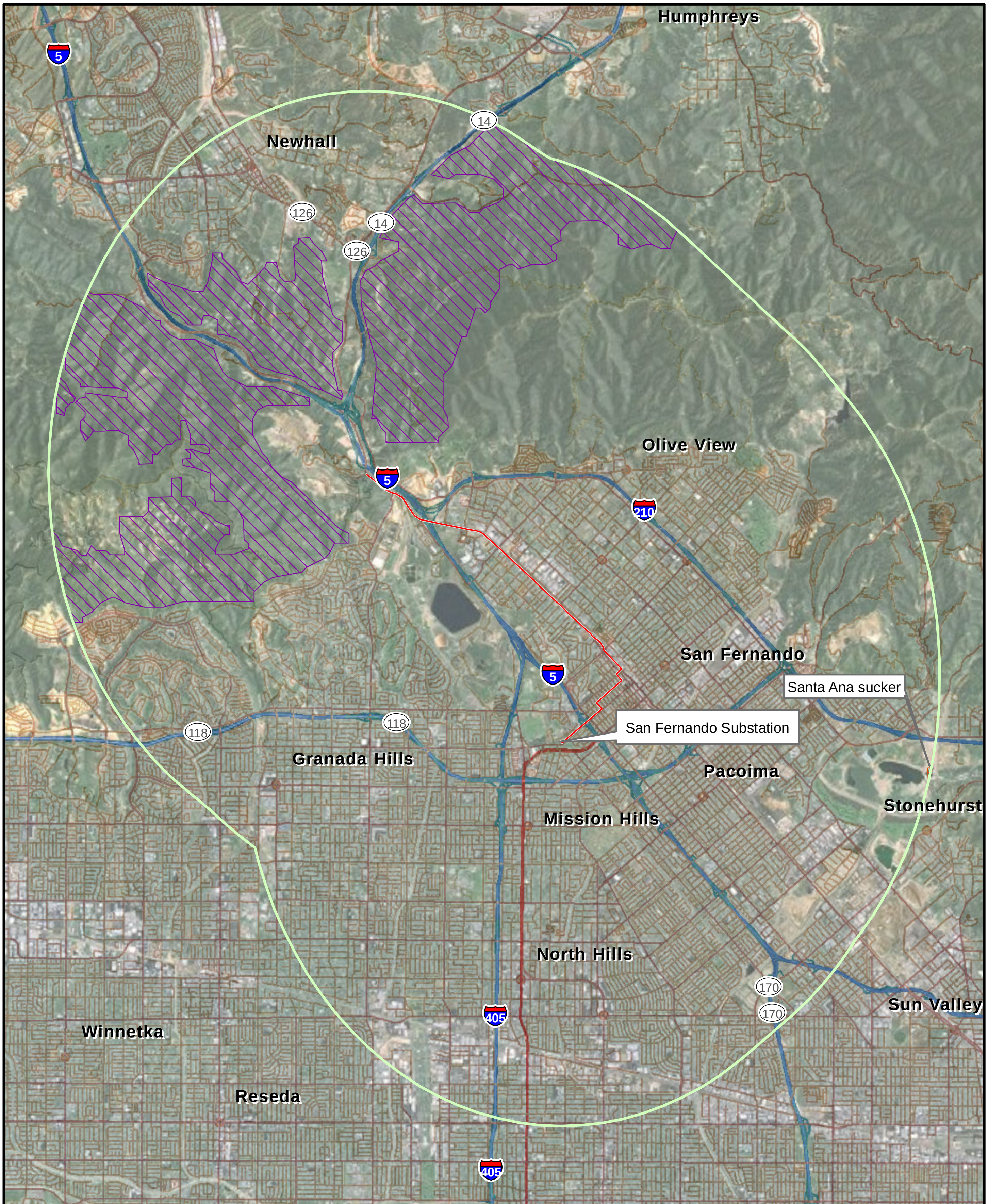

Source: USFWS, 2012

Telecommunication Route #4
Five-Mile Radius
Coastal California gnatcatcher
Santa Ana sucker

N
0 1 2 Miles
1 inch = 1.7 miles

USFWS Critical Habitat Designation within Five Miles of Telecom Route #4

Date 10-08

Aliso Canyon DEIR Supplemental Evaluation

Figure 2 of 7

File: R:\Projects\ENSR\P060\06205 Sempra\134 - SCG Aliso Canyon PEA\Maps\Telecom Line\mxd\Fig2of7_Critical Habitat within 5 Miles of Telecom Line_Route4.mxd
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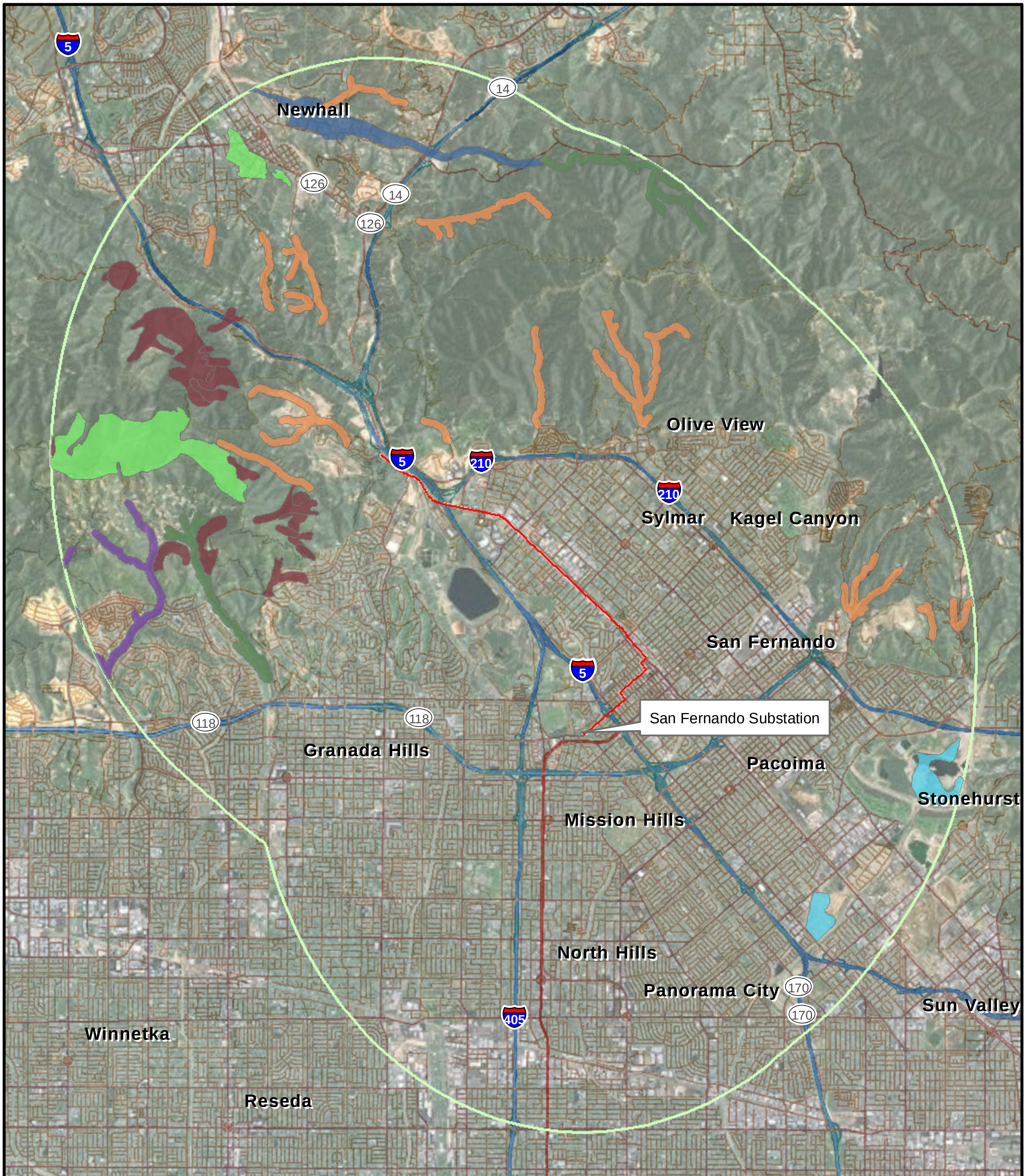

Source: CDFG, 2012

- Telecommunication Route #4
- Five-Mile Radius
- California Walnut Woodland
- Riversidian Alluvial Fan Sage Scrub
- Southern Coast Live Oak Riparian Forest
- Southern Cottonwood Willow Riparian Forest
- Southern Sycamore Alder Riparian Woodland
- Southern Riparian Scrub
- Valley Oak Woodland

N

0 1 2 Miles

1 inch = 1.7 miles

CNDDB Records within a Five-Mile Radius of Telecom Route #4: Vegetation Communities

Date 10-08	Aliso Canyon DEIR Supplemental Evaluation	Figure 3 of 7

File: R:\Projects\ENSR\P060\06205 Sempra\134 - SCG Aliso Canyon PEA\Maps\Telecom Line\mxd\Fig3of7_Habitat within Five-Mile Radius of Telecom Line_Route4.mxd
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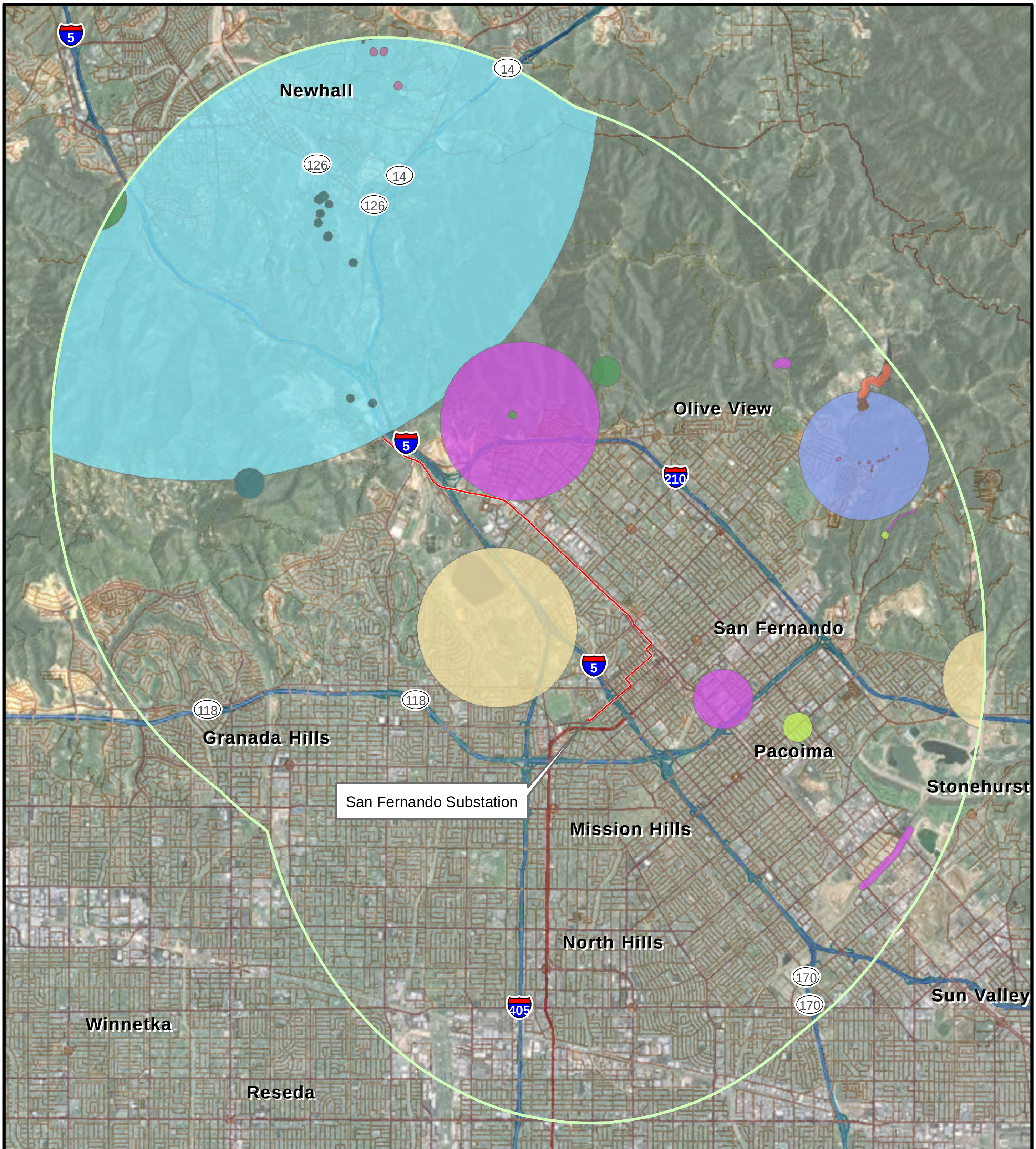

Source: CDFG, 2012

- Telecommunication Route #4
- Five-Mile Radius
- California Orcutt grass
- Davidson's bush-mallow
- Greata's aster
- Nevin's barberry
- Palmer's grapplinghook
- Plummer's mariposa-lily
- Robinson's pepper-grass
- San Fernando Valley spineflower
- short-joint beavertail
- slender mariposa-lily
- slender-horned spineflower

N

0 1 2 Miles

1 inch = 1.7 miles

CNDDB Records within a Five-Mile Radius of Telecom Route #4: Special Status Plant Species

Date 10-08	Aliso Canyon DEIR Supplemental Evaluation	Figure 4 of 7

File: R:\Projects\ENSR\P060\06205 Sempra\134 - SCG Aliso Canyon PEA\Maps\Telecom Line\mxd\Fig4of7_Plants within Five-Mile Radius of Telecom Line_Route4.mxd
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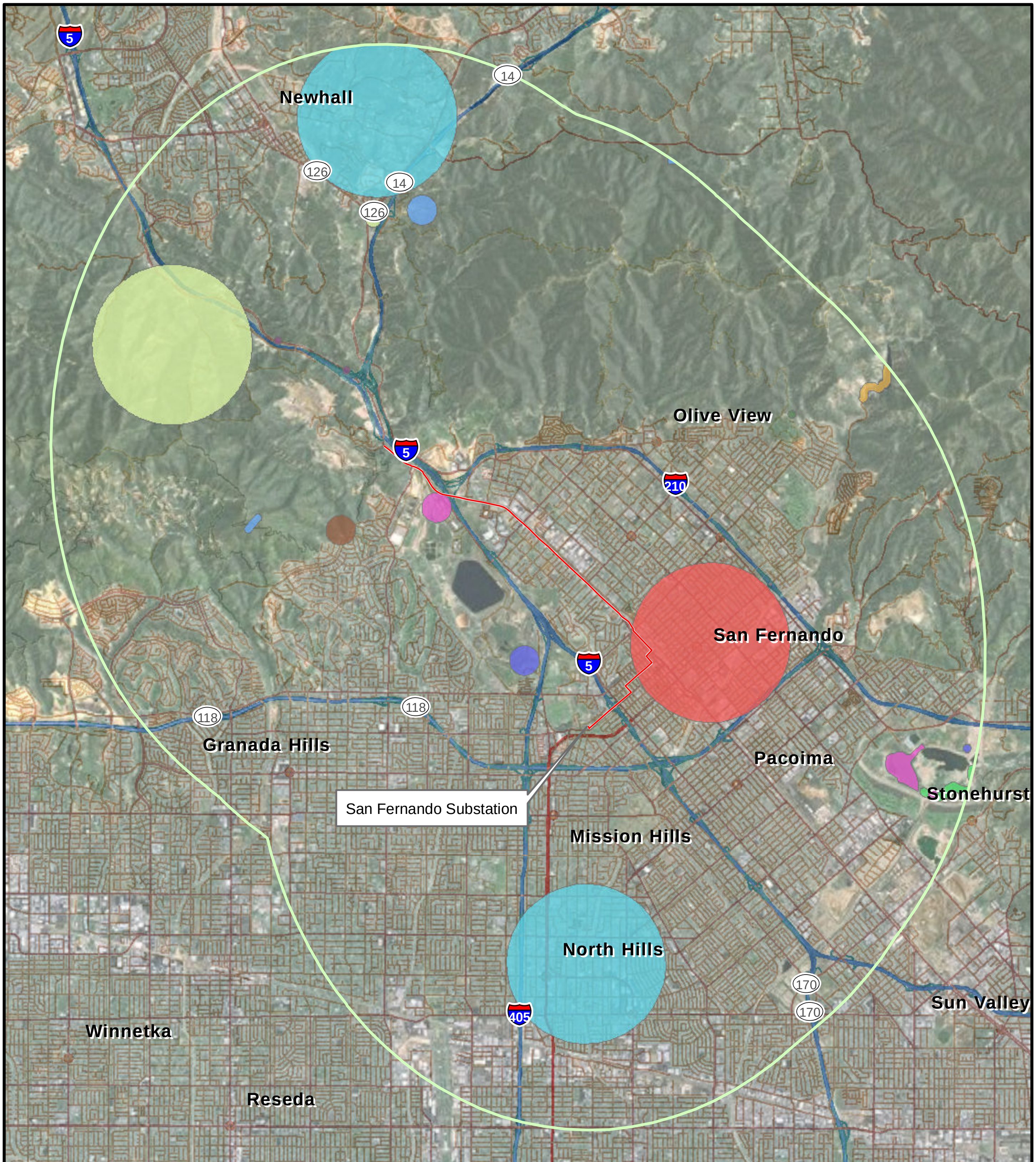

Source: CDFG, 2012

- Telecommunication Route #4
- Five-Mile Radius
- San Diego desert woodrat
- Santa Ana sucker
- Sierra Madre yellow-legged frog
- coast horned lizard
- coastal California gnatcatcher
- western yellow-billed cuckoo
- coastal whiptail
- hoary bat
- least Bell's vireo
- monarch butterfly
- western mastiff bat
- western spadefoot

N

0 1 2 Miles

1 inch = 1.7 miles

CNDDB Records within a
Five-Mile Radius of Telecom Route #4:
Special Status Wildlife Species

Date 10-08	Aliso Canyon DEIR Supplemental Evaluation	Figure 5 of 7

File: R:\Projects\ENSR\P060\06205 Sempra\134 - SCG Aliso Canyon PEA\Maps\Telecom Line\mxd\Fig5of7_Animals within Five-Mile Radius of Telecom Line_Route4.mxd
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Table 1: Special-Status Plant Species Potential to Occur within Telecom Route #4					
Species	**Status**	**Habitat**	**Blooming Period**	**Elevation**	**Likelihood**
Nevin's barberry (*Berberis nevinii*)	FE, CE, CRPR 1B	Chaparral, Cismontane woodland, Coastal scrub, Riparian scrub/sandy or gravelly soils	Mar-Jun	274 to 825 m (898 to 2,707 ft)	Suitable habitat does not exist along the Telecom Route #4 alignment and 25-meter survey buffer area. Sandy Gravelly soils not present. No individuals seen during site evaluation. Potential: None
Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)	CRPR 1B	Chaparral, Coastal scrub, Valley and foothill grassland	Mar-Jun	360 to 1,000 (1,181 to 3,280 ft)	Suitable habitat exists along the Telecom Route #4 alignment and 25-meter survey buffer area. Foothill grassland is present. Potential: High
Plummer's mariposa lily (*Calochortus plummerae*)	CRPR 1B	Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland/granitic, rocky areas	May-Jul	100 to 1,700 (328 to 5,577 ft)	Suitable habitat exists along the Telecom Route #4 alignment and 25-meter survey buffer area. Foothill grassland with rocky areas is present. Potential: Moderate
San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*)	FC, CE, CRPR 1B	Coastal scrub(sandy), Valley and foothill grassland	Apr-Jun	150 to 1,220 (492 to 4,002 ft)	Suitable habitat exists along the Telecom Route #4 alignment and 25-meter survey buffer area. Foothill grassland with friable soils are present but no predominantly sandy areas are present. Potential: Moderate

Table 1: Special-Status Plant Species Potential to Occur within Telecom Route #4					
Species	**Status**	**Habitat**	**Blooming Period**	**Elevation**	**Likelihood**
slender-horned spineflower (*Dodecahema leptoceras*)	FE, CE, CRPR 1B	Chaparral, Cismontane woodland, Coastal scrub (alluvial fan)/sandy soils	Apr-Jun	200 to 760 m (656 to 2,493 ft)	Suitable habitat does not exist along the Telecom Route #4 alignment and 25-meter survey buffer area. The alluvial fan habitat or sandy openings are not present Potential: None
Davidson's bush mallow (*Malacothamnus davidsonii*)	CRPR 1B	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland	Mar-Jun	185 to 855 (607 to 2,805 ft)	Suitable habitat exists along the Telecom Route #4 alignment and 25-meter survey buffer area. Coastal scrub is present onsite. Potential: Moderate
short-joint beavertail (*Opuntia basilaris* var. *brachyclada*)	CRPR 1B	Chaparral, Joshua tree "woodland," Mojavean desert scrub, Pinyon and juniper woodlands	Apr-Jun	425 to 1,800 m (1,394 to 5,905 ft)	Suitable habitat does not exist along the Telecom Route #4 alignment and 25-meter survey buffer area. Potential: None
California orcutt grass (*Orcuttia californica*)	FE, CE, CRPR 1B	Vernal pools	Apr-Aug	15 to 660 m (49 to 2,165 ft)	Suitable habitat does not exist along the Telecom Route #4 alignment and 25-meter survey buffer area. No vernal pools are present. Potential: None
Greata's aster (*Symphyotrichum greatae*)	CRPR 1B	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Riparian woodland/mesic soils	Jun-Oct	300 to 2,010 m (984 to 6,594 ft)	Suitable habitat does not exist along the Telecom Route #4 alignment and 25-meter survey buffer area. Mesic soils are not present onsite. Potential: None

Table 1: Special-Status Plant Species Potential to Occur within Telecom Route #4					
Species	**Status**	**Habitat**	**Blooming Period**	**Elevation**	**Likelihood**
Palmer's grapplinghook (*Harpagonella palmeri*)	CNPS 4.2	Openings with clay soil in Chaparral, Coastal scrub, and valley and foothill grassland	Mar-May	20-955 m (66-3133 ft)	Suitable habitat exists along the Telecom Route #4 alignment and 25-meter survey buffer area. Annual grassland underlain by clay loam soils is present. Potential: Moderate
Robinson's pepper-grass (*Lepidium virginicum var. robinsonii*)	CNPS 1B.2	Eroding, grantic based soils and outcrops in Chaparral and Coastal scrub	Jan-Jul	1-885 m (3- 2903 ft)	Suitable habitat exists along the Telecom Route #4 alignment and 25-meter survey buffer area. Coastal scrub underlain by sandstone soils is present. Potential: Moderate
Status Codes: **FE** = Federally Endangered; **FT** = Federally Threatened; **CE** = State of California Endangered; **CT** = State of California Threatened; **CR** = State of California Rare, **CRPR 1A** = Presumed Extinct in California; **CRPR 1B** = Rare, Threatened, or Endangered in California and Elsewhere; **CRPR 2** = Rare, Threatened, or Endangered in California but Common Elsewhere; **CRPR 4** = Plants of Limited Distribution Note: In 2011, CNPS officially changed the name "CRPR" to "California Rare Plant Rank." The definitions of the ranks and the ranking system have not changed, and the ranks are still used to categorize the same degrees of concern.					

Table 2: Special-Status Wildlife Potential to Occur in Project Component Areas			
Species	**Status Fed/State**	**Habitat**	**Potential to Occur***
Fish			
Santa Ana sucker (*Catostomus santaanae*)	FT/SSC	Occurs in shallow perennial streams up to 3.5 feet deep and less than 22°C. Generally with cobble, gravel, or sand bottoms. Feeds on algae and detritus.	**Absent.** No drainages with perennial water occur in proximity to the Telecom Route #4 alignment and 25-meter survey buffer area.
Amphibians			
Sierra Madre yellow legged frog (*Rana muscosa*)	FE/SSC	Southern California populations occupy unpolluted ponds, lakes, and streams at montane elevations of 4,500 feet or higher. Tadpoles may take multiple seasons to mature.	**Absent.** No drainages with perennial water occur in proximity to the Telecom Route #4 alignment and 25-meter survey buffer area. The project is also below the elevation range of the species.
Western spadefoot (*Spea hammondii*)	--/SSC	Occupies various habitats, including grassland, chaparral and oak-pine woodlands. Requires vernal pools for breeding and egg laying. Occurs from Ventura to San Diego County and known in Los Angeles and Santa Clara watersheds.	**Absent.** No seasonally inundated depressions (i.e. vernal pools or pronounced road ruts) occur in proximity to the Telecom Route #4 alignment and 25-meter survey buffer area.
Reptiles			
Coast (San Diego) horned lizard (*Phrynosoma coronatum blainvili*)	--/SSC	Occurs in relatively open areas of coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland, and pine forest habitat on sandy soil, often in association with harvester ants. Santa Barbara to San Diego Counties.	**Likely.** Suitable habitat is present in the natural area north of Balboa Blvd.
Coastal whiptail	--/SSC	Occurs in coastal Southern California west of the Peninsular Ranges and south of the Transverse Ranges into Baja California. Occurs in hot, dry open areas with sparse foliage in chaparral, woodland, and riparian habitats from sea level to 7,000 feet.	**Likely.** Suitable habitat is present in the natural area north of Balboa Blvd.
Birds			

Table 2: Special-Status Wildlife Potential to Occur in Project Component Areas			
Species	**Status Fed/State**	**Habitat**	**Potential to Occur***
Coastal California gnatcatcher (*Polioptila californica californica*)	FT/SSC	Obligate, permanent resident of low coastal sage scrub habitat on flat or gently sloping terrain generally below 1,640 feet in elevation. Occurs from Ventura to San Diego County.	**Absent.** The patches of Riversidean sage scrub present along the Telecom Route #4 alignment and 25-meter survey buffer area are too fragmented and small in size to support a breeding pair of the species.
Least Bell's vireo (*Vireo bellii pusillus*)	FE/SSC (nesting[1])	Requires a dense shrub layer 1.5–9 feet above ground in riparian willow scrub habitat, but will use non-riparian habitat as well. Largely absent above 1,640 feet in elevation. Nests occur primarily in willows.	**Absent.** No drainages with perennial water and adjacent riparian habitat occur in proximity to the Telecom Route #4 alignment and 25-meter survey buffer area.
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FC/SE (nesting)	Inhabits large tracts of riparian woodland with unbroken canopy and dense understory. Typically nests in trees with vertical branching.	**Absent.** No perennial drainages or other bodies of water with extensive stands of climax riparian forest occur in proximity to the Telecom Route #4 alignment and 25-meter survey buffer area.
Mammals			
Hoary bat (*Lasiurus cinereus*)	--/--	Prefers open habitats or habitat mosaics, with access to trees for cover and open area or habitat edges for feeding. Roosts in dense foliage of medium to large trees and requires access to water.	**Unlikely.** Preferred tree cover is present in the Telecom Route #4 alignment and 25-meter survey buffer; however, a perennial water source accessible to this species is not present.
San Diego desert woodrat (*Neotoma*	--/SSC	Occurs in coastal scrub and mixed chaparral of southern California from San Diego County to San Luis Obispo County. Particularly abundant in regions with rock outcrops, rocky cliffs, and slopes.	**Likely.** Suitable habitat is present in the Telecom Route #4 alignment and 25-meter survey buffer area.

Table 2: Special-Status Wildlife Potential to Occur in Project Component Areas			
Species	**Status Fed/State**	**Habitat**	**Potential to Occur***
lepida intermedia)			
Western mastiff bat (*Eumops perotis californicus*)	--/SSC	Range extends from California to west Texas and into Mexico, occupying a wide range of habitat from desert scrub to mixed montane forest. Roosting occurs on cliffs with crevices or exfoliating rock slabs.	**Likely.** Suitable foraging and roosting habitat is present throughout the Telecom Route #4 alignment and 25-meter survey buffer area.
Insects			
Monarch Butterfly	None	A large butterfly that occurs in a variety of woodland and shrub communities that contain host plants in the milkweed family (Asclepiadaceae). Wintering colonies of monarchs from northern populations aggregate in grove of trees which provide suitable climactic conditions for the species.	**Likely.** Suitable habitat is present in the Telecom Route #4 alignment and 25-meter survey buffer area for individual monarchs. No wintering groves are present onsite.

Status explanations: Federal

FE = federal endangered, FT = federal threatened. FC = candidate for listing under the federal Endangered Species Act.

State

SE = state endangered. ST = state threatened. FP = fully protected under the California Fish and Game Code. SSC = species of special concern in California.

Other Abbreviations:

C = centigrade. CNDDB = California Natural Diversity Database.

Fed = federal kV = kilovolt

Notes:

[1] Most migrating or dispersing birds have the potential to fly over the project site. Evaluations for potential impacts for birds are focused on nesting efforts. State Fully Protected Species are evaluated throughout the year.

Sources: CNDDB 2012

1.3.2 Reconnaissance Survey

A reconnaissance field evaluation of Telecom Route #4 was conducted on Monday, August 13, 2012. The field evaluation began at the southwestern terminus of the San Fernando Substation on San Fernando Mission Boulevard, followed San Fernando Road northeast, and transitioning westwards to terminate at the boundary of Sunshine Canyon Landfill (Gentili Ranch Road). The San Fernando Substation is east of Interstate 405 (I-405), in Los Angeles County. The elevation along Telecom Route #4 ranges from 994 feet to 1,345 feet.

2.0 Results of Reconnaissance Survey

The potential for sensitive natural resources along the Telecom Route #4 alignment are presented below in two segments according to the predominant land use/habitat type identified. Habitat and soil evaluations for segment 1 describe the area from San Fernando Substation to the intersection of Balboa Boulevard and San Fernando Road. Habitat and soil evaluations for segment 2 describe the area from the intersection of San Fernando Road and Balboa Boulevard to Gentili Ranch Road. Photo documentation of the reconnaissance survey is presented in Appendix A.

2.1 Habitat Evaluation

2.1.1 Telecom Route #4 – Segment 1

The Telecom Route #4 alignment from the San Fernando Substation east along San Fernando Mission Boulevard, is urbanized with ornamental tree cover dominated by the following species:

- Canary Island pine (*Pinus canariensis*)
- queen palm (*Syagrus romanzoffiana*)
- Hong Kong orchid tree (*Bauhinia blakeana*)

The urban (residential and commercial) infrastructure along Segment 1 provides suitable habitat for the following observed species known to associate with humans:

- rock doves (*Columba livia*)
- northern mockingbirds (*Mimus polyglottus*)

2.1.2 Telecom Route #4 – Segment 2

The Telecom Route #4 alignment northwest along San Fernando Road, parallels urban and undeveloped land use comprised of California Walnut Woodland and annual grassland, interspersed with patches of degraded Riversidean sage scrub. The location of the Telecom Route #4 alignment, adjacent to San Fernando Road, includes northeast facing slopes conducive to woodland formation.

California Walnut Woodland is a CDFG sensitive vegetation community that is declining throughout the state. The California Walnut Woodland community present along these slopes is dominated by the following species:

- California walnut (*Juglans californica*),
- western sycamore (*Platanus racemosa*).
- coast live oak (*Quercus agrifolia*)

Intermittent areas of annual grassland present along Segment 2 intergrades with the California Walnut Woodland community and is dominated by the following species:

- tocalote (*Centaurea solstialis*)
- California everlasting (*Gnaphalium californicum*)
- short podded mustard (*Hirschfeldia incana*)
- giant wild rye (*Leymus condensatus*).

Interspersed patches of Riversidean sage scrub along this segment are dominated by the following:

- poison oak (*Toxicodendron diversilobum*)
- California sagebrush (*Artemisia californica*).

Patches of Riversidean sage scrub are concentrated along ridge crests, bluff slides, and rock outcrops. Special-status plant species with verified occurrences within a five-mile radius of Telecom Route #4 were assessed and are presented in Table 1 above.

2.2 Soils Evaluation

2.2.1 Telecom Route #4 – Segment 1

Commercial and residential development in this area substantially altered the soil composition through excavations, fill, and building construction. With this urban development, there are no exposed soils suitable for special-status plants.

2.2.2 Telecom Route #4 – Segment 2

The area from Balboa Boulevard to San Fernando Road is underlain by Xerorthents-Urban land-Saugus, Gazos-Balcom, or Millsholm loam soils, as presented on Figure 6 (USDA, 2012). Xerorthents-Urban land-Saugus soils is a man altered residuum with variable origin. Typically, the surface layer is variable residuum derived from sandstone and shale to about 60 inches thick, underlain by bedrock to approximately 64 inches deep. Gazos-Balcom soils consist of residuum weathered from slate. The surface layer is silty clay loam to about 28 inches thick, underlain by unweathered bedrock to 32 inches deep. Millsholm-loam soils consist of residuum weathered from sandstone and shale. The surface layer is loam to 15 inches deep, underlain by unweathered bedrock to 19 inches. The soils found along this segment are conducive to the occurrence of special status plant species that are typically associated with clay-loam soils, as well as those typically associated with sandstone-shale complexes.

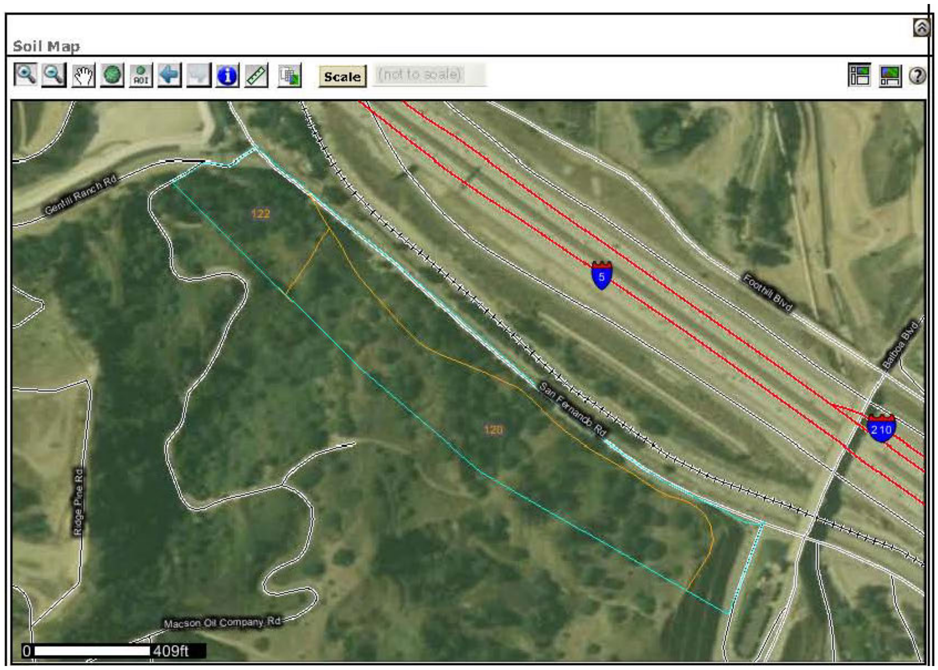
Figure 6: Telecom Route #4 Soils Survey

Search

Map Unit Legend

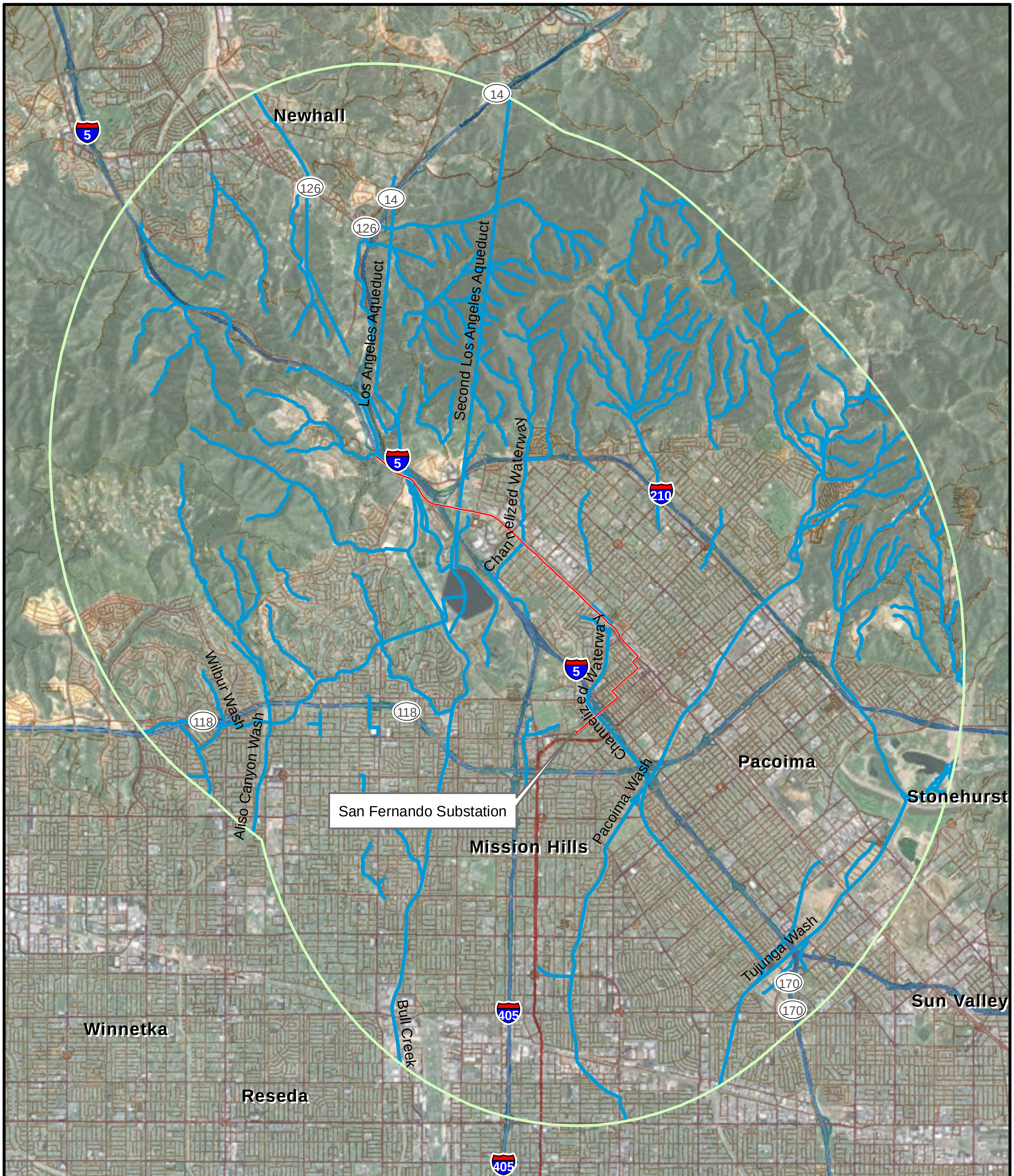
Los Angeles County, California, West San Fernando Valley Area (CA676)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
120	Gazos-Balcom complex, 30 to 50 percent slopes	10.0	57.5%
122	Millsholm loam, 30 to 50 percent slopes	3.1	18.0%
143	Xerorthents-Urban land-Saugus complex, 15 to 30 percent slopes	4.3	24.5%
Totals for Area of Interest		**17.4**	**100.0%**



2.3 Wetlands Delineation

Jurisdictional wetlands and drainages within a five-mile radius of the Telecom Route #4 alignment were delineated utilizing USGS National Hydrological Dataset. Results are presented on Figure 7. Jurisdictional waters in proximity to Telecom Route #4 were altered by past development and flood control efforts, and are within concrete channels or subterranean drainage pipes. Therefore, there are no jurisdictional wetlands or waters present that would be traversed or impacted during pole installation and conductor stringing activities associated with Telecom Route #4.



Source: USGS, 2012

- Telecommunication Route #4
- Five-Mile Radius
- Jurisdictional Water within 5-miles of Telecom Route #4

1. Jurisdictional waters that Telecommunication Route #4 transverses are subterranean or are concrete channels/drainages.

N

0 1 2 Miles

1 inch = 1.7 miles

National Hydrological Dataset: Jurisdictional Waters[1] within 5-mile radius of Telecom Route #4

Date 10-08

Aliso Canyon DEIR Supplemental Evaluation

Figure 7 of 7

File: R:\Projects\ENSR\P060\06205 Sempra\134 - SCG Aliso Canyon PEA\Maps\Telecom Line\mxd\Fig7of7_Waterways within Five-Mile Radius of Telecom Line_Route4.mxd
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Appendix A – Telecom Route #4

Photo Documentation

Appendix A – Telecommunication Route #4 Photo Documentation

Photo locations are presented on Figure 1.

Photo	Location/Habitat Description
	**Photo 1** View: West on San Fernando Mission Blvd. looking southwest towards Laurel Canyon Road Position: 34.2777, -118.4520 Habitat: Urban developed; ornamental vegetation Potential Impacts to Natural Resources: None
	**Photo 2** View: East from S. Workman Street looking down Alley. Position: 34.2801, -118.4540 Habitat: Urban developed; ornamental vegetation Potential Impacts to Natural Resources: None

Appendix A – Telecommunication Route #4 Photo Documentation

Photo locations are presented on Figure 1.

Photo	**Location/Habitat Description**

Photo 3

View: West along S. Workman Street to Hewitt Street

Position: 34.2843, -118.4485

Habitat: Urban developed; ornamental vegetation

Potential Impacts to Natural Resources: None

Photo 4

View: West along S. Workman Street to Hollister Street.

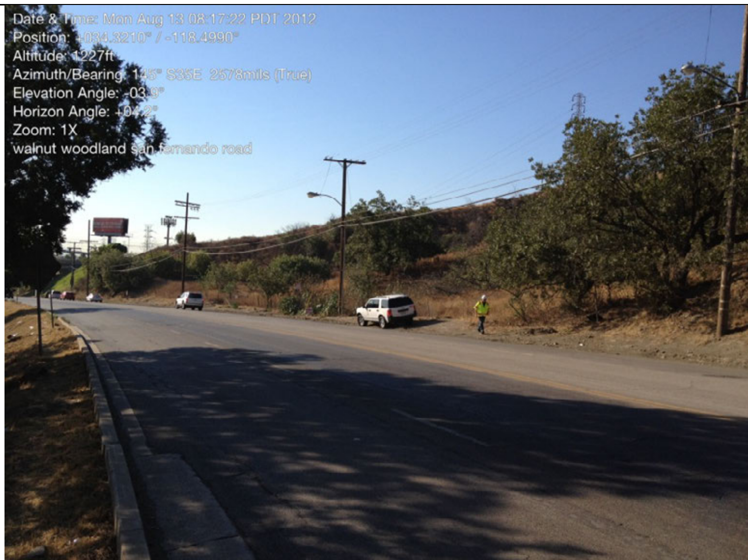
Position: 34.2847, -118.4479

Habitat: Urban developed; ornamental vegetation

Potential Impacts to Natural Resources: None

Appendix A – Telecommunication Route #4 Photo Documentation

Photo locations are presented on Figure 1.

Photo	Location/Habitat Description
	**Photo 5** View: San Fernando Road looking Southwest from Gentili Ranch Road intersection Position: 34.3210, -118.4990 Habitat: California walnut woodland, California annual grassland, Riversidean sage scrub Potential Impacts to Natural Resources: Special status plants, nesting birds, California walnut woodland
	**Photo 6** View: San Fernando Road looking northwest Position: 34.3209, -118.4991 Habitat: California walnut woodland, California annual grassland, Riversidean sage scrub Potential Impacts: Special status plants, nesting birds, California walnut woodland

Appendix A – Telecommunication Route #4 Photo Documentation

Photo locations are presented on Figure 1.

Photo	Location/Habitat Description
	**Photo 7** View: San Fernando Road looking southeast Position: 34.3217, -118.5001 Habitat: California walnut woodland, California annual grassland, Riversidean sage scrub Potential Impacts to Natural Resources: Special status plants, nesting birds, California walnut woodland
	**Photo 8** View: San Fernando Road looking west Position: 34.3218, -118.5003 Habitat: California walnut woodland, California annual grassland, Riversidean sage scrub Potential Impacts to Natural Resources Special status plants, nesting birds, California walnut woodland

Appendix A – Telecommunication Route #4 Photo Documentation

Photo locations are presented on Figure 1.

Photo	Location/Habitat Description

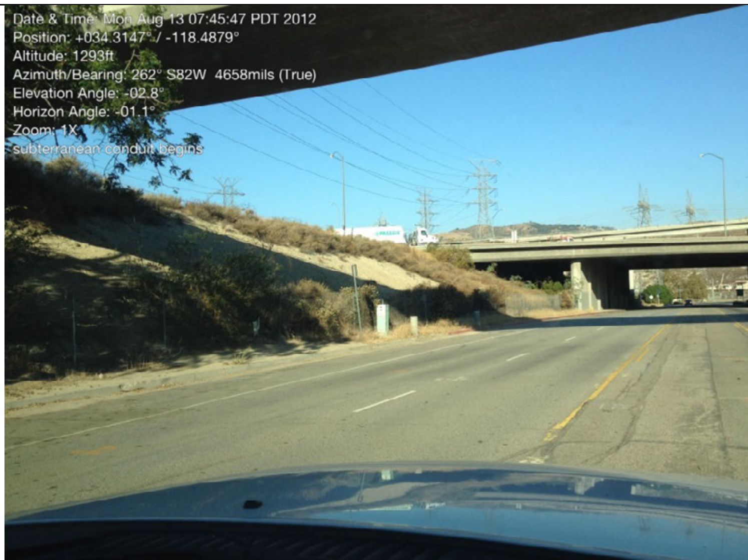


Photo 9

View: West along San Fernando Road towards 5 and 210 interchange

Position: 34.3147,-118.4879

Habitat: Urban developed

Potential Impacts to Natural Resources: None (utility lines are underground)

Photo 10

View: San Fernando Road looking west to the 5 and 201 freeway interchange

Position: 34. 3199. -118.4962

Habitat: Urban developed

Potential Impacts to Natural Resources: None (utility lines are underground)

Telecommunication Route #4
25-Meter Buffer
Five-Mile Radius
Photo Locations

N
0 0.5 1 Miles
1 inch = 0.5 miles

Telecom Route #4 Photo Documentation Locations

Date 10-08

Aliso Canyon DEIR Supplemental Evaluation

Figure 1

File: R:\Projects\ENSR\P060\06205 Sempra\134 - SCG Aliso Canyon PEA\Maps\Telecom Line\mxd\Fig6of6_ Photo_Point_Locations_Telecom Line_Route4.mxd
Date: Wednesday, October 10, 2012 8:14:50 AM

Exhibit A-2

Habitat Evaluation for Breeding Least Bell's Vireo and Southwestern Willow Flycatcher

Methodology

Least Bell's Vireo ***(****Vireo bellii pusillus*) (LBV) and Southwestern willow flycatcher (*Empidonax traillii extimus*)(SWWF) have specific habitat parameters required for successful recruitment during the breeding season. In order to determine the suitability for both species to utilize drainages areas during the breeding season that may be potentially impacted during project activities, a field assessment of linear areas not previously analyzed was conducted to evaluate habitat parameters identified during a scientific literature review. During an aerial analysis utilizing Google Earth, nine linear areas were identified within the project that crosses drainages with potential habitat. Areas 1-8 occurred on telecommunication route 2 and Area 9 occurred on the 66 kV subtransmission alignment. Field evaluations of the nine areas were conducted by endangered species biologist Thomas Juhasz and verified by ornithologist Doug Willick. The riparian habitat that occurs in Limekiln Canyon Wash was previously described within the DEIR; this information is utilized to evaluate habitat suitability for LBV and SWWF. The results of the field evaluations of habitat parameters for nesting LBV and SWWF and the literature review of Limekiln Canyon Wash are presented in Tables 1 and 2. Field assessment notes and maps are included within Attachments 1 and 2.

Description of Breeding Habitat - Least Bell's Vireo

Optimal breeding habitat for least Bell's vireo (LBV) is constituted of climax riparian vegetation with a dense understory of young willows (*Salix* spp.), mulefat (*Baccharis salicifolia*), Mexican elderberry (*Sambucus mexicana*), California rose (*Rosa californica*), mugwort (*Artemisia douglasiana*), poison oak (*Toxicodendron diversilobum*), and wild grape (*Vitis sp.*)(USFWS 1998). Three ecological variables consistently determine habitat quality for LBV: 1) the presence of *Salix* spp.; 2) the tiered stratification of vegetation within riparian breeding habitat; and, 3) the width of the willow riparian habitat. LBV closely associated with habitat dominated by *Salix* sp. with low amounts of aquatic and herbaceous cover (USFWS 1998). LBVs exhibit a clear preference for relatively broad riparian habitats, which typically exhibit more stratification of vegetation. It was noted that an increase in occupied habitat occurs as the width of the willow riparian woodland exceeds 50 meters wide versus 10 meters or less (USFWS 2006). Due to concerted conservation measures, LBV populations are recovering in southern and central California and are occupying habitat left vacant since the mid 1930s. As local populations continue to expand, and occupy the remaining areas of more typical habitat, a higher incidence of LBV utilizing lower quality or "marginal" habitats occurs.

Breeding Habitat Evaluation - Least Bell's Vireo

As presented in the Methodology Section, eight areas along Telecom Route 2 and one area along the 66-kV subtransmission alignment (as presented in the DEIR) were identified for evaluation during field efforts based on presence of potential riparian habitat. Limekiln Canyon Wash was evaluated through the information presented in the DEIR.

- Limekiln Canyon Wash contains willow scrub that is fragmented from other contiguous habitat by a paved road and a channelized conduit. The willows are currently recovering from a past fire event and are surrounded by ruderal vegetation on the banks. As the vegetation is isolated by roads and channelized drainages from other habitat and does not retain the habitat complexity preferred by LBV.

- Area 1 at Box Canyon Road does not have the habitat complexity or standing water preferred by LBV.

- Areas 2, 4 and 6 had marginal to moderate suitability for least Bell's vireo; as riparian habitats are linear in feature, there is likelihood that vireos will utilize the habitat within the buffer zones if they are connected to other suitable habitat (Areas 2, 4 and 6). The habitat is marginal to moderate due to vegetation composition and structure but is well below the 0.5 to 7.5 acre nesting territory size required by LBV (USFWS 2006).

- Area 3 is a drainage with surface water dominated by coast live oak (*Quercus agrifolia*). The understory is open with thickets of poison oak on the floor. The stratified layers of understory vegetation required by LBV are not present.

- Area 5 does not have the required habitat size and complexity required by nesting LBV. The riparian vegetation is in isolated within swatches of ruderal vegetation.

- Area 7 has an ephemeral swale that runs through coast live oak woodland with an annual grassland understory. Suitable habitat is absent in Area 7.

- Area 8 is well below the typical breeding habitat size (0.5 acres +) and linear habitat width with a rapidly flowing but very shallow channel that might be seasonally intermittent.

- The riparian habitat within Area 9 has marginal suitability due to the permanent disturbances along the drainage (5 freeway corridor, development).

There is potential for LBV to occur in project area due to the reoccupation of the Santa Clara and Los Angeles River Systems by singing males (Sepulveda Basin Wildlife Refuge); however, the habitat is either unsuitable (Limekiln Canyon Wash, Areas1, 3, 5, 7, 8) or is only marginal to moderately suitable (Areas 2, 4, 6, 9) due to constricted habitat size and a lack of stratified, dense vegetation required for successful recruitment during the breeding season.

TABLE 1: SUITABILITY OF HABITAT WITHIN DRAINAGES FOR LEAST BELL'S VIREO BREEDING SITES

Drainage Site	Primary Constituent Elements for Breeding, Reproduction, Rearing of Offspring Presence (Y or N)							Habitat Suitability[1]
	Perennial Water	Riparian Vegetation Dominated by Willows	Suitable Habitat Greater Than 0.5 Acres	Contiguous with Other Riparian Habitat	Dense Foliage from Ground- level to 4 m	Structurally Diverse Canopy	Proximity to Human Disturbance(s)	
Limekiln Canyon Wash[2]	Yes[1]	Yes	No	No	No	No	Adjacent to access road	Unsuitable
Site 1 Box Canyon Road	No	Yes	No	No	No	No	Adjacent to road	Unsuitable
Site 2 Santa Susana Road	Yes	No	Yes	Yes	No	Yes	Adjacent to road and baseball field	Marginal to Moderate
Site 3 Santa Susana Road	Yes	No	No	Yes	No	No	Natural	Unsuitable
Site 4 Devils Canyon Creek	Yes	Yes	No	Yes	No	No	Natural	Marginal to Moderate
Site 5 Browns Canyon Creek	Yes[2]	Yes	No	No	No	No	Adjacent to concrete low flow crossing	Unsuitable
Site 6 Browns Canyon Creek	Yes[2]	Yes	No	Yes	Yes	Yes	Natural	Marginal to Moderate
Site 7 Browns Canyon Creek	No	No	No	Yes	No	No	Natural area	Unsuitable
Site 8 Browns Canyon Creek	Yes[2]	Yes	No	Yes	No. Open understory.	No	Natural area	Unsuitable
Site 9 Subtransmission Route	Yes	Yes	Yes	Contiguous northwards; cut off to the south by a road.	No	Yes	Constricted by development and the 5 Freeway	Marginal

[1]Two small perennial ponds exist in the detention basin

[2]Surface water flow may cease during the summer months.

1. Terms are defined as follows: Unsuitable = Habitat does not contain the parameters needed for successful recruitment; Marginal = Habitat contains some habitat qualities required by the species but does not contain enough to facilitate nesting success; Moderate = Habitat meets enough requirements to support breeding efforts; Suitable = Contains optimal parameters required by the species for recruitment.

Description of Breeding Habitat - Southwestern Willow Flycatcher

Breeding habitat for Southwestern willow flycatcher (SWWF) is restricted to dense, well-developed riparian woodland with stratified layers occurring within the vegetation. Breeding territories are based near lentic (quiet, slow-moving, swampy, or still) surface water or saturated soil (USFWS 2002). Occupied sites are typically located along slow-moving stream reaches; at river backwaters; in swampy abandoned channels and oxbows; marshes; and at the margins of impounded water (e.g., beaver ponds, inflows of streams into reservoirs) (USFWS 2002). Where SWWF's occur along moving streams, those streams tend to be of relatively low gradient, i.e., slow-moving with few (or widely spaced) riffles (USFWS 2002). Sogge et al. (1997) suggest that nesting habitat for SWWF is on average two acres or greater in extent, with linear-shaped habitats at least 10 meters (33 feet) wide. Specific habitat characteristics, such as species composition and diversity, dominant vegetation, and vegetative structure, are quite varied. However, vegetation where nest sites are located typically have a pronounced canopy with dense foliage from the ground level up to approximately 4 m (13 ft) above ground (USFWS 2002). One of the key elements for SWWF is that they definitely prefer the presence of surface water within their territories through the entire breeding season. In many cases, flycatcher nest plants are rooted in or overhang standing water (USFWS 2002).

SWWF's have not been found in confined floodplains where only a single narrow strip of riparian vegetation less than approximately 10 m (33 feet) wide develops unless it is connected to larger riparian zones (USFWS 2002). Unsuitable breeding habitat for SWWF includes areas comprised solely of young or emergent vegetation less than 2 m tall; steep-walled and heavily bouldered narrow canyons; habitats composed exclusively of cattail (*Typha* spp.), sedge (*Carex* spp.), and rush (*Juncus* spp.), and reaches of more mature, shrub-like vegetation that formed very dense stands less than 2 m tall and do not possess an overstory (e.g.mule fat (*Baccharis glutinosa*) thickets) (Rouke et. Al 2004).

Breeding Habitat Evaluation - Southwestern Willow Flycatcher

As described in the Methodology Section above, nine linear areas were identified with potential breeding habitat and have been evaluated to determine suitability. The drainage crossings within the nine linear areas do not have the habitat parameters required by breeding SWWF. Limiting factors for the nine linear areas and Limekiln Canyon Wash area are presented in the bulleted list below:

- As presented in the DEIR, Limekiln Canyon Wash contains willow scrub that is fragmented from other contiguous habitat by a paved road and a channelized conduit. The willows are currently recovering from a past fire event and are surrounded by ruderal vegetation on the banks. As the vegetation is isolated by roads and channelized drainages from other habitat and does not retain the habitat complexity preferred by SWWF.

- Area 1 at Box Canyon Road does not have the habitat complexity or standing water preferred by SWWF.

- Area 2 has the riparian canopy preferred by SWWF and is connected to a larger riparian habitat; however, the steep canyon walls enveloping the site and the limited understory vegetation occurring to 4 meters high (sparse poison oak) makes this riparian corridor less favorable for SWWF recruitment.

- Area 3 is a drainage with surface water dominated by coast live oak (*Quercus agrifolia*). The understory is open with thickets of poison oak on the floor. The stratified layers of understory vegetation required by SWWF are not present.

- Area 4 on Devils Canyon Creek has lentic water present with dense vegetation but does not have the average vegetation typical breeding habitat size (2 acres +) required by the species. The steep canyon walls along Devils Canyon Creek preclude the formation of broader habitat areas preferred by SWWF.

- Area 5 does not have the required habitat size and complexity needed for SWWF breeding territories.

- Area 6 has appropriate understory vegetation and canopy, but is well below the patch size and linear habitat width needed by the species.

- Area 7 has an ephemeral swale that runs through coast live oak woodland with an annual grassland understory. Suitable habitat is absent in Area 7.

- Area 8 is well below the typical breeding habitat size (2 acres +) and linear habitat width with a rapidly flowing channel that might be intermittent in flows.

- Area 9 is unsuitable habitat due to the permanent disturbances along the drainage (5 freeway corridor, development).

All sites are suitable for passage *Empidonax* flycatchers but do not provide the habitat parameters needed by SWWF for successful recruitment within the breeding season from May to July.

TABLE 2: SUITABILITY OF HABITAT WITHIN DRAINAGES FOR SOUTHWESTERN WILLOW FLYCATCHER BREEDING SITES

Drainage Site	Primary Constituent Elements for Breeding, Reproduction, Rearing of Offspring Presence (Y or N)									Habitat Suitability[1]
	Perennial Water	Riparian Vegetation	Vegetation Patch Greater Than 2 Acres	Linear Habitat at least 10m Wide	Contiguous with other Riparian Habitat	Vegetation Exceeds 2m Height	Dense Foliage from Ground-Level to 4m	Stratified Vegetation Layers	Proximity to Human Disturbance(s)	
Limekiln Canyon Wash[2]	Yes[1]	Yes	No	No	No	No	No	No	Adjacent to access road	Unsuitable
Site 1 Box Canyon Road	No	Yes	No	No	No	Yes	No	No	Adjacent to road	Unsuitable
Site 2 Santa Susana Road	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Adjacent to road and baseball field	Unsuitable
Site 3 Santa Susana Road	Yes	No	No	No	Yes	Yes	No	No	Natural	Unsuitable
Site 4 Devils Canyon Creek	Yes	Yes	No	Yes	Yes	No	No	No	Natural	Unsuitable
Site 5 Browns Canyon Creek	Yes[2]	Yes	No	No	No	No	No	No	Adjacent to concrete low flow crossing	Unsuitable
Site 6 Browns Canyon Creek	Yes[2]	Yes	No	No	Yes	Yes	Yes	Yes	Natural	Unsuitable
Site 7 Browns Canyon Creek	No	No	No	No	Yes	Yes	No	No	Natural area	Unsuitable
Site 8 Browns Canyon Creek	Yes[2]	Yes	No	No	Yes	Yes	No. Open understory.	No. dominated by coast live oak	Natural area	Unsuitable
Site 9 Subtransmission Route	Yes	Yes	No	Yes	Yes northwards; cut off to the south by a road.	Yes	No	No	Constricted by development and the 5 Freeway	Unsuitable

[1] Two small perennial ponds exist in the detention basin

[2] Surface water flow may cease during the summer months.

1. Terms are defined as follows: Unsuitable = Habitat does not contain the parameters needed for successful recruitment; Marginal = Habitat contains some habitat qualities required by the species but does not contain enough to facilitate nesting success; Moderate = Habitat meets enough requirements to support breeding efforts; Suitable = Contains optimal parameters required by the species for recruitment.

References:

Rourke, J. W., B. E. Kus and M.J. Whitfield. 2004. Distribution and abundance of the Southwestern Willow Flycatcher at selected southern California sites in 2001. Prepared for the California Department of Fish and Game, Species Conservation and Recovery Program Report 2004-05, Sacramento, California.

Sogge, M. K., R. M. Marshall, S. J. Sferra, and T. J. Tibbitts. 1997. A Southwestern Willow Flycatcher natural history summary and survey protocol. National Park Sevice/USGS Colorado Plateau Research Station, Northern Arizona University. NRTR-97/12.

U.S. Fish and Wildlife Service. 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico. i-ix + 210 pp., Appendices A-O

U.S. Fish and Wildlife Service (USFWS). 1998. Draft Recovery Plan for the Least Bell's Vireo. Fish and Wildlife Service, Portland, OR. 139 pp.

U.S. Fish and Wildlife Service (USFWS). 2006. Least Bell's Vireo: 5- Year Review Summary and Evaluation. Fish and Wildlife Service, Carlsbad, CA. 26 pp.

Site 1- Box Canyon Road

- Drainage characteristic: An ephemeral stream with no flowing water. Channel width is approximately 4 feet wide. The channel drops off steeply as it flows to the west; no pooling water is able to develop in the area.

- Vegetation structure: Riparian vegetation dominated by arroyo willow and Mexican elderberry interspersed with canyon sunflower, branching phacelia, and poison oak within the understory.

- Suitability for least Bell's vireo breeding territory: Willow thickets are present but are isolated from other riparian habitat. The lack of standing water precludes this from being suitable vireo breeding habitat.

- Suitability for Southwestern willow flycatcher breeding territory: The narrow ephemeral wash retains enough moisture to induce the growth of willows but does not provide the tiered vegetation and perennial water source required by willow flycatchers to successfully breed. Site 1 is not suitable for Southwestern willow flycatcher.

Site 1 Box Canyon Road
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Artemisia douglasiana	Douglas mugwort	yes
Gnaphalium californicum	California everlasting	yes
Phacelia ramosissima	Branching phacelia	yes
Rubus ursinus	California blackberry	yes
Salix lasiolepis	Arroyo willow	yes
Sambucus mexicana	Mexican elderberry	yes
Toxicodendron diversilobum	Poison oak	yes
Venegasia carpesioides	Canyon sunflower	yes

Photo 1-a: Looking into the ephemeral stream from Santa Susana Pass Road. The canopy is dominated by arroyo willow with an occasional Mexican elderberry. Coast live oaks and patchy undifferentiated scrub are present upslope.

Photo 1-b: The understory of the ephemeral wash. Dominant species are poison oak, branching phacelia, and canyon sunflower. The lack of flowing water and a multitiered vegetation structure precludes either special-status bird species from establishing breeding territories.

Photo 1-c: Debris piles have built up in several parts of the ephemeral wash.

Site 2- Santa Susana Pass Road

- Drainage characteristic: A flowing stream approximately 1 foot wide and 10 inches deep. Flow appears to be perennial.

- Vegetation structure: Mixed riparian forest occurs within the drainage and is dominated by Fremont cottonwood, white alder, coast live oak, and red willow. The understory is dominated by poison oak and is interspersed with a midstory edible fig and shamel ash. Coast live oak and laurel sumac are present upslope.

- Suitability for least Bell's vireo breeding territory: The habitat currently present at Site 2 is marginal to moderate breeding habitat for least Bell's vireo. Optimal habitat is dominated by willows and has a well developed understory; however, the species could utilize the habitat present for breeding.

- Suitability for Southwestern willow flycatcher breeding territory: The mature riparian canopy provides the height required by the species but the area is neither extensive enough in size nore has an understory dense enough for suitable breeding habitat.

Site 2 Santa Susana Pass Road
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Alnus rhombifolia	White alder	yes
Ficus carica	Edible fig	no
Fraxinus udhei	Shamel ash	no
Malosma laurina	Laurel sumac	yes
Populus fremontii	Fremont cottonwood	yes
Quercus agrifolia	Coast live oak	yes
Salix laevigata	Red willow	yes
Toxicodendron diversilobum	Poison oak	yes

Photo 2-a: The understory is heavily dominated by poison oak.

Photo 2-b: understory of the drainage adjacent to the utility line. . Note the presence of refuse and non-native shamel ash saplings.

Photo 2-c: view of the drainage from Santa Susana Pass Road. This area past the emergent *Eucalyptus* sp. is beyond the buffer area and will not be impacted by project activities.

Site 3- Santa Susana Pass Road

- Drainage characteristic: A flowing stream with large alluvial boulders approximately 3 feet wide and 1 foot deep. Flow appears to be perennial.

- Vegetation structure: Coast live oak is dominant within the drainage with intermittent western sycamore and California walnut. The understory is dominated by poison oak.

- Suitability for least Bell's vireo breeding territory: Due to a lack of willows and a tiered vegetation structure, the habitat present does not constitute suitable breeding habitat for least Bell's vireo.

- Suitability for Southwestern willow flycatcher breeding territory: Due to a lack of willows and a tiered vegetation structure, the habitat present does not constitute suitable breeding habitat for southwestern willow flycatcher.

Site 3 Santa Susana Pass Road
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Dryopteris arguta	Coastal wood fern	yes
Juglans californica	California walnut	yes
Keckiella cordifolia	Heart leaved penstemon	yes
Mimulus aurianticus	Bush monkeyflower	yes
Platanus racemosa	Western sycamore	yes
Quercus agrifolia	Coast live oak	yes
Toxicodendron diversilobum	Poison oak	yes

Photo 3-a: View of the flowing water in the channel. Dense thickets of poison oak envelop the banks.

Photo 3-b: View of the understory. The middle story is sparse, with only an occasional western sycamore sapling or a California walnut occurring.

Photo 3-c: view of a California walnut emerging from the poison oak thicket.

Site 4- Devils Canyon Creek

- Drainage characteristic: A perennial flowing stream alternating between riffles and pools is within an approximately 5 foot wide channel. The average depth of a pool is 1 foot.

- Vegetation structure: Riparian vegetation dominated by arroyo and sandbar willow interspersed with California walnut. Mulefat, California rose, California blackberry, and giant wild rye compose a thick understory.

- Suitability for least Bell's vireo breeding territory: Due to the recent burn, the riparian habitat is still recovering to its previous climax state. The habitat currently present in Devils Canyon Creek is marginal to moderate suitable for nesting least Bell's vireo.

- Suitability for Southwestern willow flycatcher breeding territory: Due to the recent burn, the riparian habitat is still recovering to its previous climax state. The narrow channel and associated floodplain does not provide the density or tiered canopy required by willow flycatcher breeding territory.

Site 4 Devils Canyon Creek
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Anagallis arvensis	Scarlet pimpernel	no
Artemisia douglasiana	Douglas mugwort	yes
Hirschfeldia incana	Field mustard	no
Juglans californica	California walnut	yes
Lamium amplexicaule	Henbit	no
Malosma laurina	Laurel sumac	yes
Nicotiana glauca	Tree tobacco	no
Oenothera elata	Hookers evening primrose	yes
Phacelia ramosissima	Branching phacelia	yes
Polypogon mospeliensis	Rabbits foot grass	no
Quercus agrifolia	Coast live oak	yes
Rosa Californica	California wild rose	yes
Salix exigua	Sandbar willow	yes
Salix lasiolepis	Arroyo willow	yes
Toxicodendron diversilobum	Poison oak	yes

Photo 4-a: view of the Devils Canyon Creek as it flows within the buffer zone. The previously burned arroyo willows have resprouted and are beginning to shade the pool again.

Photo 4-b: The recovering riparian vegetation along Devils Canyon Creek. Mulefat, arroyo willow, and sandbar willow are forming dense vegetation in the as the water flow is constricted between the steep slopes.

Photo 4-c: view of pool with overhanging willows.

Site 5- Browns Canyon Creek

- Drainage characteristic: A lightly flowing stream approximately 1 foot wide and 1 inch deep through a deep sand deposit. Flow can be ephemeral in times of drought.

- Vegetation structure: Riparian vegetation occurs in patches isolated from each other by ruderal vegetation covering the sand bank. A low flow concrete structure bisects the stream. Coast live oak woodland occurs upslope from the channel.

- Suitability for least Bell's vireo breeding territory: Due to the fragmented nature of the riparian habitat, no suitable breeding habitat for least Bell's vireo is present.

- Suitability for Southwestern willow flycatcher breeding territory: Due to the fragmented nature of the riparian habitat, no suitable breeding habitat for willow flycatcher is present.

Site 5 Browns Canyon Creek
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Artemisia douglasiana	Douglas mugwort	yes
Hirschfeldia incana	Field mustard	no
Juglans californica	California walnut	yes
Nicotiana glauca	Tree tobacco	no
Phacelia cicutaria	Caterpillar phacelia	yes
Phacelia ramosissima	Branching phacelia	yes
Polypogon mospeliensis	Rabbits foot grass	no
Quercus agrifolia	Coast live oak	yes
Salix lasiolepis	Arroyo willow	yes
Vinca major	Greater periwinkle	no

Photo 5-a: Browns Canyon Creek flowing through a ruderal clearing. The stands of riparian vegetation are isolated from each other in the buffer area by the clearings.

Photo 5-b: View of the concrete low flow crossing that separates two stands of riparian vegetation.

Photo 5-c: View of a riparian stand within the buffer zone. Species composition includes California walnut, arroyo willow, tree tobacco, and Douglas mugwort.

Site 6- Browns Canyon Creek

- Drainage characteristic: A lightly flowing stream approximately 20 inches wide and 2 inches deep. Flow can be ephemeral in times of drought.

- Vegetation structure: The canopy is dominated by arroyo willow with a mixed species understory. The riparian channel is bordered by coast live oaks and undifferentiated scrub upslope.

- Suitability for least Bell's vireo breeding territory: Marginal breeding habitat for least Bell's vireo is present within Site 6 due to the limited amount of suitable riparian vegetation within the riparian corridor.

- Suitability for Southwestern willow flycatcher breeding territory: Flowing water is present but the narrow corridor of riparian vegetation and the lack of very dense, stratified vegetation makes site 6 unsuitable for a breeding pair of southwestern willow flycatchers.

Site 6 Browns Canyon Creek
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Artemisia douglasiana	Douglas mugwort	yes
Baccharis salicifolia	Mulefat	yes
Carex spissa	San Diego sedge	yes
Epipactis giganteum	Giant stream orchid	yes
Quercus agrifolia	Coast live oak	yes
Rubus ursinus	California blackberry	yes
Salix lasiolepis	Arroyo willow	yes
Stachys bullata	California hedge nettle	yes
Toxicodendron diversilobum	Poison oak	yes

Photo 6-a: A thicket of California blackberry occurs underneath willows and up onto the adjacent slope.

Photo 6-b: Flowing water is bordered by mulefat, young willows, California hedge nettle, and California blackberry.

Photo 6-c: The riparian vegetation at Site 6 is well tiered.

Site 7- Browns Canyon Creek

- Drainage characteristic: An ephemeral stream with a light trickle that is less than an inch deep.
- Vegetation structure: The canopy is dominated by coast live oak within an occasional western sycamore. The understory is composed nearly entirely by non-native annual grasses.
- Suitability for least Bell's vireo breeding territory: Due to an intermittent water flow, a lack of willows and a tiered vegetation structure the habitat present does not constitute suitable breeding habitat for least Bell's vireo.
- Suitability for Southwestern willow flycatcher breeding territory: Due to an intermittent water flow, a lack of willows and a tiered vegetation structure the habitat present does not constitute suitable breeding habitat for southwestern willow flycatcher.

Site 7 Browns Canyon Creek
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Baccharis salicifolia	Mulefut	yes
Bromus diandrus	Ripgut brome	no
Bromus madritensis	Foxtail brome	no
Elymus glaucus	Blue wild rye	yes
Platanus racemosa	Western sycamore	yes
Quercus agrifolia	Coast live oak	yes
Solanum douglasii	Douglas nightshade	yes

Photo 7-a: No hydrophytic vegetation is present in channel. Coast live oak woodland with an annual grass understory is the dominant vegetation type.

Photo 7-b: Coast live oak with annual grasses. More mulefat begins to appear in the background as moisture increases.

Photo 7-c: the lightly flowing channel is edged by annual grassland and oak woodland. No riparian vegetation is present.

Site 8- Browns Canyon Creek

- Drainage characteristic: A perennial flowing stream 20 inches wide and 3 inches deep. Can possibly become ephemeral under drought conditions.

- Vegetation structure: The canopy is dominated by coast live oak within an intermittent arroyo willow. The sparse understory is composed of thicket forming species such as California blackberry.

- Suitability for least Bell's vireo breeding territory: Due to a lack of a tiered vegetation structure, the habitat present is marginal breeding habitat for least Bell's vireo.

- Suitability for Southwestern willow flycatcher breeding territory: Due to a lack of a tiered vegetation structure and the narrow riparian corridor, the habitat present does not constitute suitable breeding habitat for southwestern willow flycatcher.

Site 8 Browns Canyon Creek
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Artemisia douglasiana	Douglas mugwort	yes
Epipactis giganteum	Giant stream orchid	yes
Quercus agrifolia	Coast live oak	yes
Rubus ursinus	California blackberry	yes
Salix lasiolepis	Arroyo willow	yes
Toxicodendron diversilobum	Poison oak	yes
Urtica dioica	Stinging nettle	yes

Photo 8-a: Coast live oaks are the dominant canopy cover at Site 8. A colony of giant stream orchids occurs along the lower bank in the lower right of the photograph

Photo 8-b: A few arroyo willows are interspersed within the oak canopy. The understory is composed of California blackberry, poison oak, and Douglas mugwort.

Photo 8-c: Close up of the giant stream orchid

Site 9-Subtransmission Route

- Drainage characteristic: A lightly flowing perennial stream approximately 1 foot wide and 3 inches deep. Can possibly become ephemeral under drought conditions.

- Vegetation structure: Canopy dominated by arroyo willows and red willows with an intermittent Mexican elderberry. Understory not well developed

- Suitability for least Bell's vireo breeding territory: Due to the development constraints on each side of the riparian corridor (5 freeway and office complex), the habitat present constitutes marginal breeding habitat for least Bell's vireo.

- Suitability for Southwestern willow flycatcher breeding territory: Due to a lack of a tiered vegetation structure and the narrow riparian corridor confined by development on both sides, the habitat present does not constitute suitable breeding habitat for southwestern willow flycatcher.

Site 9 Subtransmission Route
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Polypogon montspeliensis	Rabbits foot grass	no
Salix laevigata	Red willow	yes
Salix lasiolepis	Arroyo willow	yes
Sambucus mexicana	Mexican elderberry	yes

Photo 9-a: A view of the willow canopy overhanging the channel.

Photo 9-b: The sparse understory is composed primarily of woody debris.

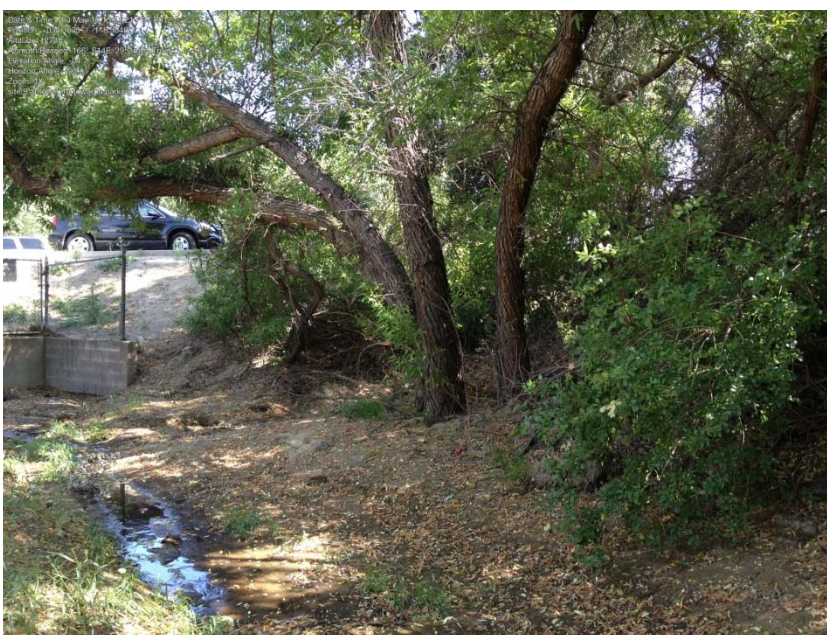


Photo 9-c: View looking towards the culvert and tower 14 (not pictured to the left of the culvert). A red willow and a Mexican elderberry is to the right.

Appendix C-2
Supplemental Cultural Resources and Paleontological Resources Information

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PHASE I CULTURAL RESOURCES ASSESSMENT LETTER REPORT FOR TELECOMMUNICATION ROUTE #4, ALISO CANYON TURBINE REPLACEMENT PROJECT

Prepared for:

SoCalGas

Prepared by:

AECOM
515 South Flower Street, 9th Floor
Los Angeles, California 90071

Author:

Sara Dietler, B.A.
Stacie Wilson, M.S., RPA

October 2012

U.S.G.S. Quadrangle: Oat Mountain, CA and San Fernando, CA   Keywords: San Fernando Mission, Gabrieliño.

TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

AECOM

1.0 INTRODUCTION

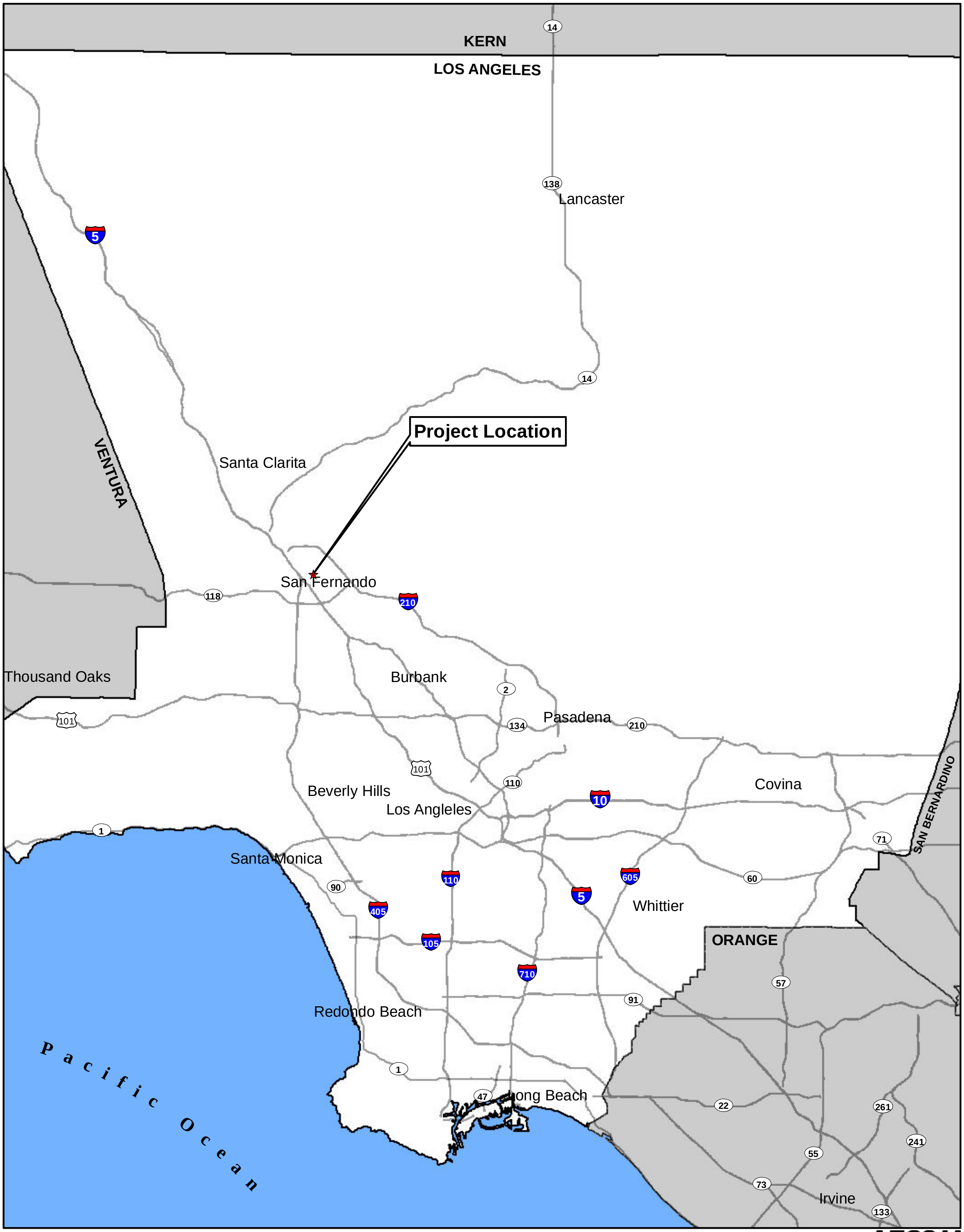
This Phase I cultural resources record search was undertaken to supplement existing studies and to evaluate the cultural resource impacts resulting from the addition of Telecommunication (Telecom) Route #4 to the Aliso Canyon Turbine Replacement Project, as presented on Figure 1. This document is prepared as supplemental information in support of the Draft Environmental Impact Report (*Aliso Canyon Turbine Replacement Project, Draft Environmental Impact Report 2012*) prepared in accordance with CEQA, Public Resources Code Section 21000 *et seq.* and the State CEQA Guidelines, CCR Section 15000 *et seq.*

2.0 PROJECT LOCATION

As presented on Figures 2 and 3, Telecom Route #4 is located within the city of San Fernando, on San Fernando Road. The northern terminus of the alignment is located on the northwest corner of the intersection of Gentili Ranch Road and San Fernando Road. The alignment follows San Fernando Road, running parallel to the west side of Interstate 5, and then follows San Fernando Road to the south east under Interstate 5. At Truman Street and San Fernando Road, the alignment switches to Truman Street for approximately 0.5-mile. The alignment then continues on South Workman Street where it heads west for 500 feet, then south on Celis Street for 550 feet, then west on South Kalisher Street for 2,300 feet. The alignment continues along Omelveny Avenue for 580 feet to San Fernando Mission Boulevard west, where it terminates at the San Fernando Substation located the north side of San Fernando Mission Boulevard.

3.0 PROJECT DESCRIPTION

Construction activities associated with Telecom Route #4 would consist of the installation of new fiber optic cable on new or existing overhead Southern California Edison (SCE) and Los Angeles Department of Water and Power-owned poles and within new and existing underground conduit. Predominantly fiber optic cable would be installed on existing poles; however, final engineering has not been completed. Undergrounding is proposed for approximately 2,275 feet (ft) along San Fernando Road from the northern terminus of the route south to Balboa Boulevard, along 200 ft of San Fernando Road near Yarnell Street, along 200 ft of San Fernando Mission Boulevard where is crosses Interstate-5, and along a 100 ft portion of the route at the San Fernando Substation.



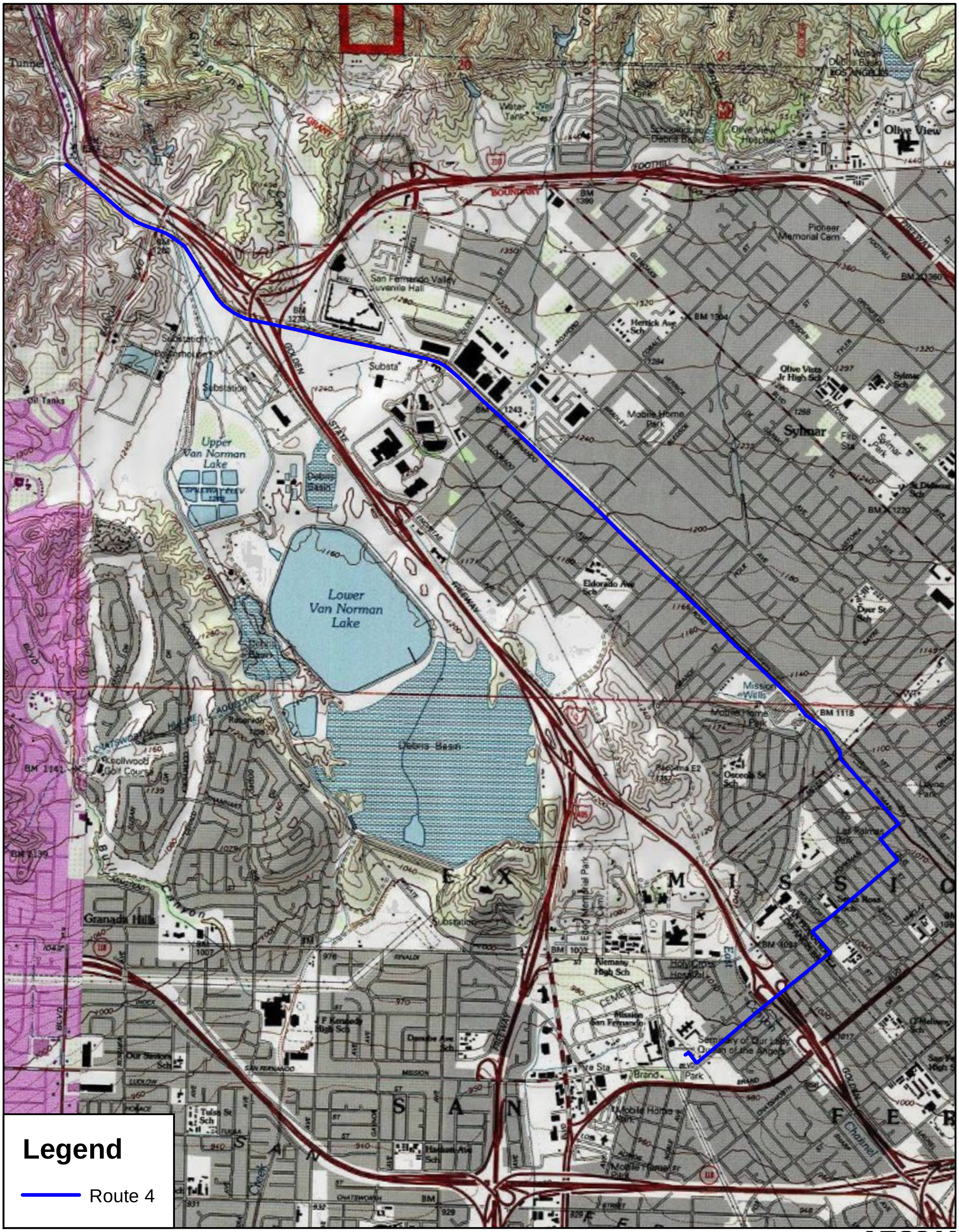
Source: ESRI 2012 Imagery

0 5 10 15 20 Miles

N

AECOM

Figure 1
Regional Location Map



Source: ESRI 2012 USGS 7.5" Quardrangle Oat Mountain (1969); San Fernando (1988)

0 0.25 0.5 0.75 1 Miles

AECOM

Figure 2
Project Area

Source: ESRI 2012

0 0.25 0.5 0.75 1
Miles

Figure 3
Project Location

3.0 ARCHIVAL RESEARCH RESULTS

The records search included review of previously recorded cultural resources within a ½-mile radius of the Telecom Route #4 alignment (herein referred to as “study area”), found at the South Central Coastal Information Center (SCCIC). Results of archival research are presented in subsequent sections. No site visit was conducted by AECOM as part of this study; however, a survey of the Telecom Route #4 alignment was conducted by U. S. Secretary of the Interior qualified archeologists, Seth Rosenberg of SoCalGas, and Dave Hanna of Southern California Edison (Rosenberg, pers. comm., 2012). That survey did not identify any new resources.

A total of 25 previously recorded cultural resources were identified within the study area during the archival record search, as presented in Table 1. One of these resources is located within the Telecom Route #4 alignment. This resource is P-19-002681, a multi-component site including historic and prehistoric artifact scatters. The site is located in the vicinity of the intersection of Truman Street and San Fernando Road and was discovered during monitoring within the Metrolink Right of Way (ROW). The site was identified in 1998 and the documentation was submitted to the SCCIC in 2001. The identified artifacts included approximately 100 pieces of historic glass, brick features remnants of unknown function, and 13 prehistoric artifacts. The prehistoric artifacts consist of a possible anvil, possible groundstone, hammerstone, bifacial mano, scraper, a flake, a chopper, and a metate. The artifacts were found on top of back-dirt piles, but it appeared to the monitor that at least minor archeological deposits could be intact at depths of 4 feet or more in the vicinity of the Metrolink ROW. According to the P-19-002681 site form, the ethnographic village of *Pasknga* is reportedly located in the general boundary of the resource; however, no intact archaeological deposits positively verifying the village, or its location, have been identified.

The remaining 24 resources consist of some of the most famous archaeological sites and adobes in the San Fernando region, as well as several sites associated with the Mission San Fernando (CA-LAN-169H). According to the DEIR, preserved components of the mission may be present in the vicinity of the San Fernando Substation. Trenching that occurred at the mission resulted in the discovery of artifacts up to 80 centimeters below the surface.

Table 1: Previously Recorded Cultural Resources within Study Area

Site Number (CA-LAN-)	P-Number (P-19-)	Row or Buffer?	Description/Resource Name	Date Recorded	Significance
34	000034	Buffer	San Fernando Metate Site	1951	Not relocated, probably destroyed
169(H)	-	Buffer	San Fernando Mission; CRHL #157	1950	-
407	000407	Buffer	Walker's San Fernando or Porter Ranch Ceremonial Cairn	2/1970	Not relocated, probably destroyed
408		Buffer	Walker's site-B-"campsite"	2/1970	Not relocated, probably destroyed
409		Buffer	Walkers's Site C	2/1970	Not relocated, probably destroyed
411		Buffer	Walker's Site E	2/1970	probably destroyed
412		Buffer	Walker's Site F	2/1970	probably destroyed
644	000644	Buffer	V.N. #9	1/29/1974	-
960(H)	000960(H)	Buffer	Mission San Fernando Dam	July 1st 1978	-
1124(H)	001124(H)	Buffer	Southern Pacific Enginehouse, turntable, and San Fernando Station	May 15th 1982	-
2006	2006(H)	Buffer	Andres Pico Adobe 10940 Sepulveda Blvd, Mission Hills, L.A. Co. Ca.	Nov 1991	-
2105H	002105	Buffer	Los Angeles Aqueduct	8/14/1992	-
2132H		Buffer	Los Angeles Aqueduct Transmission Line USFS#05-01-53-155	8/14/1992	-
2681/H	002681	ROW	Sylmar Site	November 1998	-
2760	002760	Buffer	Mission Reservoir	10/05/1998	Eligible under Criterion 2 and 3
2766	2766	Buffer	1212 Pico Street, City of San Fernando	5/21/99	Likely not eligible

Table 1: Previously Recorded Cultural Resources within Study Area

Site Number (CA-LAN-)	P-Number (P-19-)	Row or Buffer?	Description/Resource Name	Date Recorded	Significance
	3182(H)	Buffer	Northeast Valley Animal Shelter	April 15th 2004	-
	167231	Buffer	Mission San Fernando Rey de Espana Convento Building 15151 San Fernando Mission Boulevard, Los Angeles, California HRI#021181 Registered Landmark # 157	1-11-1935	Eligible
	186558	Buffer	Brand Park aka Memory Garden HRI#021182 Registered Landmark # 150	2/10/1934	Eligible
	186560	Buffer	The Cascades, Registered Landmark # 653	July 18th 1958	Eligible
005	186580	Buffer	La Casa De Geronimo Lopez, 1100 Pico St., San Fernando, CA HRI#033641 Registered Landmark #	8/7/1968	Eligible
	188051	Buffer	1499 Chatsworth Dr. Los Angeles, CA 91345 HRI#152591	8/26/2004	-
	188052	Buffer	14936 Chatsworth Dr. Los Angeles, CA 91345 HRI#152590	8/26/2004	-
	188053	Buffer	14930 Chatsworth Dr. Los Angeles, CA 91345 HRI#152589	8/26/2004	-
	1888054	Buffer	14922 Chatsworth Dr. Los Angeles, CA 91345 HRI#152587	8/26/2004	-

3.1 NATIVE AMERICAN CONTACT PROGRAM

A Native American contact program was not conducted as part of this study by AECOM. It is understood by AECOM that the California Public Utilities Commission (CPUC) has conducted and will continue to conduct all Native American coordination in conjunction with this project.

4.0 RECOMMENDATIONS

Based on the results of the archival research, prehistoric and historic archaeological deposits are known to occur within the study area. In addition, the vicinity surrounding the Telecom Route #4 alignment is known to contain a high level of archaeological sensitivity due to the early settlement of the area related to the Mission San Fernando, as well as, known locations of prehistoric sites and villages within the study area. It is highly possible that prehistoric archaeological resources may be present within the study area. Such resources may lie beneath the surface, obscured by pavement, vegetation, or development.

In accordance with MM CR-2 intensive-level pedestrian surveys should be conducted for all areas to be disturbed by project construction that have not already been surveyed and have not been previously disturbed or are located with residential areas. For Telecom Route #4, this includes the area at the northern terminus of the alignment from the intersection of Gentili Ranch Road and San Fernando Road to Balboa Boulevard where undergrounding work is proposed to occur. The remainder of the Telecom Route #4 alignment is located in previously disturbed areas and built environment and is not required to be surveyed. A report with a research design, methods, and survey results should be prepared and submitted to CPUC for review.

In accordance with MM-CR-3, the construction contractor shall use archaeological monitoring in culturally sensitive areas during all ground disturbing and undergrounding activities, including, but not limited to, trenching, boring, and grading. These would include any areas determined to be culturally sensitive by the surveys undertaken in accordance to MM CR-2 for the northern section of Telecom Route #4. Additionally, if undergrounding work occurs within the areas within 600 feet east of the San Fernando Substation or in the immediate vicinity of P-19-002681, archaeological monitoring shall occur in these locations as well. This archaeological monitoring should be conducted in accordance with the cultural resources plan (MM CR-1). Monitoring should include inspection of soils to determine if cultural materials are present. Archaeological monitors would follow earth-moving equipment and examine excavated sediments and excavation sidewalls for evidence of archaeological resources. The archaeological monitor shall have the authority to re-direct construction equipment (MM CR-4) in the event potential archaeological resources are encountered. In the event archaeological resources are encountered, work in the vicinity of the discovery shall halt until appropriate treatment of the resource is determined by a qualified archaeologist in accordance with the provisions of CEQA Section 15064.5.

If archaeological resources are discovered during ground disturbance in areas that do not have an archaeological monitor, the applicant and SCE will ensure that ground-disturbing work will be halted or diverted until a CPUC-approved archaeologist can inspect the discovery and determine whether further work is needed (MM CR-4).

If human remains are discovered during any construction activities, all ground-disturbing activity shall be halted immediately, and the County coroner shall be notified immediately, according to Section 5097.98 of the State Public Resources Code and Section 7050.5 of California's Health and Safety Code. If the remains are determined by the County coroner to be Native American, the Native American Heritage Commission (NAHC) shall be notified within 24 hours. The NAHC shall identify a Most Likely Descendant who will be designated to cooperate with the owner of the land on which the remains were discovered to arrange for the proper disposition of the remains, according to the NAHC guidelines for the treatment and disposition of human remains.

In the laboratory, all artifacts from contexts with integrity should be identified, inventoried, and a determination of significance made. All cultural resource material should then be transferred to an approved archaeological repository accompanied by a copy of the final monitoring report and all data in hard and electronic copy. The cost of curation, maintenance, and permanent storage of archaeological materials is assessed by the repository.

A final monitoring report should be prepared that would include, but would not be limited to, a discussion of the results of the monitoring, an evaluation and analysis of the materials collected, an itemized catalog of artifacts collected, an appendix of curation agreements and other appropriate communications, and a discussion of the project-specific monitoring plan. This report shall be filed with the SCCIC, California State Fullerton upon completion of monitoring and analysis of materials recovered (if any).

References Cited

Ecology and Environment, Inc.

2012 *Aliso Canyon Turbine Replacement Project, Draft Environmental Impact Report*.

Rosenberg, Seth A. Archaeologist, Southern California Gas Company.

2012 Review and comments of Phase I Cultural Resources Assessment Letter Report for Telecommunication Route #4, Aliso Canyon Turbine Replacement Project, provided October 10, 2012.

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PHASE 1 PALEONTOLOGICAL ASSESSMENT REPORT FOR TELECOMMUNICATION ROUTE #4, ALISO CANYON TURBINE REPLACEMENT PROJECT (ACTR)

Prepared for:

Southern California Gas Company
555 West 5th St, GT17E2
Los Angeles, California 90013

Prepared by:

AECOM
999 West Town and Country Road
Orange, CA 92868

October 2012

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TABLE OF CONTENTS

1.0 Introduction

This Phase I paleontological resources record search was undertaken to supplement existing studies and to evaluate the paleontological resource impacts resulting from the addition of Telecommunication (Telecom) Route #4 to the Aliso Canyon Turbine Replacement Project. This document is prepared as supplemental information in support of the Draft Environmental Impact Report (*Aliso Canyon Turbine Replacement Project, Draft Environmental Impact Report 2012*) prepared in accordance with CEQA, Public Resources Code Section 21000 *et seq.* and the State CEQA Guidelines, CCR Section 15000 *et seq.*

Telecom Route #4 is approximately 5.8 miles long and is located within the city of San Fernando, on San Fernando Road. The northern terminus of the alignment is located on the northwest corner of the intersection of Gentili Ranch Road and San Fernando Road. The alignment follows San Fernando Road, running parallel to the west side of Interstate 5, and then follows San Fernando Road to the south east under Interstate 5. At Truman Street and San Fernando Road, the alignment switches to Truman Street for approximately 0.5-mile. The alignment then continues on South Workman Street where it heads west for 500 feet, then south on Celis Street for 550 feet, then west on South Kalisher Street for 2,300 feet. The alignment continues along Omelveny Avenue for 580 feet to San Fernando Mission Boulevard west, where it terminates at the San Fernando Substation located on the north side of San Fernando Mission Boulevard.

Construction activities associated with Telecom Route #4 would consist of the installation of new fiber optic cable on new or existing overhead Southern California Edison and Los Angeles Department of Water and Power poles and within new and existing underground conduit.

2.0 Methods

The literature search included review of vertebrate paleontology records within a ½-mile radius of the Telecom Route #4 alignment (herein referred to as “study area”), found at the Los Angeles County Natural History Museum.

2.0 Archival Research Results

A literature search was conducted to determine whether any previously recorded fossil localities occur within the study area, based on research completed for the U.S. Geological 19 Survey (USGS) 7.5-minute San Fernando and Oat Mountain quadrangles (quads) near the city of San Fernando in Los Angeles County.

Based on the results of the records search, there are no vertebrate fossil localities directly within the Telecom Route #4 alignment. However, there are localities nearby from the same sedimentary units that occur as subsurface deposits within the study area.

At the northern end of the study area, around the elevated terrain north of the intersection of Interstate 5 (I-5) and the Foothill Freeway (I-210), there are exposures of the Plio-Pleistocene Saugus Formation and marine Pliocene Pico Formation. At depth, marine late Miocene Towsley Formation may be encountered. Exposures of the Saugus Formation south of the intersection of I-5 and I-210, near the intersection of west San Fernando Road and Olden Street, may also be encountered at depth.

The closest vertebrate fossil locality from the Towsley Formation is LACM 7421, located approximately ½-mile north of the northern terminus of the Telecom Route #4 alignment, which produced fossil specimens of the extinct baleen whale Nannocetus. The closest vertebrate fossil locality from the Pico Formation is LACM 5456, located west-southwest of the northern terminus of the Telecom Route #4 alignment in Browns Canyon. This locality produced fossil specimens of great white shark, Carcharocles, and bonito shark, Isurus planus.

There are two nearby vertebrate fossil localities from the Saugus Formation that are equidistant from the northern terminus of the Telecom Route #4 alignment: LACM 1733, in the hills around I-405 immediately south of the intersection with I-5, which produced fossil specimens of horse, Equus; and, LACM 6601, located due west of locality LACM 1733, in Wilbur Wash Canyon between Limekiln Canyon and Aliso Canyon south of Horse Flats, which produced fossil specimens of deer, Cervidae, and a rare fossil specimens of tapir, Tapirus merriami. The tapir specimen was figured in the scientific literature by G. T. Jefferson in 1989 (Late Cenozoic Tapirs (Mammalia: Perissodactyla) of Western North America (Contributions in Science, Natural History Museum of Los Angeles County, 406:1-21).

Surficial deposits in the rest of the study area consist of younger Quaternary Alluvium, derived primarily as alluvial fan deposits from the Pacoima Mountains to the north. These deposits typically do not contain significant vertebrate fossil remains, at least in the uppermost layers, but they are underlain by older sedimentary deposits. The closest fossil vertebrate locality from the older Quaternary deposits is LACM 5745, situated north of the northern portion of the study area bounded by San Fernando Road, Bradley Avenue, Yarnell Street and Olden Street. This area contained fossil mastodon, Mammut, and horse, Equus, in fill dirt. The next closest vertebrate fossil locality from these deposits is LACM 3397, located west of the middle portion of the study area and north of the Van Norman Reservoir debris basin, which produced fossil bison, Bison, at a seventy-five foot depth. In the lower retention basin further to the south-southeast, northwest of the I-5 and I-405 intersection, vertebrate fossil locality LACM 7152 was identified which produced fossil mammoth, Mammuthus, and bison, Bison, in terrace deposits.

4.0 Recommendations

Construction activities associated with Telecom Route #4 would not require substantial excavation; grading or very shallow excavations in the uppermost few feet of younger Quaternary Alluvium is unlikely to encounter or impact significant vertebrate fossils. Therefore, additional mitigation measures would not be required.

4.0 References

Los Angeles County Natural History Museum. Vertebrate Paleontology Records Search. October 2012.

Appendix C-3
Supplemental Geology, Soils, and Mineral Resources Information

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REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED GAS TURBINE REPLACEMENT PROJECT

ALISO CANYON GAS STORAGE FIELD
LIMEKILN CANYON ROAD
LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

SOUTHERN CALIFORNIA GAS COMPANY

Los Angeles County, California

April 22, 2011

MACTEC Project 4953-10-1751

MACTEC

MACTEC

engineering and constructing a better tomorrow

April 22, 2011

Mr. Frank Chechitelli
Southern California Gas Company
555 West Fifth Street
Mail Location GT17H7
Los Angeles, California 90013

Subject: **LETTER OF TRANSMITTAL**
Report of Geotechnical Investigation
Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Limekiln Canyon Road
Los Angeles County, California
MACTEC Project 4953-10-1751

Dear Mr. Chechitelli:

We are pleased to submit the results of our geotechnical investigation for the proposed Gas Turbine Replacement Project to be constructed at the Aliso Canyon Gas Storage Field located on Limekiln Canyon Road in the unincorporated area of Los Angeles County, north of the town of Porter Ranch, California. This investigation was conducted in general accordance with our proposal and the agreement (Agreement no. 5660020503) between Southern California Gas Company (The Gas Company) and MACTEC Engineering and Consulting, Inc. (MACTEC) dated December 13, 2010 and subject to the terms and conditions contained in that agreement. This report supersedes our Draft Report of Geotechnical Investigation, dated February 11, 2011

The objectives of our subsurface investigation are to: 1) provide a 3-D characterization of the site stratigraphy to assist prospective Engineering, Procurement and Construction (EPC) contractors in developing their bid packages so that grading and equipment placement can be optimized and cost estimates derived and 2) aid The Gas Company in optimizing the grading, plant layout, and design and construction of the equipment foundations and earth-retaining structures.

MACTEC Engineering and Consulting, Inc.
5628 East Slauson • Los Angeles, CA 90040-1554 • Phone: 323.889.5300 • 323.889-5398

The results of our investigation and site development recommendations are presented in this report. Please note that this report probably will not be suitable to support a permit application to Los Angeles County because the details of the proposed compressor layout are not completely finalized at the present time.

It is the general opinion of the undersigned, a duly certified engineering geologist and soils engineer, based on our work as outlined in this report, that (1) the proposed grading and structure(s) can be safe against hazard from landslide, settlement, or slippage, and that (2) the proposed grading and equipment foundation construction will have no adverse effect on the geological stability of property outside of the proposed construction site. Once the final compressor configuration is selected by the EPC contractor MACTEC should be retained to review the details and develop specific design parameters. The resulting report would be suitable for submitting with a permit application.

It has been a pleasure to be of professional service to you. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

MACTEC Engineering and Consulting, Inc.

S. V. Jagannath

S. V. (Jag) Jagannath, Ph.D., G.E.
Senior Engineer
Geotechnical Engineer 2486

REGISTERED PROFESSIONAL ENGINEER
SHANKAM JAGANNATH
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GEOLOGIST
STATE OF CALIFORNIA

P:\4953 Geotech\2010-proj\101751 SCG Aliso Canyon Compressor\4.0 Project Deliverables\4.1 Reports\Final Report\4953-10-1751Rpt01.docx\MS:la

(5 Bound and 1 Unbound copies submitted)

REPORT OF GEOTECHNICAL INVESTIGATION
PROPOSED GAS TURBINE REPLACEMENT PROJECT

ALISO CANYON GAS STORAGE FIELD
LIMEKILN CANYON ROAD
LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

SOUTHERN CALIFORNIA GAS COMPANY

Los Angeles, California

MACTEC Engineering and Consulting, Inc.

Los Angeles, California

April 22, 2011

Project 4953-10-1751

TABLE OF CONTENTS

TABLE OF CONTENTS - continued

LIST OF FIGURES

Figures

EXECUTIVE SUMMARY

We have completed our geotechnical investigation of the site of the proposed Gas Turbine Replacement Project located at the Aliso Canyon Gas Storage Field within Southern California Gas Company property. Our subsurface explorations, engineering analyses, and preliminary recommendations are summarized below.

We investigated the soil conditions by drilling six borings and performing seventeen Cone Penetration Tests (CPTs) at the site. To supplement our current geotechnical analyses, we also reviewed the geotechnical report provided to us by The Gas Company, which was prepared for the same site by Globus in 2006. The geotechnical discussion and recommendations in this report were developed in part using the information contained in the Globus report.

The site is not within a currently established Alquist-Priolo (AP) Earthquake Fault Zone for surface fault rupture hazards. The closest Alquist-Priolo Earthquake Fault Zone, established for the Santa Susana fault zone, is located approximately 0.3 miles southeast of the site. There is no evidence that a major trace of the Santa Susana fault with the potential for significant ground surface rupture is present at the site. However, the potential for distributed ground deformation at the site area in the event of renewed movement on this fault cannot be precluded.

Based on our review of available published information, the site is not located within an area identified as having a potential for seismic slope instability. There are no mapped landslides located beneath or adjacent to the site and adverse bedding orientations were not observed.

According to the California Geological Survey (California Division of Mines and Geology, 1998), the site is not within an area identified as having a potential for liquefaction. The seismic settlement at the site is estimated to be on the order of about 1 inch. The potential for tsumanis is considered negligible. Other geologic hazards such as inundation, seiches, and flooding affecting the site are considered low. The site is not within an area of known subsidence associated with fluid withdrawal (groundwater or petroleum) or peat oxidation.

According to the available information, the site was originally graded in the 1970s. During grading, fill soil was placed to bring the site to the current configuration. The depth of fill varies considerably across the site because the two east-west trending pre-existing canyons were filled to achieve the current grades. The maximum depth of fill/natural soils overlying bedrock encountered in our borings and CPT's was about 38 feet from the ground surface. The depth of fill/natural soils is generally consistent with the landscape features that existed at the site prior to grading. No record of the fill placement is available at this time. Hence, the fill is assumed to be uncertified.

Based on our analysis of the data collected by our current exploration and prior data contained in the Globus report, we have characterized the site from a geotechnical point of view and developed 3-D maps of the subsurface conditions that show the variability of the engineering properties of the subsurface materials across the site. Specifically, the maps focus on the distribution and consistency of the fill/natural soils materials as indexed by the Standard Penetration Resistance known as N1(60). Our analyses indicate that the subsurface materials that occur under the northern portion of the site are more competent relative to the fill/natural soils materials that exist on the south side of the project site. It is our opinion that the northern part of the site may be more favorable for supporting the proposed equipment foundations. Based on the available information on the equipment and the foundation dimensions, we are presenting two alternative layouts for the plant. The relative merits and negative characteristics of each option are described. Other layouts, however, could be considered.

The corrosion studies indicate that the existing fill soils are corrosive to ferrous metals and have negligible effect to Portland cement concrete.

1.0 SCOPE

This report provides foundation design information for the proposed Aliso Canyon Gas Turbine Replacement Project for the Southern California Gas Company (The Gas Company). The proposed project site is located within The Gas Company property north of the town of Porter Ranch, California. The location of the site is shown on Figure 1, Vicinity Map.

The main objectives of the investigation were to provide a 3-D characterization of the site stratigraphy to assist prospective EPC contractors in developing their bid package and to aid The Gas Company in optimizing grading, plant layout, and design and construction of equipment foundations and earth retaining structures. The following tasks were performed to meet these objectives:

- Review of pertinent geologic and geotechnical reports including the geotechnical report prepared by Globus (2006) for this site.
- Performance of a field investigation consisting of drilling of 6 exploratory soil borings and advancing 17 Cone Penetration Tests (CPTs).
- Performance of laboratory testing of soil samples collected from the borings.
- Engineering analysis, data interpretation, and preparation of maps and figures.
- Preparation of this report summarizing our findings and conclusions related to geologic and geotechnical conditions at the site, and providing recommendations for the planned project.

As mentioned before, this report will not be suitable to support a permit application to Los Angeles County because the details of the proposed compressor / equipment layout are not completely finalized at the present time.

The assessment of general site environmental conditions for the presence of contaminants in the soils and ground water of the site was beyond the scope of this investigation.

While our recommendations for the most part are based on the results of our field data, laboratory tests, and appropriate engineering analyses, we have also considered information contained in the report prepared by Globus (2006) for the site. In general, we agree with the findings of the report and therefore we used relevant information from the report in formulating our opinions. The locations of borings and CPTs of our current investigation are presented on Figure 2, Exploration Map. The previous exploratory borings and test pits performed by Globus are also shown on Figure 2 as well. The results of the current field explorations and laboratory tests are presented in Appendix A. A summary of Cone Penetration Test Data is presented in Appendix B. A copy of the Globus report is included in Appendix C.

2.0 PROJECT DESCRIPTION

The project site is located within the Aliso Canyon gas storage field in The Gas Company property. The site is located adjacent to Limekiln Canyon Road in an unincorporated area of Los Angeles County north of the town of Porter Ranch. The project boundary is an irregular area, approximately 675 feet long in the north-south direction and a maximum of about 335 feet wide in the east-west direction. The irregular project site is approximately 2.83 acres in area. The site location is shown on Figure 1.

We understand that the proposed Gas Turbine Replacement Project involves installation of compressors and cooling units with overall plan dimensions of approximately 235 feet by 115 feet. Based on the available information, the proposed Gas Turbine Project consists of the following:

- Three compressors with either Vorcon or VFD motors each having approximate plan dimension of about 40 feet long by 17 feet wide, each weighing approximately 56,000 to 77,000 pounds. For each of the compressors, a lube oil cooler area, lube oil area, and seal gas areas are also proposed. The total plan dimension of each of the entire units is on the order of 47 feet by 47 feet.
- Twelve units of compressor after-cooler fin-fans, each having a plan dimension of approximately 14 feet by 31 feet, with a total plan dimension of 170 feet by 35 feet if placed contiguously.
- Several other ancillary devices, such as lube oil coolers, scrubbers, and transformers.
- Unspecified lengths of piping that connect the various machinery components.
- An approximately 20-foot-wide access road around the perimeter of the compressors

It is our understanding that the three compressors can be constructed in a contiguous area or separated to some degree (e.g., turbine and fin fans as individual units). The proposed turbine project when fully operational would replace the existing compressors that are located northeast of and upslope of the project boundary.

3.0 SITE CONDITIONS

The main portion of the project site is currently occupied by The Gas Company facilities consisting of modular office buildings, at-grade paved parking areas, driveways, and utilities. The project boundaries and the existing structures are shown on Figure 2. The locations of the subsurface investigation are shown on Figure 2. The north[1] end of the site is unpaved; a large pressure vessel is located a short distance north of the pad. This portion of site is relatively level and the average elevation is approximately 1850 feet above Mean Sea Level (MSL) based on the topographic map provided to us. For the purpose of discussion, this level pad is called "Upper Pad." A fill slope descends from this relatively level pad in an approximately westerly direction to a service road and a gently sloping pad below. For the purpose of discussion, this level pad is called "Lower Pad." This fill slope is approximately 10 to 25 feet in height and the slope gradient varies from 1.5:1 (horizontal:vertical) to 2:1.

An engineered fill slope on the northeast side of the Upper Pad ascends eastward towards the existing compressor facility above the project boundaries. The height of the fill slope is about 50 feet from the level pad of the proposed project site and the average gradient is 1½:1 (horizontal: vertical). Concrete-lined drainage swales exist on this fill slope.

Another slope cut into natural deposits exists on the south side of the project site that ascends from the level pad to Limekiln Canyon Road. This slope is possibly covered by a blanket of fill generally anticipated to be only a few feet thick.

Surface runoff from the slope on the east side of the project boundaries is collected in concrete drainage swales and is directed into two drainage concrete-lined channels that traverse the site in the east-west direction. Surface drainage from the site is generally in the south and west directions.

Based on the available data, we understand that the site was developed initially in the early 1970s. During the site development, fill was placed over then-existing canyons traversing across the site to bring the site to its present grade. We understand that the existing office modular buildings on the upper pad of the site were constructed in the early 1990s. Fill material across the site is expected to

[1] For the purposes of this report, the long direction of the project site is assumed to be in the north-south direction with Limekiln Canyon Road to be on the south side of the site. Plant coordinates were used to locate borings and CPTs; these coordinates are generally consistent with our use of 'north:

vary in thickness and consistency. A more detailed discussion on the subject is presented in Section 8.0.

4.0 REVIEW OF EXISTING DATA

As a part of our review of existing information, the following documents were reviewed:

- Preliminary Geotechnical Investigation, Aliso Canyon Turbine Replacement Project, Northridge, California, a report dated November 17, 2006 by Globus Engineering, Inc.
- Aliso Canyon Gas Storage Field Grading Plan, Drawing No. 1796, Revision 6, dated 0/30/03
- Aliso Canyon Turbine Replacement Plot Plan, Special Case 4, Three Compressors, Drawing No. 31655-3015-D.PIP, Plan prepared by Washington Group International.
- Available geologic maps and reports. Please see Section 9.0 for a complete list.

4.1 REVIEW OF GLOBUS REPORT

The 2006 report from Globus indicates that the site was explored by Globus by drilling 9 soil borings down to a maximum depth of 47 feet and by excavating 7 test pits to a maximum depth of 17 feet below the existing ground surface. The locations of the Globus investigation are shown on Figure 2. For the purpose of clarity, prior Borings B-1 through B-7 performed by Globus has been designated as PB-1 through PB-7, in this report. The report indicates that the site is underlain by fill materials and colluvium that overlie bedrock of the Topanga Formation. The depth of fill was reported to vary from 2 to 36 feet. The report indicates that the consistency of the fill material is variable and at some locations the fill materials do not meet the commonly accepted level of compaction, i.e., 90 percent of the maximum dry density as determined by ASTM D1557. However, the Globus report does not clearly delineate the aerial and depth extent of the fill that is less than 90 percent relative compaction. Ground water was reported in several borings and test pits at depths ranging from 10 feet to about 37 feet.

Within the Globus report, two conceptual design alternatives for the proposed plant development were considered within the upper pad. In one of the alternatives, the site was assumed to be graded into two-tiered level pads in order to reduce the amount of grading. In this option, retaining walls were needed to create more usable space. In the other alternative, the proposed plant was placed on a level pad involving significant cut into bedrock and construction of tall retaining walls (to offset the grade difference) on fills, resulting in increased magnitude of grading.

5.0 EXPLORATIONS AND LABORATORY TESTS

The soil conditions beneath the site were explored by drilling 6 borings and 17 Cone Penetration Tests (CPTs) at the locations shown on Figure 2. Figure 2 also shows the locations of the exploratory borings and test pits excavated by Globus as a part of their investigation in 2006. The borings for the current investigation were drilled on December 21 and 27, 2010. The borings were drilled to depths ranging from about 12½ to 39 feet below the existing grade. The borings were extended at least five feet into relatively competent bedrock of the Topanga Formation. Details of the explorations and the logs of the borings are presented in Appendix A. The CPTs were conducted on December 21 and 22, 2010, and were advanced to depths ranging from approximately 6½ to 38½ feet below the existing grade. The CPTs were terminated where refusal to penetration was encountered in all cases. The results of the CPTs are presented in Appendix B.

Laboratory tests were performed on selected samples obtained from the borings to aid in the classification of the soils and to determine the pertinent engineering properties of the foundation soils. The following tests were performed:

- Moisture content and dry density determinations.
- Sieve Analysis.
- Atterberg Limits.
- Direct shear.
- Unconfined Compression.
- Consolidation.
- Compaction.
- California Bearing Ratio
- Expansion Index.

All testing was done in general accordance with applicable ASTM specifications. Details of the laboratory testing program and test results are presented in Appendix A. Corrosion tests on selected soil samples were performed by Schiff and Associates under a subcontract with MACTEC. The results of the corrosion tests and the report of corrosion studies are also included in Appendix A.

6.0 GEOLOGY

6.1 GEOLOGIC SETTING

The site is located in southeastern part of the Aliso Canyon Oil Field approximately 3 miles southeast of Oat Mountain, on the southern flanks of the Santa Susana Mountains just above Porter Ranch in the northern part of the San Fernando Valley.

Regionally, the site is located in the Transverse Ranges geomorphic province. This province is characterized by several east-west trending geologic structures that include the west-trending Santa Susana Mountains, the San Gabriel Mountains to the northeast and the Santa Monica Mountains to the south. The Santa Susana Mountains consist of sedimentary bedrock ranging in age from Cretaceous to Late Pleistocene, and are the result of complex tectonic activity, which includes uplift from local thrust faulting and compression regionally, controlled by the San Andreas fault zone and associated faults. The trend of the Santa Susana Mountains reflects the overall trend of the Transverse Ranges, where major structural features exhibit a west-trending orientation in contrast to the northwest-trending orientation that dominates most of the rest of California.

The relationship of the site to local geologic features is shown in Figure 3, Local Geology Map. Figure 4 presents the Regional Geology Map and Figure 5 presents the Faults and Seismicity Map, showing the locations of major faults and earthquake epicenters in Southern California.

6.2 GEOLOGIC MATERIALS

Geologic mapping of the site was conducted in January 2011. Geologic materials consist of weakly cemented clayey sandstone of the Topanga Formation and two types of natural surficial deposits (colluvium and alluvium) as shown on Figure 6, Geology Map. Fill materials (map symbols af and afu), varying in thickness from about 2 feet to 36 feet thick, were found in the current and previous borings, CPT’s and trenches. Deeper fill could occur between borings, but the pre-grading topographic map contours from the 1970s suggests that substantially deeper fill deposits are not likely to exist. The fill materials consist of predominantly sandy silt and sandy clay and are not uniformly compacted. The fill also locally includes concrete debris, gravel, and rock fragments. The fill was apparently placed during several episodes of grading of the site prior to the early 1970s when the existing structures on the upper pad were built. The fill is further described and characterized in Sections 7 and 8.

Topsoil and colluvium (map symbol Qcol) were encountered in some of the explorations at the site. These materials consist of mixtures of sand, silt and clay with pebble to cobble-size rock fragments. Where encountered in borings and trenches the colluvium ranged from a few inches to over 17 feet in thickness. The colluvium is generally thicker along the lower portions of the slopes and may underlie existing fill in the buried canyons and along slopes.

Alluvium (map symbol Qal) is likely present in the active stream channel along the western portion of the site. It is anticipated to be similar in composition to the colluvium as it was derived from the surrounding areas.

Bedrock in the area consists of fine to coarse grained sandstone with minor siltstone of the middle Miocene-age Topanga Formation (map symbol Tt). The sandstone is well indurated and massive to indistinctly bedded. Mapped bedding planes are variable ranging from 10 degrees to 45 degrees. The bedrock is folded into anticlinal and synclinal structures with bedding dips to the north-northwest, north and southeast. The boring logs are presented in Appendix A.

6.3 GROUND WATER

Ground water was encountered within current boring B-1 at a depth of about 12 feet from the ground surface. No ground water was encountered in other current borings. Ground water was recorded using a water sounder in some of the CPT locations, and the depth to ground water in the CPT holes, (following the withdrawal of the CPT cone) was measured to be between 12 and 15 feet below ground surface. Ground water was reported in some of the previous borings by Globus at depths ranging from 9 to 37 feet below the ground surface.

For the purposes of preliminary design, the depth to groundwater below the upper pad grade (elevation of 1850 feet) is taken to be 12 feet. It should be noted that the depth of groundwater depends on various factors such as seasonal fluctuations due to rainfall.

6.4 FAULTS

The numerous faults in Southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on those criteria developed by the California Geological Survey for the Alquist-Priolo Earthquake Fault Zoning Program (Hart, 1999). By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault is a fault that has demonstrated surface displacement of Quaternary age deposits (the last 1.6 million years). Inactive faults have not moved in the last 1.6 million years. A list of nearby active faults (those included in CGS, 2003) and the distance in miles between the project site and the nearest point on the fault, the maximum magnitude, and the slip rate for the fault are given in Table 1, Major Faults Considered to be Active in Southern California. A similar list for potentially active faults is presented in Table 2, Major Named Faults Considered to be Potentially Active in Southern California.

The closest active fault to the project site with the potential for surface rupture is the Santa Susana fault mapped to the southeast. This fault extends northeastward from the Santa Susana Mountains across San Fernando Pass and into the San Gabriel Mountains. In the vicinity of the project site, the main trace of the Santa Susana fault is exposed and has been mapped across Limekiln Canyon Road on the order of 0.3 miles to the south. Saul (1979) has mapped discontinuous fault traces in the northern-most and southern-most portions of the site. Globus, 2006, mapped minor faults within the site. Substantial folding of the bedrock has been mapped regionally and at the site, as evidenced by the variable dip directions of bedding at the site. The folding is related to near surface, upper plate deformation along the Santa Susana fault. The faults mapped at the site are most likely related to this deformation. These fault traces are likely relatively minor. The California Geological Survey (CGS, 2003) considers the Santa Susana fault to be capable of a magnitude 6.7 earthquake with a slip rate of 5.0 mm/yr.

The closest potentially active fault to the site is the Northridge Hills fault located approximately 2.9 miles to the south. The fault is considered potentially active by Jennings (1994). However, a recent publication suggests that deformation of young sediments could be related to the Northridge Hills fault (Baldwin et al., 2000).

6.5 GEOLOGIC-SEISMIC HAZARDS

6.5.1 Fault Rupture

The site is not within a currently established Alquist-Priolo (AP) Earthquake Fault Zone for surface fault rupture hazards. The closest Alquist-Priolo Earthquake Fault Zone, established for the Santa Susana fault zone, is located approximately 0.3 miles south of the site (California Division of Mines and Geology, 1976) (see figure 8). The Santa Susana fault zone extends to the west of the AP Zone, but has not yet been evaluated for zoning purposes. As discussed in Section 6.4, discontinuous faults have been mapped within the bedrock at the site. Where observed, these faults appear to be relatively minor, related to deformation in the upper plate of the Santa Susana fault. There is no evidence that a major trace of the Santa Susana fault with the potential for significant ground surface rupture is present at the site. However, the potential for distributed ground deformation at the site area in the event of renewed movement on this fault cannot be precluded.

6.5.2 Seismicity

The seismicity of the region surrounding the site was determined from research of an electronic database of seismic data (Southern California Seismographic Network, 2010). This database includes earthquake data compiled by the California Institute of Technology from 1932 through 2010 and data for 1812 to 1931 compiled by Richter and the U.S. National Oceanic Atmospheric Administration (NOAA). The search for earthquakes that occurred within 100 kilometers of the site indicates that 575 earthquakes of Richter magnitude 4.0 and greater occurred from 1932 through 2010; one earthquake of magnitude 6.0 or greater occurred between 1906 and 1931; and one earthquake of magnitude 7.0 or greater occurred between 1812 and 1905. Epicenters of moderate and major earthquakes (greater than magnitude 6.0) are shown in Figure 5.

A number of earthquakes of moderate to major magnitude have occurred in the Southern California area within the last 150 years. A partial list of these earthquakes is included in the following table.

List of Historic Earthquakes

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude	Distance to Epicenter (Miles)	Direction to Epicenter
Fort Tejon	January 9, 1857	8.0	48	NW
Lake Elsinore	May 15, 1910	6.0	78	SE
Loma Linda area	July 23, 1923	6.3	77	ESE
Long Beach	March 11, 1933	6.4	58	SE
Tehachapi	July 21, 1952	7.5	54	NW
San Fernando	February 9, 1971	6.6	11	ENE
Whittier Narrows	October 1, 1987	5.9	31	SE
Sierra Madre	June 28, 1991	5.8	32	ESE
Landers	June 28, 1992	7.3	121	ESE
Big Bear	June 28, 1992	6.4	98	ESE
Northridge	January 17, 1994	6.7	7	S
Hector Mine	October 16, 1999	7.1	131	ENE

Prepared by PWK 12/27/10
Checked by RM 2/8/11

The site could be subjected to strong ground shaking in the event of an earthquake. However, this hazard is common in Southern California and the effects of ground shaking can be mitigated by proper engineering design and construction in conformance with current building codes and engineering practices.

6.5.3 Slope Stability

The site is located on a relatively level triangular-shaped pad with gentle to moderate slopes descending to the south and west. An engineered fill slope and fill-over-cut slope ascends from the site on the northeast side and a fill slope descends from the site on the west side. The overall site surface drainage is towards the west and south, over the west slope and into the natural drainage/creek traversing north-south, and then into the Limekiln Canyon drainage.

A review of published geologic maps and literature, field reconnaissance, and geologic mapping of nearby bedrock outcrops were conducted to evaluate the stability of the existing slopes in the vicinity of the proposed facilities.

Based on our review of available published information, the site is not located within an area identified as having a potential for seismic slope instability (California Division of Mines and Geology, 1998). There are no mapped landslides located beneath or adjacent to the site and adverse bedding orientations were not observed. The closest mapped landslides are located approximately 320 feet to the southwest and 460 feet to the southeast of the site (California Division of Mines and Geology, 1997).

During our reconnaissance, no indications of recent slope instability were observed within the slopes in the vicinity the site. Bedding orientations obtained from our geologic mapping and previous mapping are plotted on Figure 6, Geology Map. The geologic structure underlying the slopes in the site is generally neutral to into slope. We have performed preliminary slope stability analysis for the existing slopes at the site. Factors of safety greater than 1.5 and 1.1 were found for the slopes for static and pseudostatic (with a horizontal seismic coefficient of 0.15) conditions, respectively. Therefore, the potential for slope instability impacting the proposed structures is considered to be low.

In general, the existing slopes that are steeper than 2:1 (H:V) may not meet the Los Angeles County Building Code and may require special considerations such as obtaining a variance to the code or reconstruction of slopes to meet current standards and/or provide adequate setbacks from the slopes. However, it should be noted that areas of steep fill slopes (1:1) are expected to be marginally stable, especially under saturated conditions, and will need to be remediated appropriately when grading plans are developed.

6.5.4 Liquefaction and Seismically-Induced Settlement

According to the California Geological Survey (California Division of Mines and Geology, 1998), the site is not within an area identified as having a potential for liquefaction (Figure 8). The middle Miocene-age bedrock beneath the site is not susceptible to liquefaction.

The epicenter of the 1994 Northridge Earthquake, which produced strong ground shaking at the site, is estimated to be about 6.7 miles south from the site and the slopes that surround the site reportedly performed acceptably during the earthquake.

Seismic settlement is often caused by loose to medium-dense granular soils densified during ground shaking. Uniform settlement beneath a given structure would cause minimal damage. Dry and partially saturated soils as well as saturated granular soils are subject to seismically-induced settlement. We have calculated the seismic settlement at the site to be on the order of about 1 inch.

6.5.5 Tsunamis, Inundation, Seiches, and Flooding

The site is not in a coastal area. Therefore, the potential for tsumanis is considered negligible. Other geologic hazards such as inundation, seiches, and flooding affecting the site are considered low.

6.5.6 Subsidence

The site is not within an area of known subsidence associated with fluid withdrawal (groundwater or petroleum) or peat oxidation.

7.0 SOIL CONDITIONS

Soil materials encountered in our borings consisted of fill, colluvium, and bedrock of Topanga formation. Fill soils were encountered in all of the borings. The thickness of the fill varied from 6 to 36 feet below the existing ground surface. Deeper fill could occur between borings but the pre-grading topographic map contours from the 1970s suggests that substantially deeper fill deposits are not likely to exist. . In Boring B-4, 18 feet of slope wash material was encountered between fill and bedrock. The thickness of fill at Boring B-4 was estimated to be about 12 feet.

The consistency and nature of fill soils was found to vary across the site. The fill soils consist predominantly of sandy silt and sandy clay; silty sand and lean clay were also encountered locally. Fill material also locally included concrete debris, gravel, and rock fragments. The consistency of the fill material was evaluated based on SPT blow counts and equivalent SPT blow counts from Modified California Sampler and CPT data. The boring data presented in the Globus report were also taken into consideration in evaluating the nature of the fill material. The contour plot on Figure 9.1 shows a three-dimensional rendering of the existing topography and the prior (pre-1970) topography across the project site. The figure also shows thickness of fill material below existing grade across the site. The thickness of fill material across the site is generally consistent with the difference between the pre-development ground elevation and the current grade level, indicating that during prior grading, then-existing canyons across the site were backfilled to achieve the existing level condition in the upper pad. A detailed explanation of the figure is presented in Section 8.0 of this report.

The bedrock encountered at the site consists of sandstone and minor siltstone of Topanga formation. In general, the upper portion of the bedrock directly below the fill material is highly weathered and relatively weak. However, within about five feet below the top of bedrock, the degree of weathering was found to decrease and competent bedrock was encountered. The weathered bedrock generally is as strong as well compacted soil.

The corrosion studies indicate that the existing fill soils are corrosive to ferrous metals and have negligible effect to portland cement concrete. The report of corrosion studies presented in Appendix A should be referred to for a discussion of the corrosion potential of the soils and for potential mitigation measures.

8.0 DISCUSSIONS AND RECOMMENDATIONS

The main objectives of our investigation were to develop a 3-D characterization of the site and to aid The Gas Company in optimizing plant layout, grading, and design and construction of equipment foundations and earth retaining structures. To achieve these objectives, we analyzed the data collected during our current investigation along with the data reported by Globus in their 2006 report. The results of our analyses are presented in this section.

8.1 DEPTH OF FILL

A considerable amount of fill was placed at the site during grading prior to the early 1990s to bring the site to a level condition as seen now at the upper pad. The depth of fill therefore varies with the original topography of the ground as it existed prior to grading. On Figure 9.1, 3-D surface maps of the pre-1970 grades and existing conditions are presented. The surface maps were developed based on the contour plans provided to us by The Gas Company. A plot is also presented in Figure 9.1 that shows contours of thickness of fill based on all the available subsurface data. For the purposes of site characterization, all soils above bedrock are considered to be fill. The subsurface data includes our exploratory borings and CPTs as well as data reported by Globus in 2006.

As can be seen on Figure 2, the map showing the pre-1970 condition of the site, a relatively deep canyon was located in an approximately northeast to southwest direction across the middle portion of the site prior to site grading. The maximum depth of the canyon is on the order of 35 feet below the existing grade elevation. The slope of the canyon wall on the south side appears to have been flatter than that on the north side. The depth of fill as encountered in our exploratory borings and those by Globus confirms the general trend in fill thickness along the canyon axis with maximum depth of fill encountered in C-9 and PB-7 (by Globus) about 38 feet. The maximum depth of fill encountered at the northeast end of the canyon was about 26 feet (see borings B-2 and PB-1). As seen on the contour map, the maximum depth of fill was observed along the canyon axis, and the depth of fill decreased as one moves across the canyon wall, away from the canyon axis.

A shallower canyon also existed at the northern end of the site which apparently has also been filled during past grading. The maximum depth of fill encountered in this area was about 17 feet in CPT C-14.

A prominent ridge was present between the two canyons in the pre-grading surface map. A portion of the ridge was excavated during grading to create the pad, resulting in a bedrock knoll.

8.2 CONSISTENCY AND VARIABILITY OF FILL

The consistency, hence the competency of the soil materials underlying the site is of importance for future development. The consistency of the subsurface materials was evaluated on the basis of SPT N-value, which serves as a convenient index parameter. To generate a consistent set of data, the field blow counts from SPT and modified California samplers were corrected for overburden stress, hammer efficiency, sampler size, and borehole diameter. We used the data from our current borings as well as those reported by Globus in this process. In addition, CPT data were converted to equivalent SPT blow counts based on published procedure (Robertson and Campanella, 1983; Robertson et al. 1983) and combined with the SPT data described above.

In Figure 9.2, a three-dimensional rendering of contour plots of equivalent blow counts at different depths is presented. The top most exhibit shows the relative locations of exploration points on the existing topographic map. The exhibit below the topographic map shows a variation of SPT N-value, hence the soil consistency, across the site between the depths of 5 to 10 feet below the ground surface. The subsequent contours show similar variations at 5-foot intervals to a depth of 25 feet below the ground surface. As the upper 5 feet of soil at each boring location were hand augered to avoid potential conflict with buried utilities, no samples were collected within that zone, and SPT N-values are not available in the upper 5 feet. The plots indicate that the consistency of the soil materials varies across the site. However, the soils in the northern part of the site have significantly better consistency than the rest of the site in terms of equivalent SPT blow counts. Except for some localized areas, the soil in the northern portion of the site can be characterized as competent to highly competent as demonstrated by equivalent SPT blow count of 30 or greater. The fill materials on the south side of the site show greater variability and poorer consistency.

The variability of the subsurface soils at the site can be seen in the profile of SPT-N-values along Section A-A’ presented in Figure 10.1. Section A-A’ is located along the upper pad near the crest of the slope. The main filled canyon is clearly visible beyond a distance of about 250 feet from the north end of the section line.

The variability of the fill in the main canyon is illustrated in Figures 10.2 and 10.3. The two graphical plots on the left side of this Figure 10.2 shows the SPT blow counts for all borings on one diagram and for all CPTs on another diagram. The borings and CPTs that were used in this analysis are plotted on an index map on the right side of Figure 10.2. Figure 10.3 shows the SPT blow counts for the borings and CPTs on a single plot. The blow counts in bedrock were interpreted to be represented by a rapid rise in values of blow count; these bedrock blow count values were dropped from the analysis so that the resulting values would represent only the fill soils. The average values calculated on the basis of elevation are plotted with a red line on Figure 10.2, whereas a green line is used to show the 16^{th} percentile values (1 standard deviation below the mean value). Between elevations 1847 and 1828, the 16^{th} percentile blow count value in the fill soils is no lower than 12. However, it should be noted that many more data points are in the upper 15 feet of the site profile than in the lower 25 feet, and the number of data points influences the standard deviation value.

We attempted to create a similar plot using relative compaction as indicator of fill consistency in a manner similar to the one used by Globus (2006). Relative compaction is the ratio of in-situ dry density to the maximum density determined in laboratory by performing compaction test according to ASTM D-1557. However, we concluded that such characterization is not reliable because the maximum density tests could be performed only on bulk samples obtained from the near-surface soil deposits, and may not be representative of the soil materials encountered at depth.

8.3 RECOMMENDATIONS

We understand that a number of factors contribute to the suitability of the site for the proposed compressor units. Those factors include geotechnical and non-geotechnical considerations. The geotechnical factors include the thickness and variability of the fill soils, as well as the amount of site grading and earthwork needed. The site grading factor not only affects site construction costs, but also may trigger a County of Los Angeles grading permit. The ultimate determination of site suitability will be made by The Gas Company and its EPC contractor. From a purely geotechnical perspective, areas within the site that have bedrock at shallow depth may be more favorable than deeper fill soils because of better foundation support and smaller differential settlement. However, the weights of the compressor units are relatively low for their foundation dimensions, meaning that the bearing pressures could be low. Low bearing pressures could result in tolerable settlements even on the fill soils that have variable consistency.

On the basis of our site characterization, we conclude that the northern portion of the site may be more favorable for the installation of proposed compressor and ancillary equipment than the south portions of the site that are underlain by thicker fill deposits. Based on available information, the vertical loads from the proposed compressor, after-cooler fans, and other equipment are not very significant. We estimate the average bearing pressure from the equipment to be less than 200 psf. However, it is our understanding that some of the equipment has relatively small tolerance for out of level condition; therefore any significant settlement of the foundation soil may be a critical issue. It is noted here that the loads from the equipment are not large enough to cause any significant consolidation settlement of the fill materials. However, fill material may continue to settle under its own weight resulting in a settlement of the order of less than 0.5 inch.

In addition to the plant layout and arrangement shown on the RFP documents (Request for Proposal for Subsurface Investigation, September 14, 2010), we have considered a second layout option based on the available equipment and foundation dimensions from the plan prepared by Washington Group International. These two layout options will be referred to as Option 1 and Option 2, respectively, and are shown schematically on Figures 11.1 and 11.2. In developing these options, it is assumed that the equipment will be supported on concrete mat foundations. The merits and negative charachteristics of each option are described below. The south portion of the project site where the greatest thickness of fill material was encountered and the consistency of the fill materials indicate relatively poor compaction, currently is being excluded from consideration as a plant location.

The grading requirements described below are for preliminary evaluation and comparison purposes only. Detailed recommendations and design parameters for site grading, foundations, and retaining walls will be needed once a layout is selected for the project. We believe that sufficient subsurface data have been collected to permit the design parameters to be developed without additional field work. The evaluation to estimate the parameters is beyond the scope of the present investigation.

8.3.1 Proposed Layout Option 1

In this option, all 3 compressor units and corresponding 12 units of after-cooler fin-fans are located in a contiguous manner. The overall plan dimension of the supporting foundation/structure is about

98 feet by 170 feet. A 20-ft wide road around the equipment appears to be part of the required layout.

As can be seen on Figure 11.1, in this option, the equipment is proposed to be located east of the existing office buildings. The northern part of the proposed plant would be over the existing bedrock knoll and the southern portion of the plant will be over an area that is currently underlain by fill. Assuming that the plants will be placed near the current grade level of the upper pad (elevation 1850), excavation would be required in the bedrock in the northern two-third portion of the plant area to create a level pad for the proposed equipment. The maximum depth of the cut would be approximately 16 feet. A retaining wall of similar height will be required to retain the vertical cut. The southern portion of the proposed foundation/structure would be located on the old canyon axis with approximately 20 feet of fill. The fill materials in the area are not evenly compacted, and there is a potential for differential settlement of the foundation and the equipment in the long run. An alternative that the EPC contractor might consider is introducing adjustable elements at the top of the concrete foundation that could be used to level the units as differential settlements occur.

To minimize excavation in bedrock and reduce the height of the retaining wall, other grading options such as cut-fill combination may be used. However, such an option would entail placement of addition fill over existing fill in the southern portion of the site. This might not be a desirable option, given the relatively thick existing fill with relatively poor compaction in that area. Placement of additional fill would increase the potential for additional settlement.

The compressors would be located over the existing drainage swale near the toe of the large fill slope and the channel that traverse the site. These drainage features would require realignment and/or redesign.

8.3.2 Proposed Plant Layout Option 2

In this option, it is assumed that all three compressor units do not need to be housed together. Two separate areas are considered for the equipment as shown on Figure 11.2. The larger foundation would support two compressors and eight fin-fan units and the other foundation would support the third compressor and remaining four fin-fan units. Based on the available plans, the approximate plan dimensions of the larger area were estimated to be about 98 feet by 138 feet and those of the smaller area were estimated to be about 72 feet by 98 feet. A 20-ft-wide road is considered around the plant area as shown.

Although the proposed plants and their supporting foundations would straddle bedrock and fill materials, the most significant advantages over Layout Option 1 is that the plant, for most part would be supported on bedrock and fill material on the north part of the site. As mentioned earlier, the fill materials encountered in this part of the site are competent to very competent. Also, the thickness of the fill material is significantly less than the south portion of the site. Only a small portion of the fin-fan foundation would be supported on weaker fill material behind the existing office building.

As seen on Figure 11.2, the footprint of the foundations would extend over the slope on the west side of the upper pad. The footprint would also extend into the knoll and the west facing slope that ascend to the existing plan site above. As a result, grading would involve both cut and fill. About 12 to 14-ft high excavation in the bedrock would be required to bring the knoll area to the current grade elevation of the pad. A retaining wall of similar height would be required to support the excavation. On the west side, 6 to 8 feet of fill placement would be required to bring the lower service road and portions of the slope to the current pad elevation. Some realignment of the service road may also be necessary.

As in Option 1, the plant would be located over the existing drainage swale near the toe of the slope and the channel that traverse the site. These drainage features would require realignment and/or redesign. Also, the existing office buildings on the upper pad would require relocation.

8.3.3 Foundation Design Recommendations

Following Sections provide preliminary foundation design recommendations for the design of shallow foundations.

NEEDS TO BE FORMATTED

Bearing Capacity

Lightweight equipment and structural elements that are not sensitive to settlement may be placed on shallow concrete foundations constructed on soil prepared as described in the Site Preparation and Grading section of this report. The following sections should be carefully reviewed before any shallow foundations are designed. The structural engineer must verify with the mechanical and electrical engineers that their equipment can tolerate the given settlements and the resulting deflections or tilting. In addition, supporting above-ground facilities by different foundation types (deep versus shallow) should be avoided because the two foundation types tend to produce different amounts of settlement which could result in undesirable effects.

With all of these caveats in mind, for shallow foundation design, the allowable soil bearing capacity is 2,000 psf for an isolated spread footing placed on engineered fill and having a minimum embedment depth of 1.5-foot below compacted finished grade. Oil containment rock and asphalt pavement should not be considered as compacted engineered fill material and do not contribute to meeting the embedment requirement. The corresponding bearing capacity value for a spread footing placed on undisturbed bedrock materials may be taken as 4,000 psf for the foundation types anticipated for this project. The allowable bearing capacity may only be increased 15% for temporary seismic loads; 33% increase is acceptable for other temporary loads such as wind.

The allowable lateral bearing capacity for shallow foundations is 200 psf per foot of depth into compacted fill or undisturbed native soil material. The allowable lateral bearing capacity may only be increased 15% for temporary seismic loads; 33% for other temporary loads such as wind. The maximum value for all cases is 500 psf. The lateral sliding resistance of friction coefficient, which is multiplied by the dead load, is 0.30 with no increases allowed. The values determined for lateral bearing and lateral sliding may be combined to calculate the total lateral resistance. Oil containment rock and asphalt pavement should not be counted as providing confinement for lateral capacity.

<u>Settlement</u>

For preliminary planning purposes, total consolidation or static settlement under the foundations for currently anticipated loads may be taken as 1-inch with differential settlement of 0.5 inch.

<u>Dynamic Soil Design Parameters</u>

The design of some of the major foundations, such as for the turbines and generator, will consider the effects of vibrating equipment. Based on a geotechnical literature review on the types of soil found in the upper 40 feet of the site we recommend that the following soil values be used for dynamic design:

- Poission's Ratio = 0.350
- Modulus of Subgrade Reaction = 150 kcf
- Dynamic Shear Modulus = 3,000 ksf (from an estimated shear wave velocity of 940 fps in the upper 25 ft. of soil, based on 2 seismic CPT's performed by Gregg In Situ, Inc.).

Site Preparation and Grading

Before any fill is placed or foundations constructed the site must be prepared. It is anticipated that the existing office buildings, trailers and drainage structures will be completely demolished. Abandoned piping, substructures, trash pits, foundations, asphalt, and other debris shall be removed completely and any excavation properly backfilled. Large volumes of water from potable, sprinkler, and sewer pipes should not be allowed to soak into the fill or flow over unprotected slopes where erosion gullies could form. The function of existing surface and subsurface drainage features should be preserved as part of the future site preparation and grading.

For planning purposes, for foundations placed on top of existing fill soils, it is anticipated that a minimum 3 feet of over excavation below the bottom of the proposed foundations, would be required to provide a uniform support for the foundation.

In order to avoid saturated soil conditions and groundwater related problems, it is recommended that the bottom of any excavation required for the construction of foundations, vaults, pipelines, conduits or other underground elements be designed or constructed approximately 4 feet above the water table.

Construction Considerations

The design and construction of all shallow foundations shall consider their impact and influence on adjacent structures. Where shallow footings are adjacent to underground piping, tanks, or conduits, or below grade walls (such as vaults), the bearing depth of the footing should extend below an imaginary 45-degree plane (1:1) projected upward from the bottom of the substructure or the toe of the adjacent wall footing. This additional depth is required to avoid surcharge loading of the underground features with the new foundation loads. As an alternative, in some cases the underground element that is the recipient of the surcharge can be designed or modified to accommodate the additional load.

In order to avoid interferences and tight fits, all design disciplines shall consider the locations of their structures, pipes, or conduits with respect to the other disciplines. Adequate separation shall be maintained between concrete foundation elements and substructures. A minimum of 12 inches of clearance shall be maintained between the bottom of any concrete structure and the top of underground piping or electrical duct encasement, except for vertical risers. Pipe bends and conduit sweeps coming in beneath shallow foundations and piles should be vertical before they enter the concrete element. In addition, a minimum of 12 inches of clearance shall be maintained between the side of any concrete structure (including piles) and adjacent runs of underground piping or electrical duct encasement.

Shallow foundations shall not be placed directly against piles or single deep foundations. Structural separation shall be designed and constructed between adjacent structures that are supported on different foundation types or are structurally independent. A buffer zone shall be incorporated between the two elements to allow for independent horizontal and vertical movement. The size of the space or joint shall be large enough to accommodate the estimated relative movements (tilting from settlement, deflections, and lateral motion) between the elements. In any case the clearance between the concrete elements shall be a minimum of one inch.

GENERAL LIMITATIONS AND BASIS FOR RECOMMENDATIONS

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has been prepared for Southern California Gas Company and their design consultants to be used solely in the installation of the proposed compressor and other ancillary equipment. The report has not been prepared for use by other parties, and may not contain sufficient information for purpose of other parties or other uses.

The recommendations provided in this report are based upon our understanding of the described project information and on our interpretation of the data collected during our current investigation and previous subsurface explorations performed by Globus and reported in their 2006 report. We have made our recommendations based upon experience with similar subsurface conditions under similar loading conditions. The recommendations apply to the specific project discussed in this report; therefore, any change in the structure configuration, loads, location, or the site grades should be provided to us so that we can review our conclusions and recommendations and make any necessary modifications.

The recommendations provided in this report are also based upon the assumption that the necessary geotechnical observations and testing during construction will be performed by representatives of our firm. The field observation services are considered a continuation of the geotechnical investigation and essential to verify that the actual soil conditions are as expected. This also provides for the procedure whereby the client can be advised of unexpected or changed conditions that would require modifications of our original recommendations. If another firm is retained for the geotechnical observation services, our professional responsibility and liability would be limited to the extent that we would not be the geotechnical engineer of record.

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TABLES

Table 1
Major Named Faults Considered to be Active in Southern California

Fault (in increasing distance)	Maximum Magnitude			Slip Rate (mm/yr.)	Distance From Site (miles)	Direction From Site
Northridge Thrust	7.0	(a)	BT	1.5	-	-
Santa Susana	6.7	(a)	R	5.0	0.3	S
Sierra Madre (San Fernando Section)	6.7	(a)	R	2.0	2.2	S
Simi-Santa Rosa	7.0	(a)	RO	1.0	4.2	WSW
San Gabriel	7.2	(a)	SS	1.0	7	NE
Verdugo	6.9	(a)	R	0.5	8.2	SE
Oak Ridge	7.0	(a)	R	4.0	11	NW
Holser	6.5	(a)	RO	0.4	11	NW
Sierra Madre	7.2	(a)	R	2.0	15	ESE
San Cayetano	7.0	(a)	R	6.0	15	NW
Hollywood	6.4	(a)	RO	1.0	17	SE
Santa Monica	6.6	(a)	RO	1.0	18	SE
Puente Hills Blind Thrust	7.1	(a)	BT	0.7	18	ESE
Malibu Coast	6.7	(a)	RO	0.3	18	SSW
Upper Elysian Park	6.4	(a)	BT	1.3	19	SE
Raymond	6.5	(a)	RO	1.5	22	SE
Anacapa-Dume	7.5	(a)	RO	3.0	22	SW
Newport-Inglewood Zone	7.1	(a)	SS	1.0	22	SSE
Palos Verdes	7.3	(a)	SS	3.0	25	S
San Andreas (Mojave South Section)	7.4	(a)	SS	29.0	25	NE
Clamshell-Sawpit	6.5	(a)	R	0.5	32	ESE
Whittier	6.8	(a)	RO	2.5	37	SE
San Jose	6.4	(a)	RO	0.5	42	SE
Cucamonga	6.9	(a)	RO	5.0	50	ESE
Chino-Central Avenue	6.7	(a)	NO	1.0	51	SE
San Joaquin Hills Blind Thrust	6.6	(a)	BT	0.5	56	SE
San Jacinto (San Bernardino Section)	6.7	(a)	SS	6.0	56	ESE

(a) California Geological Survey, 2003
(b) Mark, 1977
(c) Slemmons, 1979
(d) Wesnousky, 1986
(e) Hummon et al., 1994
SS Strike Slip
NO Normal Oblique
RO Reverse Oblique
BT Blind Thrust

Prepared by PWK 12/27/10
Checked by RM 4/21/11

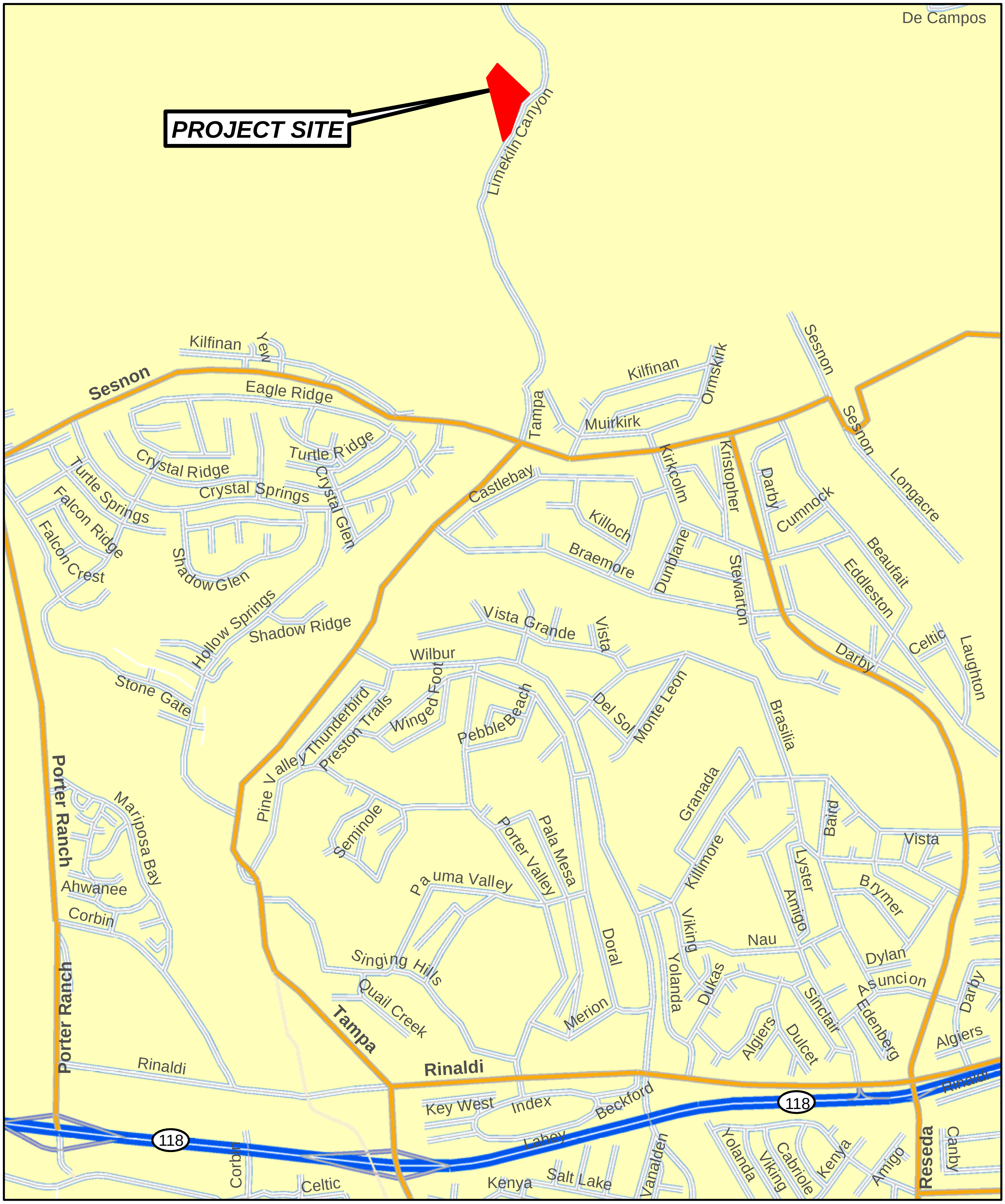
Table 2
Major Named Faults Considered to be Potentially Active in Southern California

Fault (in increasing distance)	Maximum Magnitude			Slip Rate (mm/yr.)	Distance From Site (miles)	Direction From Site
Northridge Hills	6.6	(d)	SS	1.2	2.9	S
Overland	6.0	(c)	SS	0.1	20	S
MacArthur Park	5.7	(e)	RO	0.1	21	SE
Charnock	6.5	(c)	SS	0.1	22	SSE
Duarte	6.7	(c)	RO	0.1	33	ESE
Norwalk	6.7	(c)	RO	0.1	38	SE
Los Alamitos	6.2	(b)	SS	0.1	41	SE
Indian Hill	6.6	(b)	RO	0.1	43	SE
El Modeno	6.5	(b)	NO	0.1	48	SE
Peralta Hills	6.5	(b)	RO	0.1	53	SE

(a) California Geological Survey, 2003
(b) Mark, 1977
(c) Slemmons, 1979
(d) Wesnousky, 1986
(e) Hummon et al., 1994
SS Strike Slip
NO Normal Oblique
RO Reverse Oblique

Prepared by PWK 12/27/10
Checked by RM 4/21/11

FIGURES



N
W E
S

2,000 Feet

MACTEC

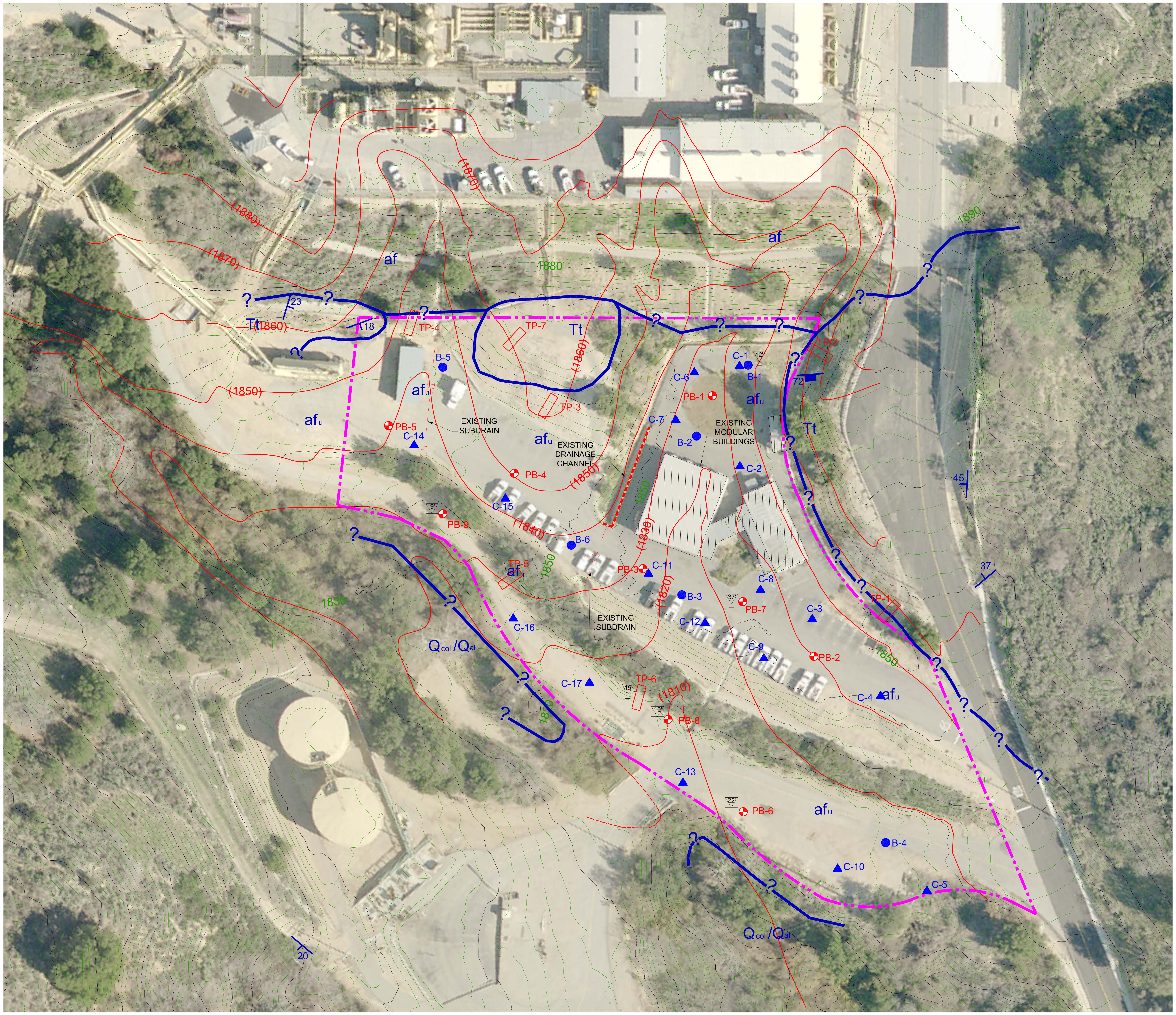
5628 E. SLAUSON AVENUE
LOS ANGELES, CALIFORNIA 90040
P (323) 889-5300 F (323) 889-5398

VICINITY MAP

FIGURE 1

Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

PROJECT NO.: 4953-10-1751		REVISION:
DATE:	4/21/2011	
SCALE:	AS NOTED	
DWG BY:	NH	CHECKED BY: JAG



KEY:

B-6	●	CURRENT MACTEC BORING
C-17	▲	CURRENT MACTEC CPT
PB-9		PRIOR BORING BY GLOBUS IN 2006
TP-7	▭	PRIOR TEST PIT BY GLOBUS IN 2006
		EXPLORATION LOCATION AND NUMBER
	10'	DEPTH OF GROUNDWATER ENCOUNTERED AT TIME OF DRILLING
		2002 TOPOGRAPHIC CONTOURS, 2-FOOT CONTOUR INTERVAL
		PRE-1971 TOPOGRAPHIC CONTOURS, 10-FOOT CONTOUR INTERVAL
		PROJECT BOUNDARY

REFERENCE: 2002 TOPOGRAPHICAL CONTOURS PROVIDED BY SOUTHERN CALIFORNIA GAS COMPANY. PRE-1971 TOPOGRAPHICAL CONTOURS EXTRACTED FROM 1971 GRADING PLAN BY SOUTHERN CALIFORNIA GAS COMPANY. 2008 AERIAL IMAGE PUBLISHED BY COUNTY OF LOS ANGELES.

0 25 50 100

Scale in Feet

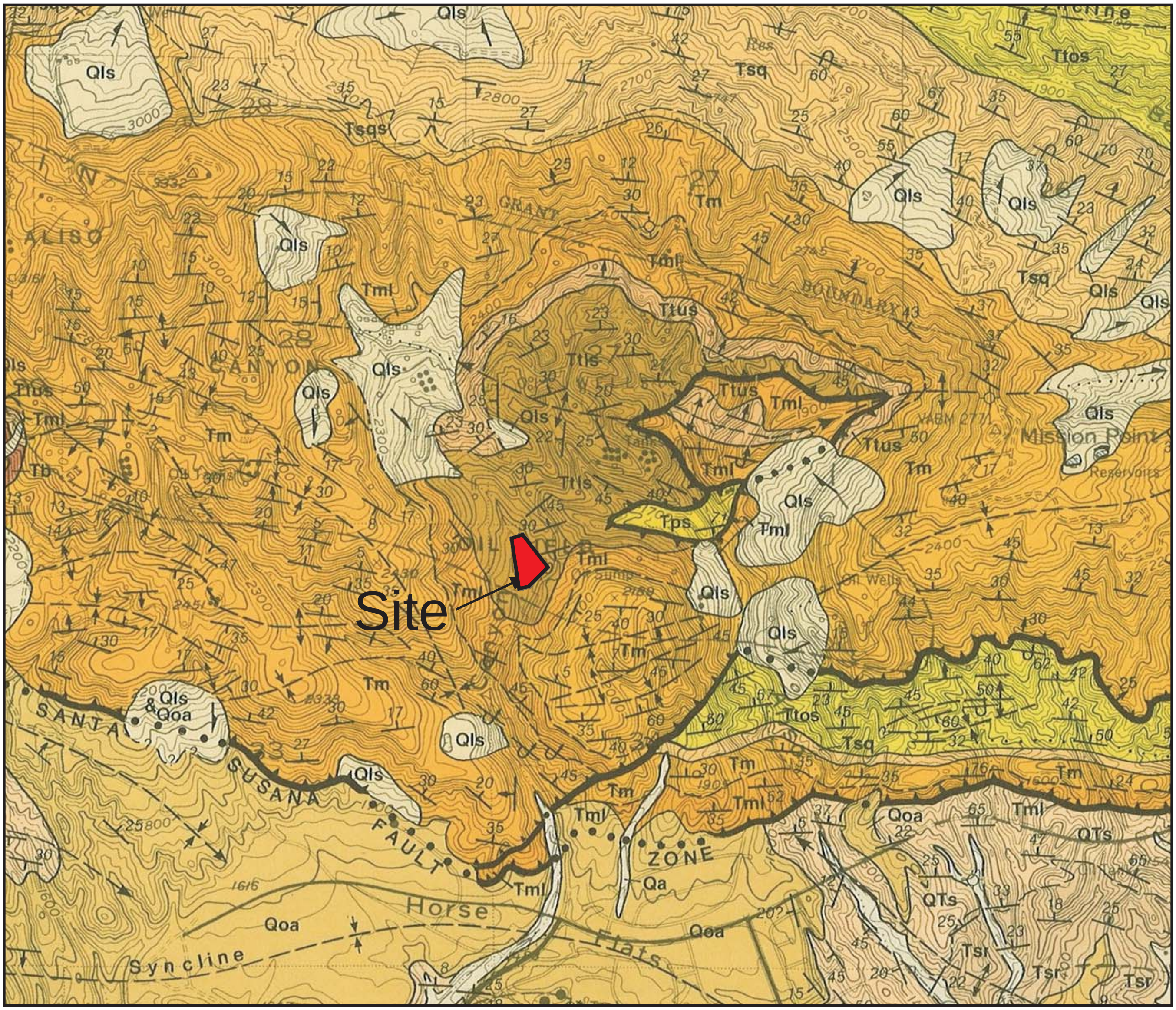
MACTEC
5628 E. SLAUSON AVENUE
LOS ANGELES, CALIFORNIA 90040
(323) 889-5300 FAX (323) 889-5398

FIGURE 2

EXPLORATION PLAN

PROPOSED GAS TURBINE REPLACEMENT PROJECT
ALISO CANYON GAS STORAGE FIELD
LOS ANGELES COUNTY, CALIFORNIA

PROJECT NO.	4953-10-1751	REVISION:	
DATE:	2/11/2011		
SCALE:	1" = 50'		
DWG BY:	NH	CHECKED BY:	JAG



Source: Geologic Map of the Oat Mountain and Canoga Park (North ½) Quadrangles, Los Angeles County, California, by Thomas W. Dibblee, JR., 1992, Dibblee Geological foundation Map # DF-36

COORDINATES

Latitude : 34.307270° Longitude : -118.552540°

0 2000 4000

Feet

N

EXPLANATION

Qls Landslide Debris (Holocene)

Qoa Older alluvium (Pleistocene)

QTs Saugus Formation (Pleistocene and Pliocene)
- light gray to brown prbble-cobble conglomerate, sandstone and siltstone/claystone

Tsr Saugus Formation (Pleistocene and Pliocene)
- terrestrial deposits similar to QTs

Tps Pico Formation (Pliocene)
- mostly light gray to nearly white, soft friable sandstone

Ttos Towsley Formation (Early Miocene and possibly latest Miocene)
- light gray to tan coherent to semi-friable sandstone

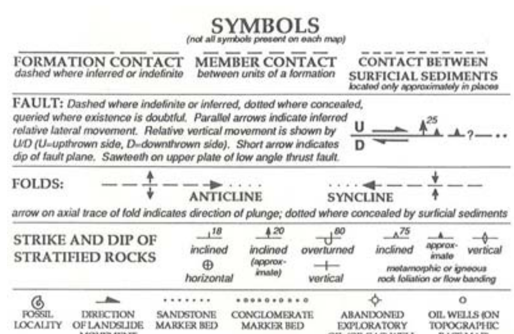
Tsq Sisquoc Shale, included in Modelo Formation (Miocene)
- dark gray to brownish gray clay shale

Tm Monterey Shale, Modelo Formation (Miocene)
- thin bedded siliceous shale

Tml Monterey Shale, Modelo Formation (Miocene)
- thin bedded semi-siliceous shale to soft shaly claystone

Ttus Topanga Formation (Middle Miocene)
- upper sandstone

Ttls Topanga Formation (Middle Miocene)
- lower sandstone



MACTEC
MACTEC ENGINEERING AND CONSULTING, INC.
5628 E. Slauson Ave., Los Angeles, California 90040
(323) 889-5300, fax (323) 889-5398

Figure 3. Local Geology Map

Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles, California

		REVISIONS:
JOB NO.:	4953-10-1751	
DATE:	01/24/11	
SCALE:	1:24,000	
DRAWN BY:	PWK	
CHECKED BY:	RM	

Description of Map Units

Qaf : Artificial fill (late Holocene)—Deposits of sand silt and gravel resulting from human construction, mining or quarrying activities

Ql : Lake deposits (late Holocene)—Unconsolidated clay, silt, fine-grained sand and plant matter accumulated on floors of ponds and reservoirs

Qf : Alluvial-fan deposits (Holocene)—Unconsolidated bouldery, cobbley, gravelly, sandy, or silty alluvial deposits

Qsw : Slope wash deposits (Holocene and late Pleistocene)—Unconsolidated silt, sand and gravel

Qu : Undifferentiated surficial deposits (Holocene and late Pleistocene?)—Unconsolidated and uncorrelated deposits of silt, sand, and gravel

Qls : Landslide deposits (Holocene and late Pleistocene?)—Rock detritus from bedrock and surficial materials

Qyf : Young alluvial-fan deposits, undivided (Holocene and late Pleistocene)—Unconsolidated gravel, sand and silt, bouldery near mountain fronts

Qoa : Old alluvium, undivided (late to middle Pleistocene)—Unconsolidated to moderately indurated gravel, sand and silt

Qof : Old alluvial-fan deposits, undivided (late to middle Pleistocene)—Slightly to moderately consolidated silt, sand and gravel deposits on alluvial fans

Qpa : Pacoima Formation (middle to early Pleistocene)—Indurated, yellow-brown, locally intensely folded and faulted fanglomerate

QTs : Saugus Formation, undivided (early Pleistocene to late Pliocene)—Slightly consolidated, poorly sorted, coarse-grained, cross-bedded sandstone and pebble conglomerate; includes QTsu and QTsm

Kc : Chatsworth Formation (late Cretaceous)—Dominantly turbidite sandstone, massive, thick-bedded, medium- to coarse-grained, well-cemented

Mzgd : Granodiorite (Mesozoic)—Average composition is quartz diorite using IUGA classification (Streckheisen, 1973)

Mzdg : Diorite gneiss (early to middle Mesozoic)—Dark gneiss including metadiorite, massive hornblende diorite, and amphibolite and biotite schist

MzPzsp : Serpentinite (Mesozoic or Paleozoic)—Light to dark green, foliated, sheared and slickensided serpentinite, altered peridotite (chiefly augite and olivine)

Pzp : Placerita Formation (Paleozoic)—Metamorphosed sedimentary rocks

Tsr : Saugus Formation, Sunshine Ranch Member, undivided (late Pliocene)—Interfingered marine, brackish water, and nonmarine cross-bedded and pebbly to cobbley sandstone

Tp : Pico Formation (Pliocene)—Marine clayey siltstone and sandy siltstone; includes Tps

Tw : Towsley Formation, undivided (early Pliocene and late Miocene)—Interbedded sandstone, conglomerate, and mudston; includes Tws and Twc

Tmc : Mint Canyon Formation, undivided (late and middle Miocene)—Includes a variety of semi-consolidated nonmarine sediments deposited in fluvial and lacustrine environments

Ttk : Tick Canyon Formation, undivided (middle to early Miocene)—Reddish, fluvial and lacustrine sandstone, siltstone and claystone, and gray, tan, and reddish, well-cemented and well-bedded conglomerates

Tm : Modelo Formation, undivided (late Miocene)—Predominantly gray to brown thin-bedded mudstone, diatomaceous clay shale, or siltstone; includes Tm_5, Tm_4, Tm_3, Tm_2 and Tm_1

Tmd : Modelo Formation (late Miocene), diatomaceous shale—Diatomaceous shale

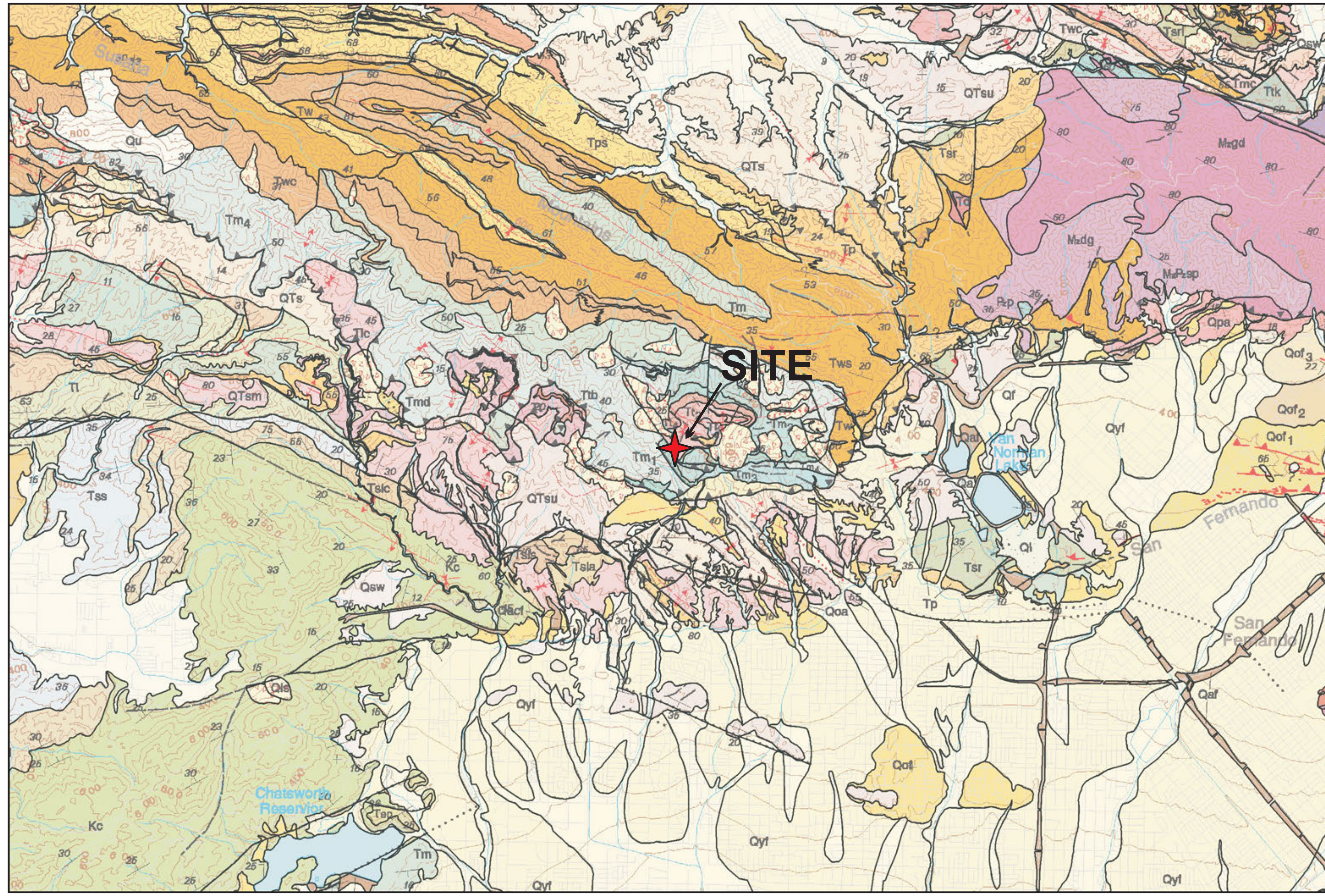
Tt : Topanga Group, undivided (middle Miocene)—Heterogeneous sequence of sedimentary and volcanic rocks; includes Tt_5, Tt_4, Tt_3, Tt_2, Tt_1 and Tt_b

Td : Domengine Formation (middle Eocene)—Marine, gray to greenish, hard calcareous sandstone

Tss : Santa Susana Formation (early Eocene to late Paleocene)—Clay shale and fractured mudrock

Tsi : Simi Conglomerate, undivided (Paleocene)—Thin, nonmarine cobble-boulder conglomerate; includes Tsic, Ysis and Tsia

Tl : Llajas Formation (middle to early Eocene)—Marine sandstone, very fine- to fine-grained, siltstone, pebble conglomerate and interbedded platy to shaly siltstone and mudstone



Base: USGS 7.5 minute topographic quadrangles (NRCS stiched spatial version)
Preliminary Geologic Map of the Los Angeles 30' x 60' Quadrangle, Southern California, Open File report 2005-1019
USGS OF2005-1019, Version 1.0 2005

EXPLANATION

Contact - Accuracy of location ranges from well-located to approximately located

Fault - Solid where accurately located; dashed where approximately located or inferred; dotted where concealed; queried where location or existence uncertain. Includes strike-slip, normal and reverse dip-slip, oblique-slip, and thrust faults. Arrow and number indicate measured dip of fault plane

Anticline - Solid where accurately located; dotted where concealed. Arrowhead on axis shows direction of plunge

Syncline - Solid where accurately located; dotted where concealed. Arrowhead on axis shows direction of plunge

Strike and dip of beds

Inclined
Overturned
Vertical
Horizontal

N

SCALE 1:100,000

1 .5 0 1 2 MILES

1 .5 0 1 2 KILOMETERS

CONTOUR INTERVAL 50 METERS

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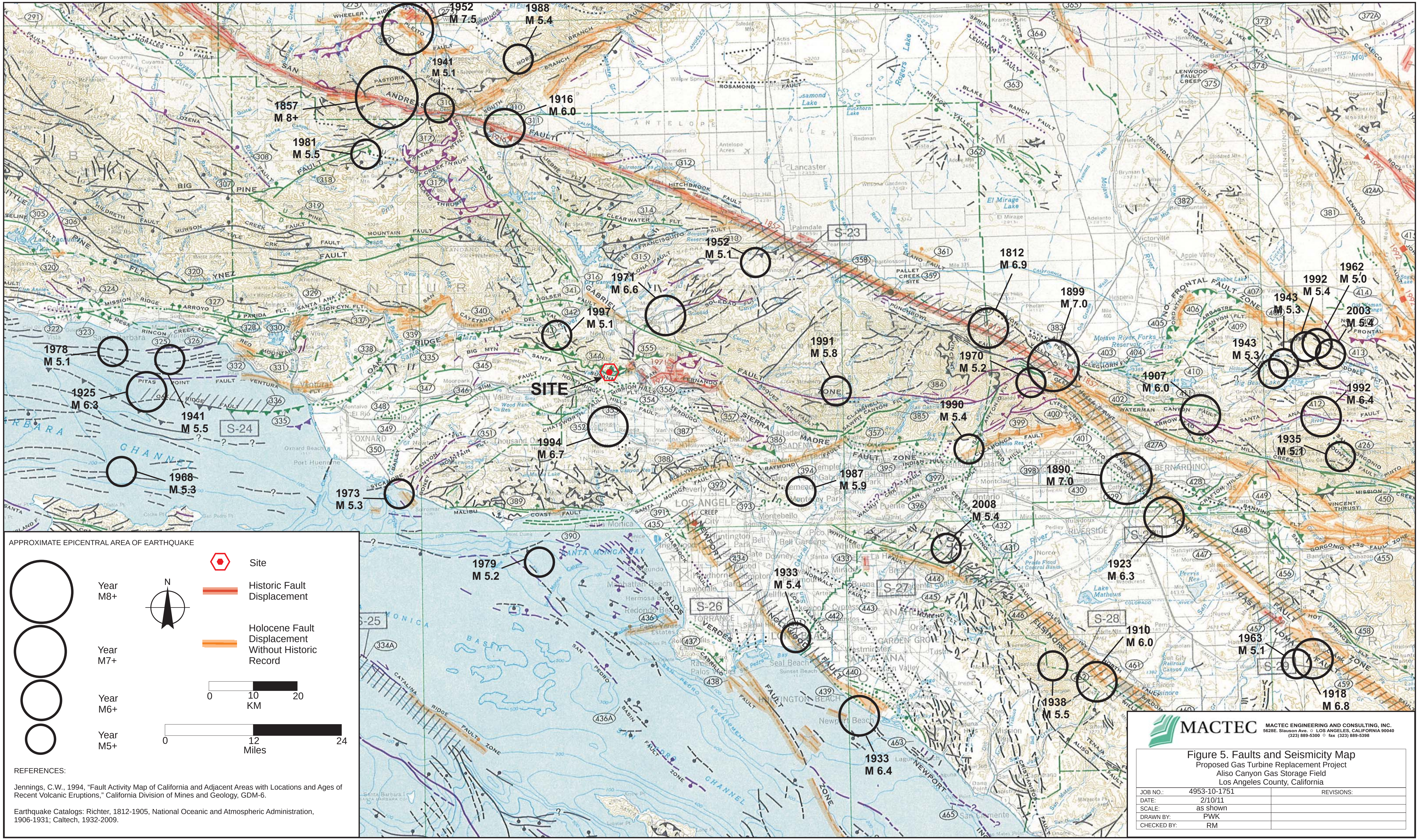
Figure 4. Regional Geology Map
Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

JOB NO.:	4953-10-1751	REVISIONS:
DATE:	1/24/11	
SCALE:	1:100,000	
DRAWN BY:	PWK	
CHECKED BY:	RM	



REFERENCES:

Jennings, C.W., 1994, "Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions," California Division of Mines and Geology, GDM-6.

Earthquake Catalogs: Richter, 1812-1905, National Oceanic and Atmospheric Administration, 1906-1931; Caltech, 1932-2009.

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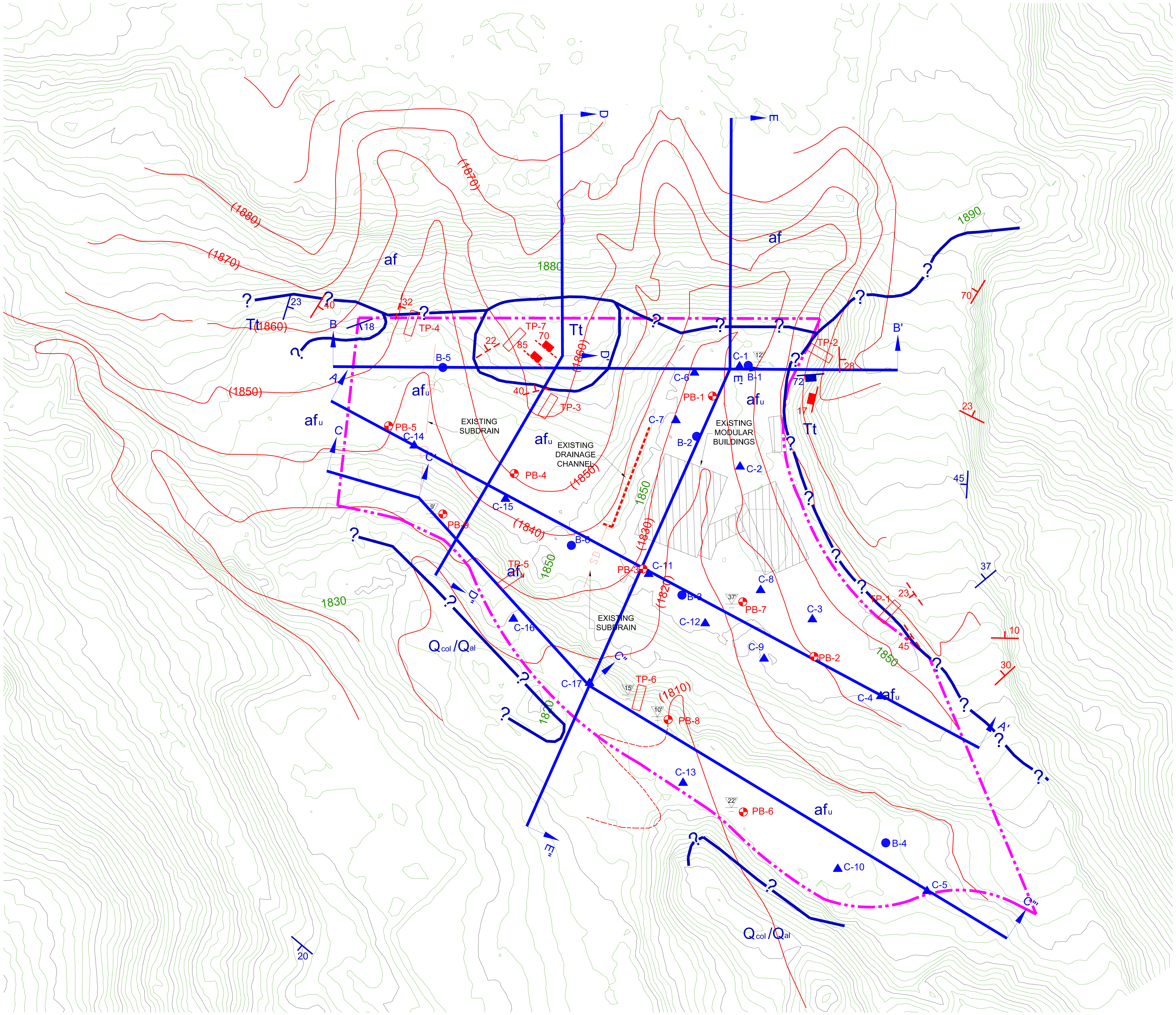
Figure 5. Faults and Seismicity Map
Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

JOB NO.:	4953-10-1751	REVISIONS:
DATE:	2/10/11	
SCALE:	as shown	
DRAWN BY:	PWK	
CHECKED BY:	RM	



KEY:

B-6 CURRENT MACTEC BORING

C-17 CURRENT MACTEC CPT

PB-9 PRIOR BORING BY GLOBUS IN 2006

TP-7 PRIOR TEST PIT BY GLOBUS IN 2006

EXPLORATION LOCATION AND NUMBER

45 STRIKE AND DIP OF BEDDING (MAPPED BY MACTEC)

72 STRIKE AND DIP OF JOINTING (MAPPED BY MACTEC)

28 STRIKE AND DIP OF BEDDING, DASHED WHERE BURIED (PREVIOUSLY MAPPED BY GLOBUS)

17 STRIKE AND DIP OF JOINTING, DASHED WHERE BURIED (PREVIOUSLY MAPPED BY GLOBUS)

af CERTIFIED ARTIFICIAL FILL

af_u UNCERTIFIED ARTIFICIAL FILL

Q_{col} COLLUVIUM

Q_{al} ALLUVIUM

Tt SANDSTONE (INTERBEDDED WITH SOME SILTSTONE), TOPANGA FORMATION

? GEOLOGIC CONTACT WHERE UNCERTAIN

10' DEPTH OF GROUNDWATER ENCOUNTERED AT TIME OF DRILLING

12' DEPTH OF GROUNDWATER MEASURED AFTER DRILLING

2002 TOPOGRAPHIC CONTOURS, 2-FOOT CONTOUR INTERVAL

PRE-1971 TOPOGRAPHIC CONTOURS, 10-FOOT CONTOUR INTERVAL

PROJECT BOUNDARY

E E' CROSS-SECTION (SEE FIGURES 7.1 THROUGH 7.5)

REFERENCE: 2002 TOPOGRAPHICAL CONTOURS PROVIDED BY SOUTHERN CALIFORNIA GAS COMPANY. PRE-1971 TOPOGRAPHICAL CONTOURS EXTRACTED FROM 1971 GRADING PLAN BY SOUTHERN CALIFORNIA GAS COMPANY. 2008 AERIAL IMAGE PUBLISHED BY COUNTY OF LOS ANGELES.

0 25 50 100

Scale in Feet

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FIGURE 6

GEOLOGY MAP

PROPOSED GAS TURBINE REPLACEMENT PROJECT
ALISO CANYON GAS STORAGE FIELD
LOS ANGELES COUNTY, CALIFORNIA

PROJECT NO.	4953-10-1751	REVISION:
DATE:	2/11/2011	
SCALE:	1" = 50'	
DWG BY:	NH	CHECKED BY: RM

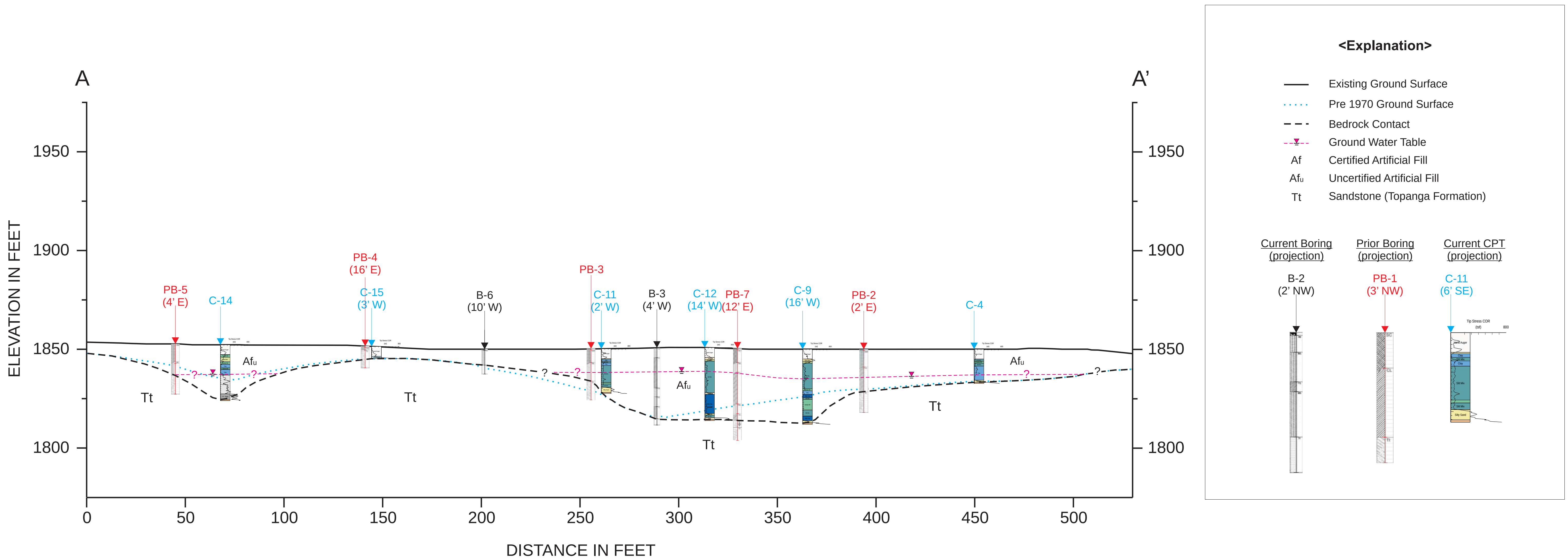

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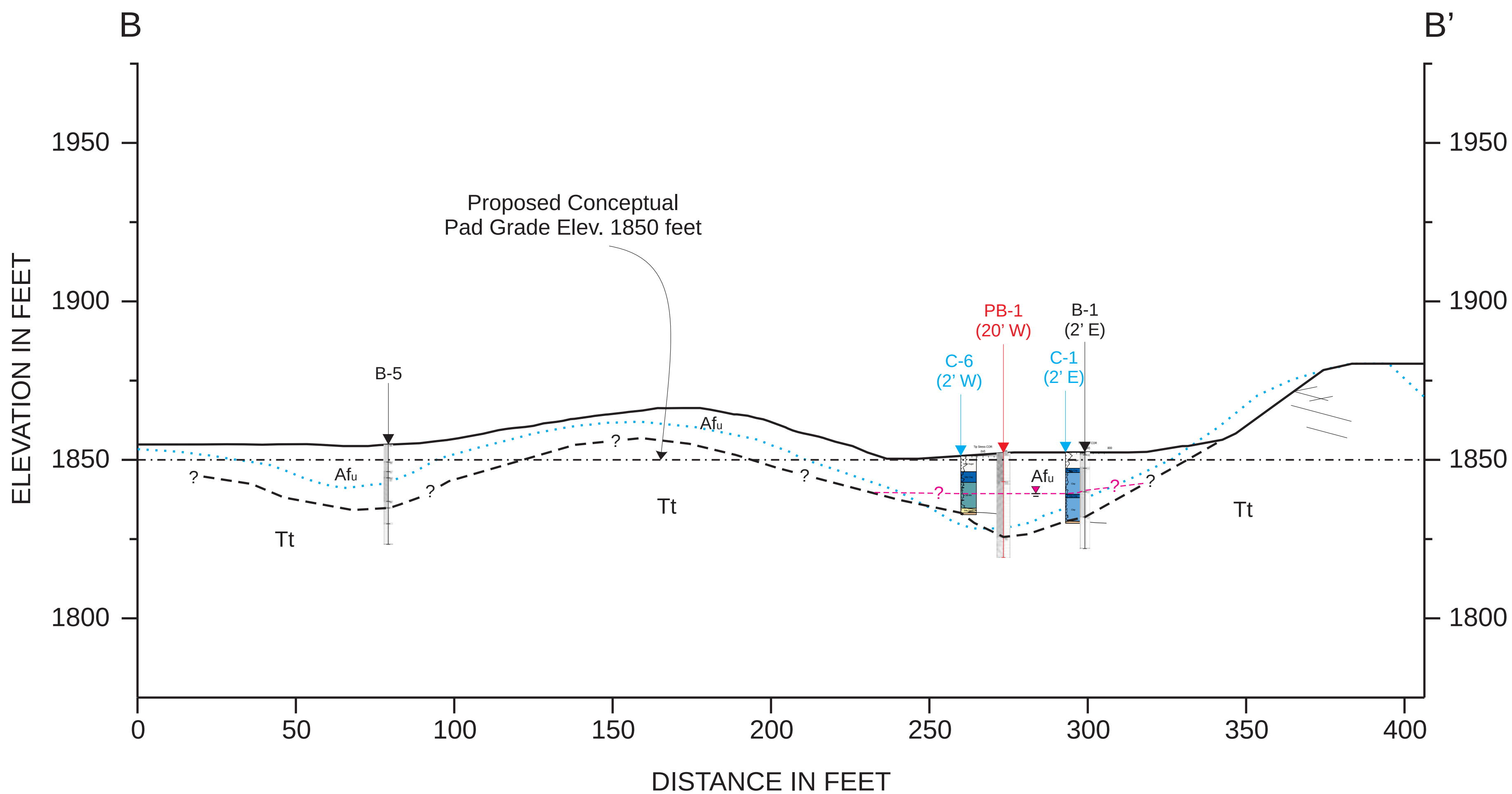
Figure 7.1. Cross Section A-A'
Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

JOB NO.:	4953-10-1751	REVISIONS:
DATE:	2/10/11	
SCALE:	1" = 50 feet	
DRAWN BY:	PWK	
CHECKED BY:	RM	



<Explanation>

Existing Ground Surface

Pre 1970 Ground Surface

Bedrock Contact

Ground Water Table

Af Certified Artificial Fill

Afu Uncertified Artificial Fill

Tt Sandstone (Topanga Formation)

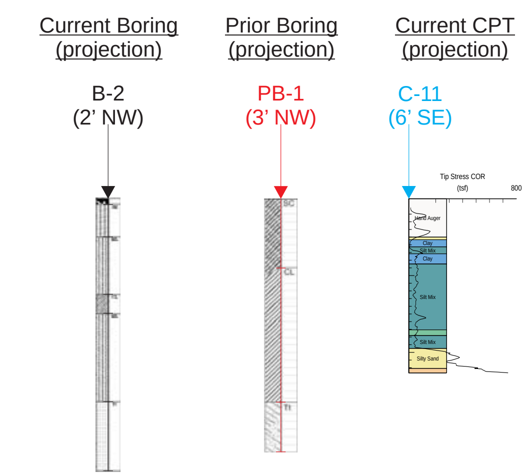


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Figure 7.2. Cross Section B-B'

Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

JOB NO.:	4953-10-1751	REVISIONS:
DATE:	2/10/11	
SCALE:	1" = 50 feet	
DRAWN BY:	PWK	
CHECKED BY:	RM	

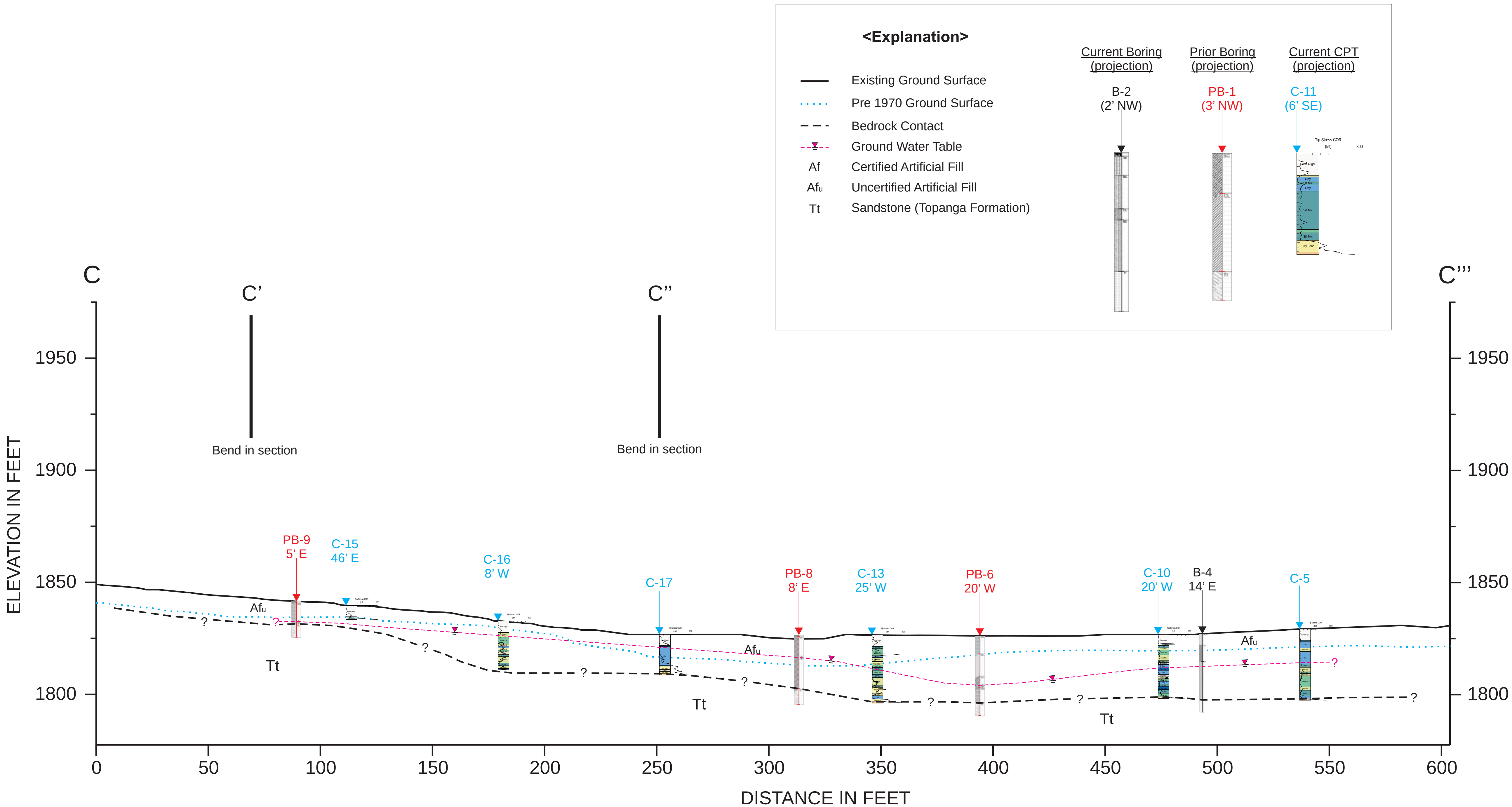

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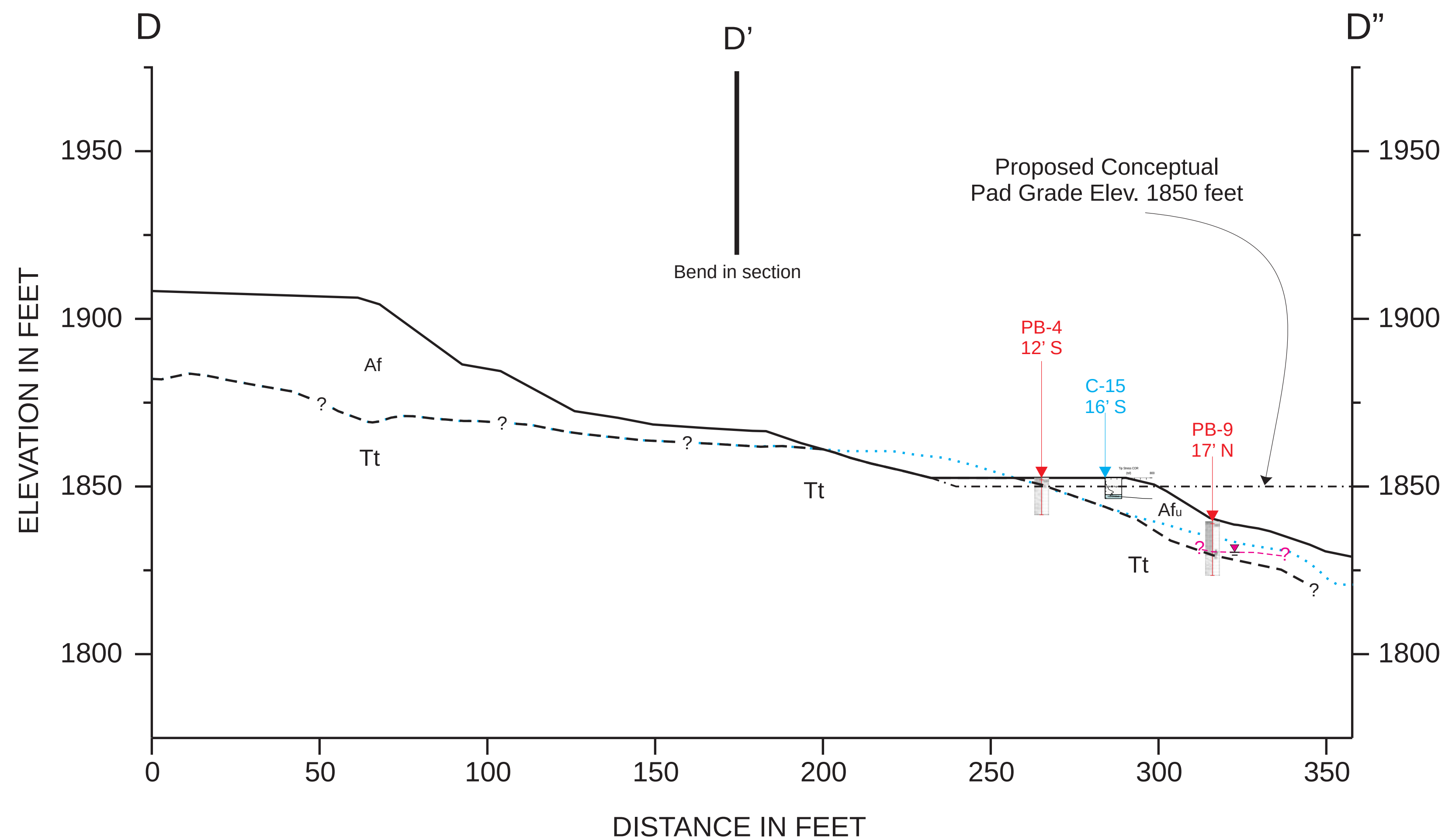
Figure 7.3. Cross Section C-C'''
Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

JOB NO.:	4953-10-1751	REVISIONS:
DATE:	2/10/11	
SCALE:	1" = 50 feet	
DRAWN BY:	PWK	
CHECKED BY:	RM	



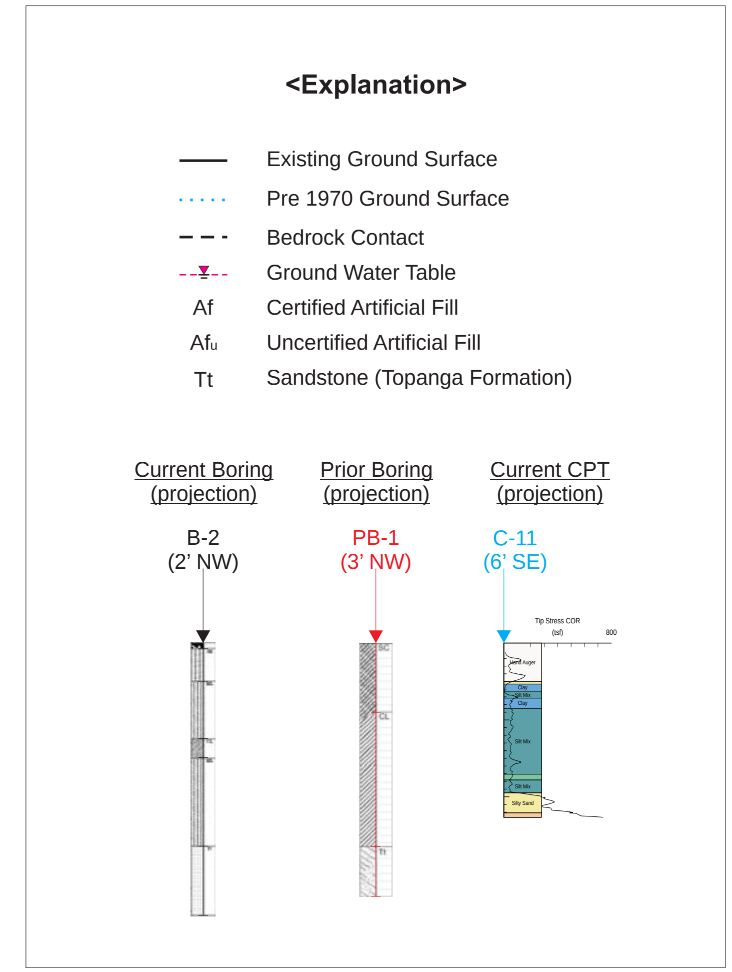


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Figure 7.4. Cross Section D-D"

Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

JOB NO.:	4953-10-1751	REVISIONS:
DATE:	2/10/11	
SCALE:	1" = 50 feet	
DRAWN BY:	PWK	
CHECKED BY:	RM	

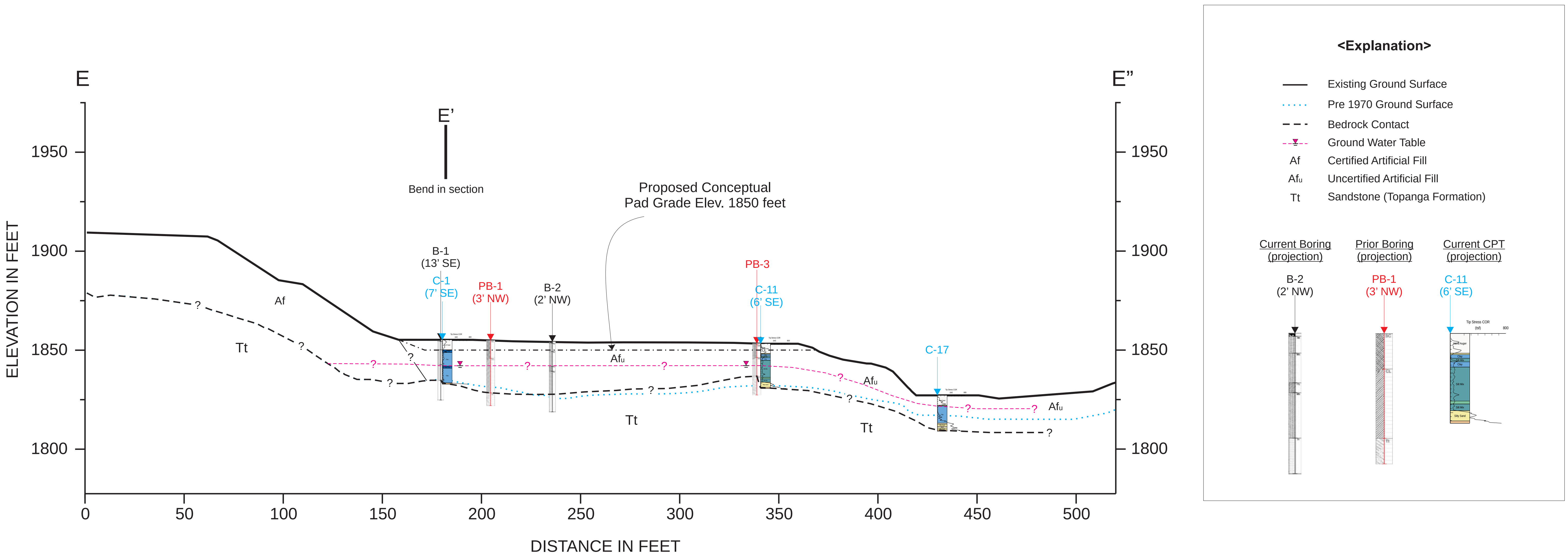

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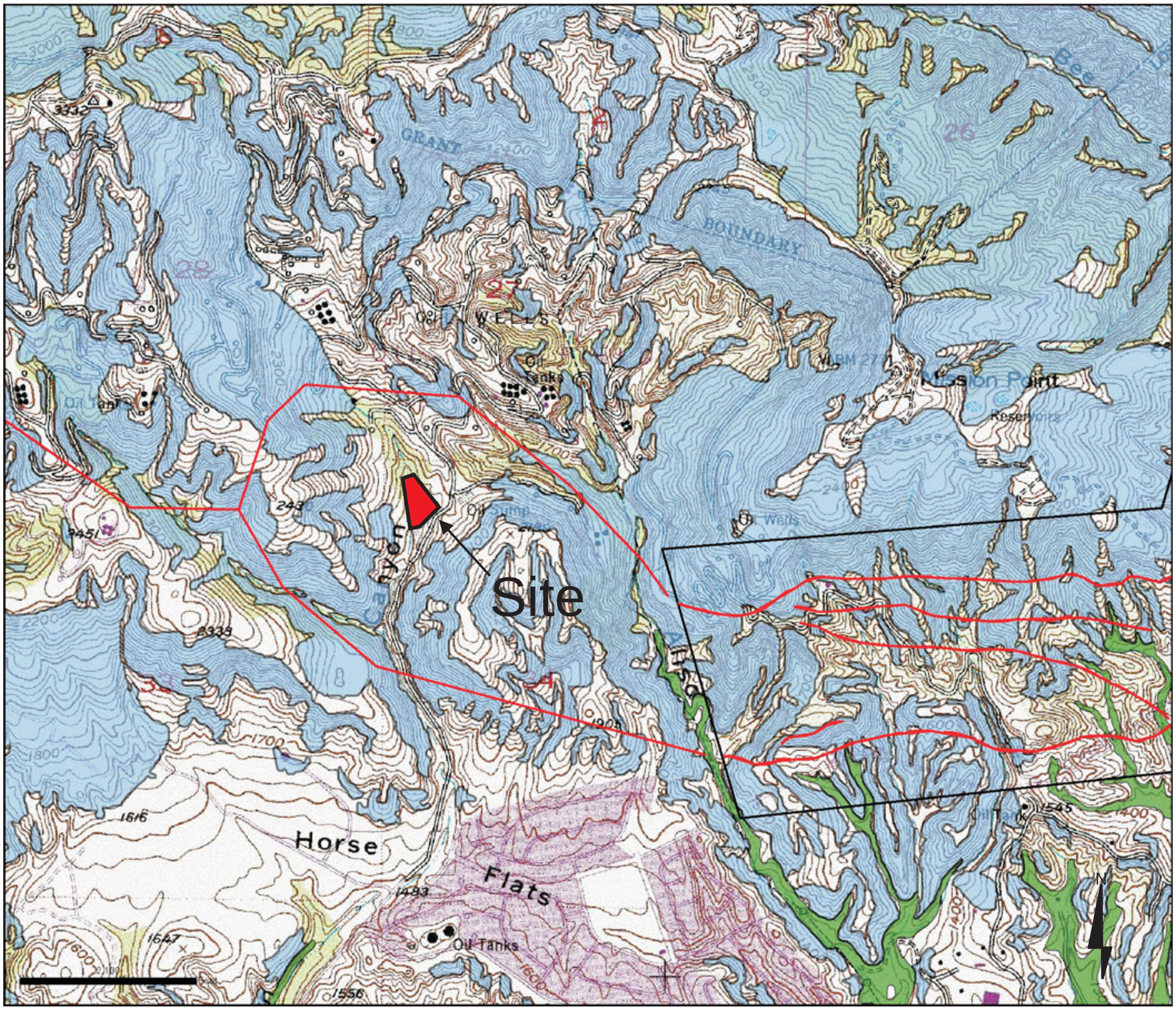
Figure 7.5. Cross Section E-E"
Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

JOB NO.:	4953-10-1751	REVISIONS:
DATE:	2/10/11	
SCALE:	1" = 50 feet	
DRAWN BY:	PWK	
CHECKED BY:	RM	



Base Map: CGS Official Map of Oat Mountain, Seismic Hazard Zone Map, 1998

MAP EXPLANATION
Zones of required Investigation:

Liquefaction
Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693 (c) would be required.

Earthquake-Induced Landslides
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693 (c) would be required.

Santa Susanna Fault and AP zone

REFERENCES:

Seismic Hazard Evaluation of the Oat Mountain 7.5 minute quadrangle, Los Angeles County, California: California Division of Mines and Geology, Open-File report 98-05.

State of California Special Studies Zones, Oat Mountain Quadrangle, January 1, 1976, California Division of Mines and Geology.

COORDINATES

Latitude : 34.307270°
Longitude : -118.552540°

0 500 1000
Meter

0 2000 4000
Feet

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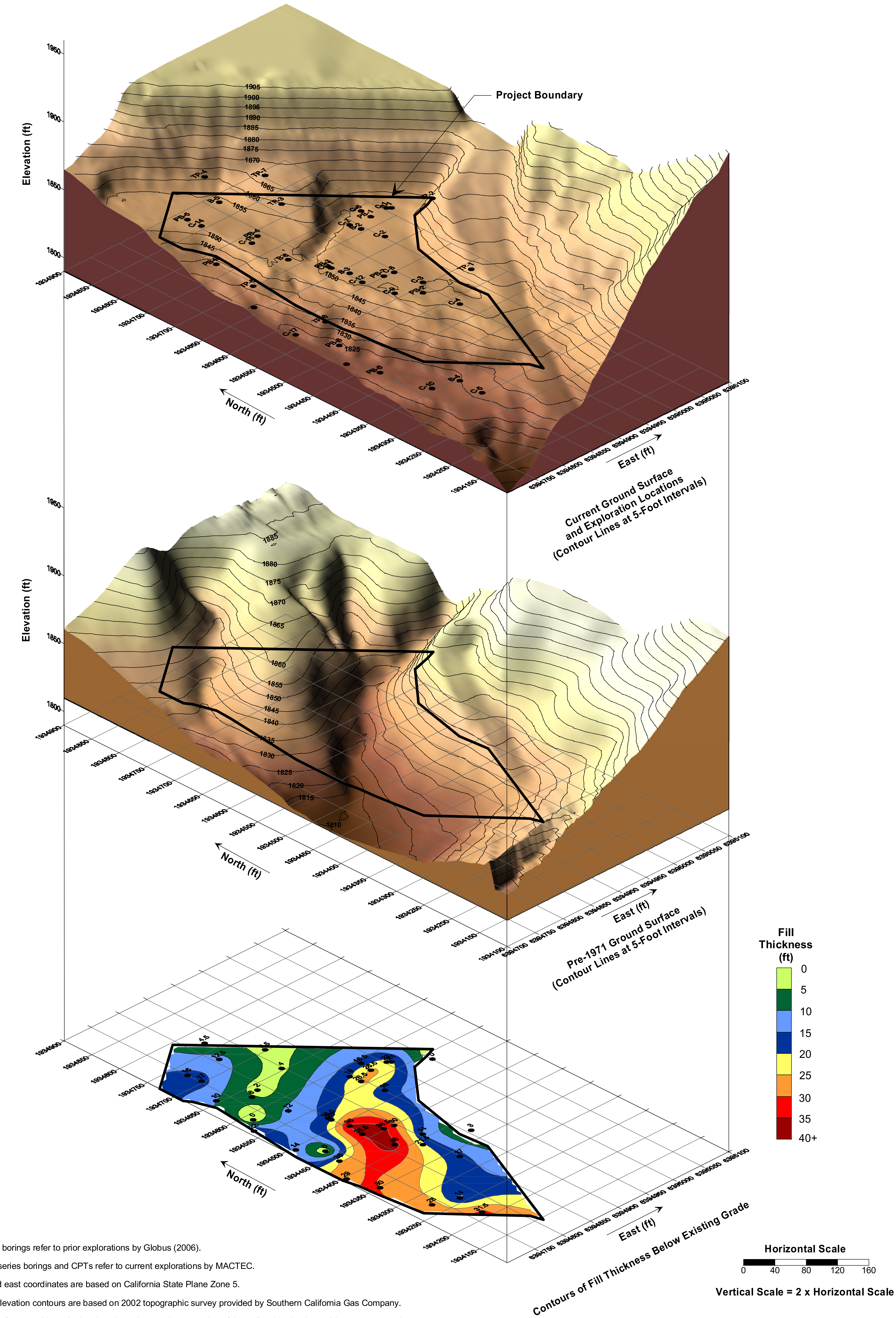
Figure 8. Seismic Hazard Zone Map
Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

JOB NO.:	4953-10-1751	REVISIONS:
DATE:	2/14/11	
SCALE:	1: 24,000	
DRAWN BY:	PWK	
CHECKED BY:	RM	



Notes: 1) PB series borings refer to prior explorations by Globus (2006).

2) B and C series borings and CPTs refer to current explorations by MACTEC.

3) North and east coordinates are based on California State Plane Zone 5.

4) Ground elevation contours are based on 2002 topographic survey provided by Southern California Gas Company.

5) The subsurface conditions depicted are based on our interpretation of the soil and bedrock conditions encountered at the exploration locations shown, and are intended for illustrative purposes only. Conditions between borings have been interpolated and are not necessarily accurate, and therefore should be field verified during grading.

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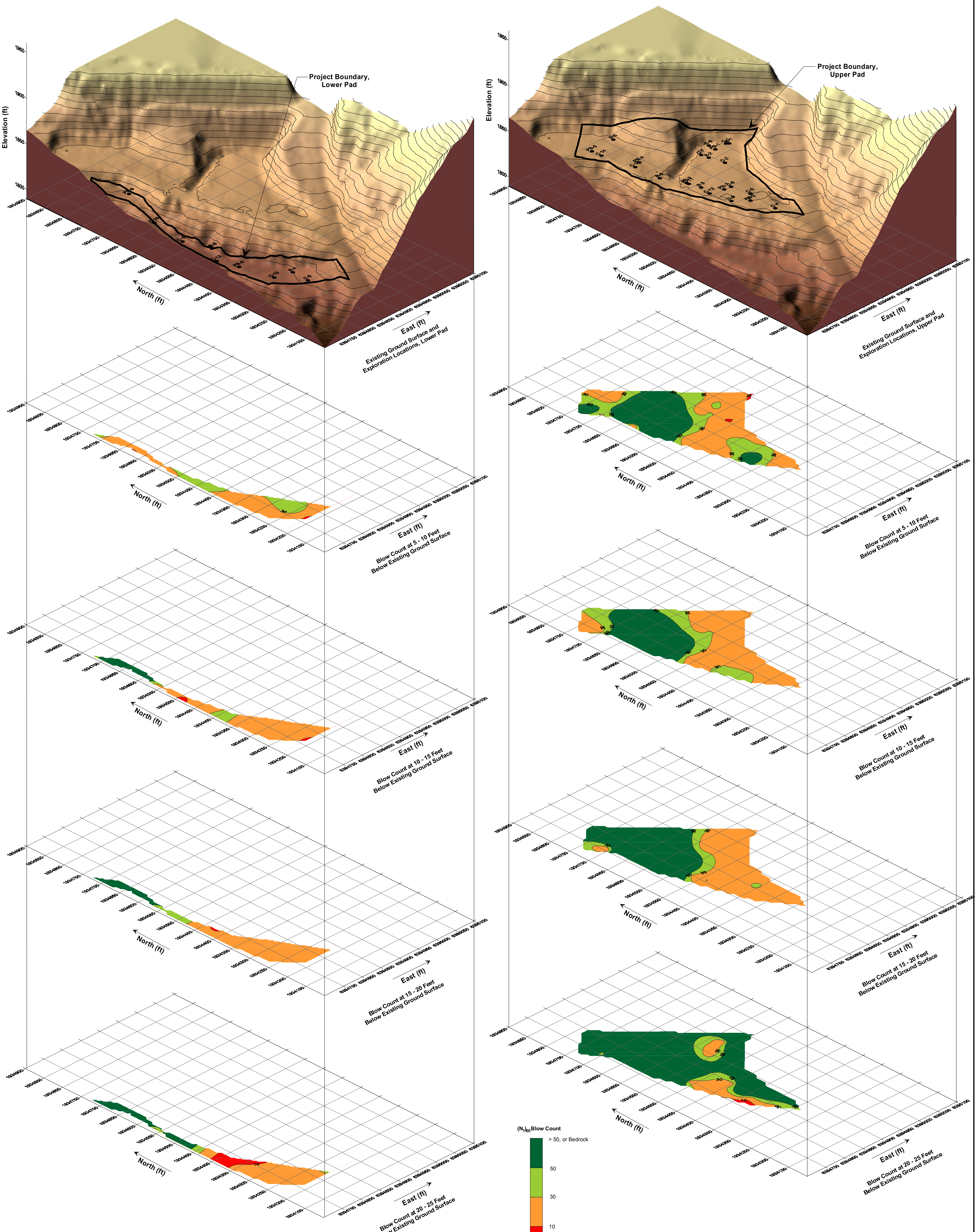
Figure 9.1. Topography and Fill Depth Contours
Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California
Project No. 4953-10-1751



Notes: 1) PB series borings refer to prior explorations by Globus (2006).

2) B and C series borings and CPTs refer to current explorations by MACTEC.

3) North and east coordinates are based on California State Plane Zone 5.

4) Ground elevation contours are based on 2002 topographic survey provided by Southern California Gas Company.

5) The subsurface conditions depicted are based on our interpretation of the soil and bedrock conditions encountered at the exploration locations shown, and are intended for illustrative purposes only. Conditions between borings have been interpolated and are not necessarily accurate, and therefore should be field verified during grading.

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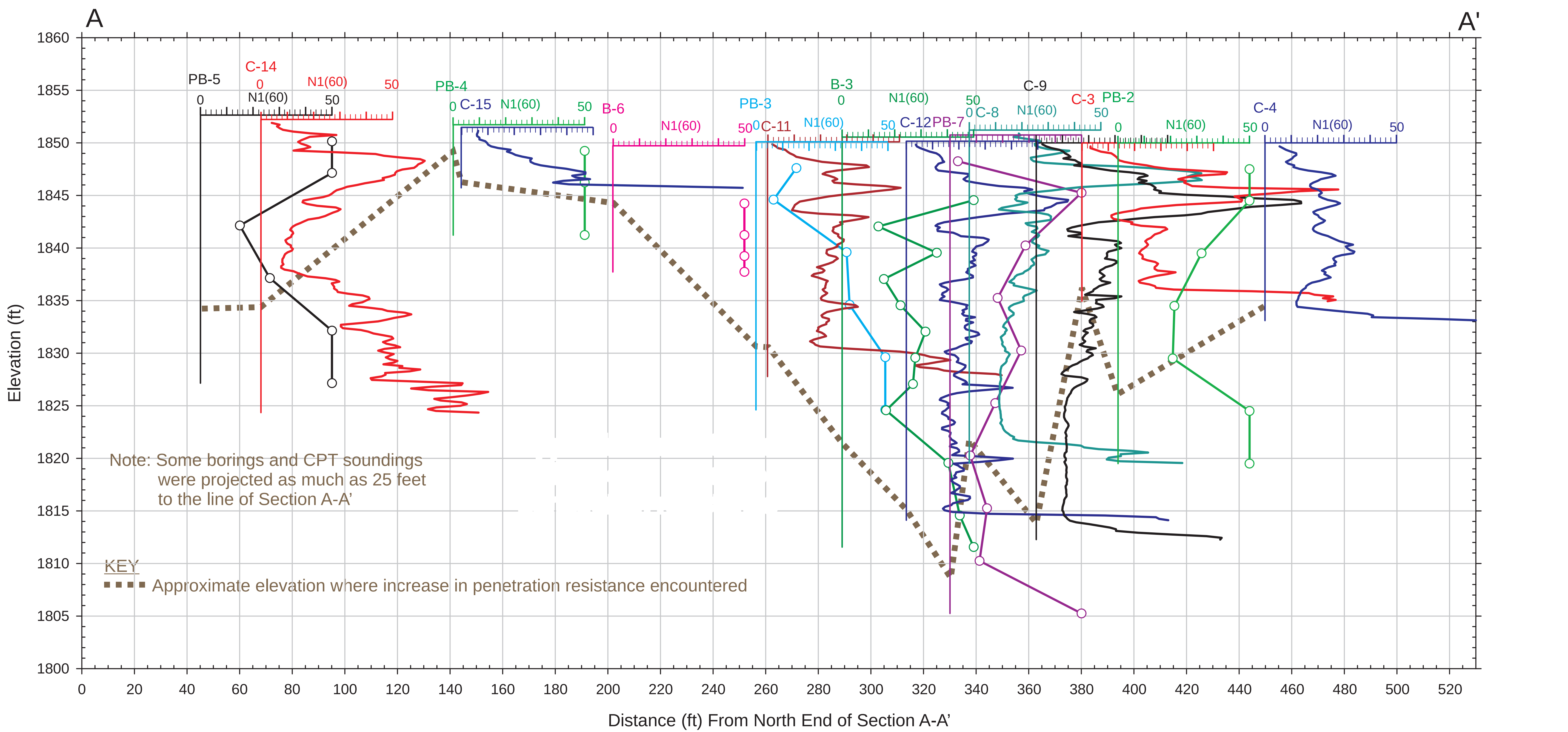
Figure 9.2. Variation of Fill Competency In Terms of Corrected SPT Blow Counts
Proposed Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California
Project No. 4953-10-1751



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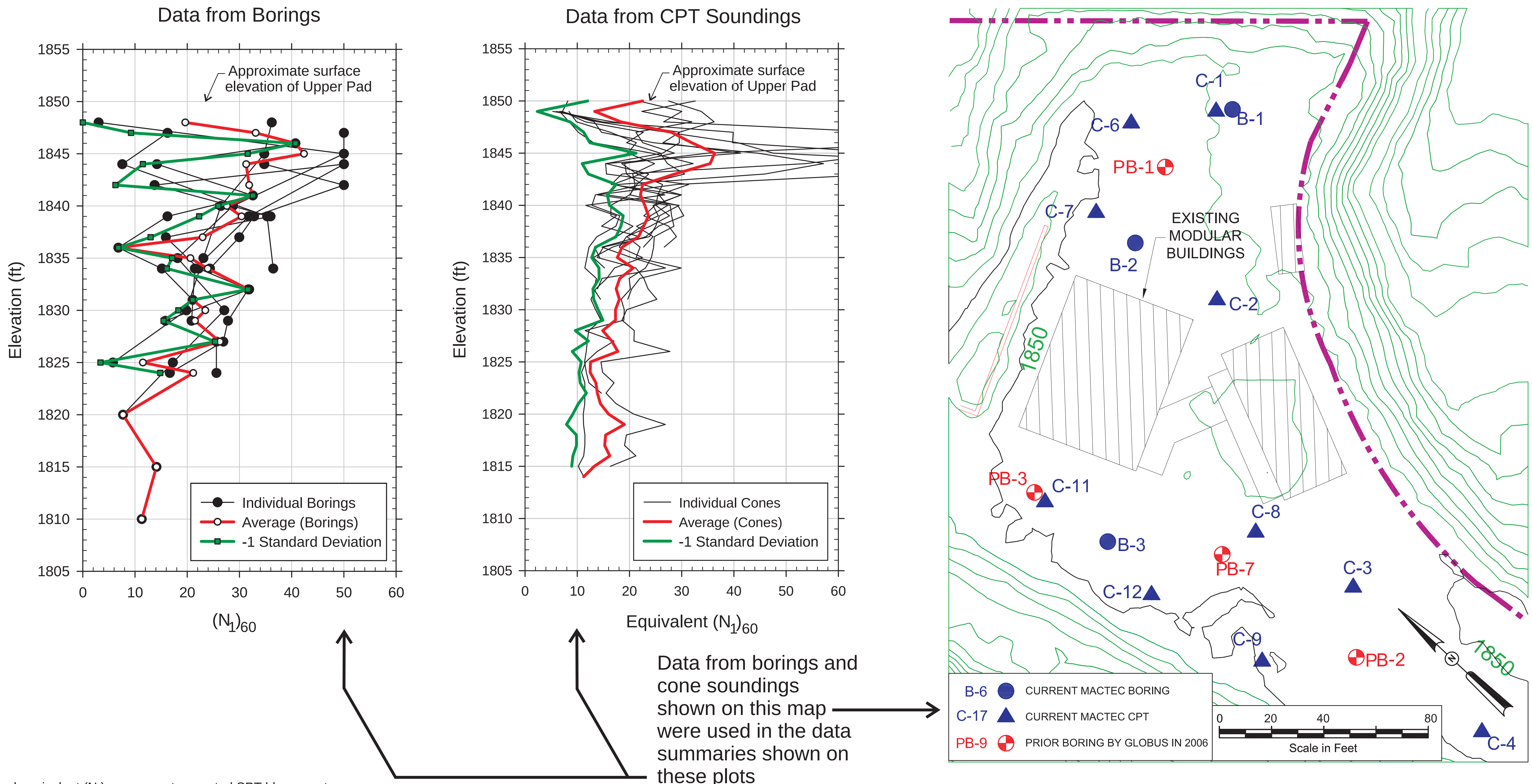
Project No. 4953-10-1751
By: JRK, 2-7-11; checked by: JAG 2-10-11

Figure 10.1
Summary of $(N_1)_{60}$ and Equivalent $(N_1)_{60}$
Along Section A-A'



Note: $(N_1)_{60}$ and equivalent $(N_1)_{60}$ represent corrected SPT blow count.

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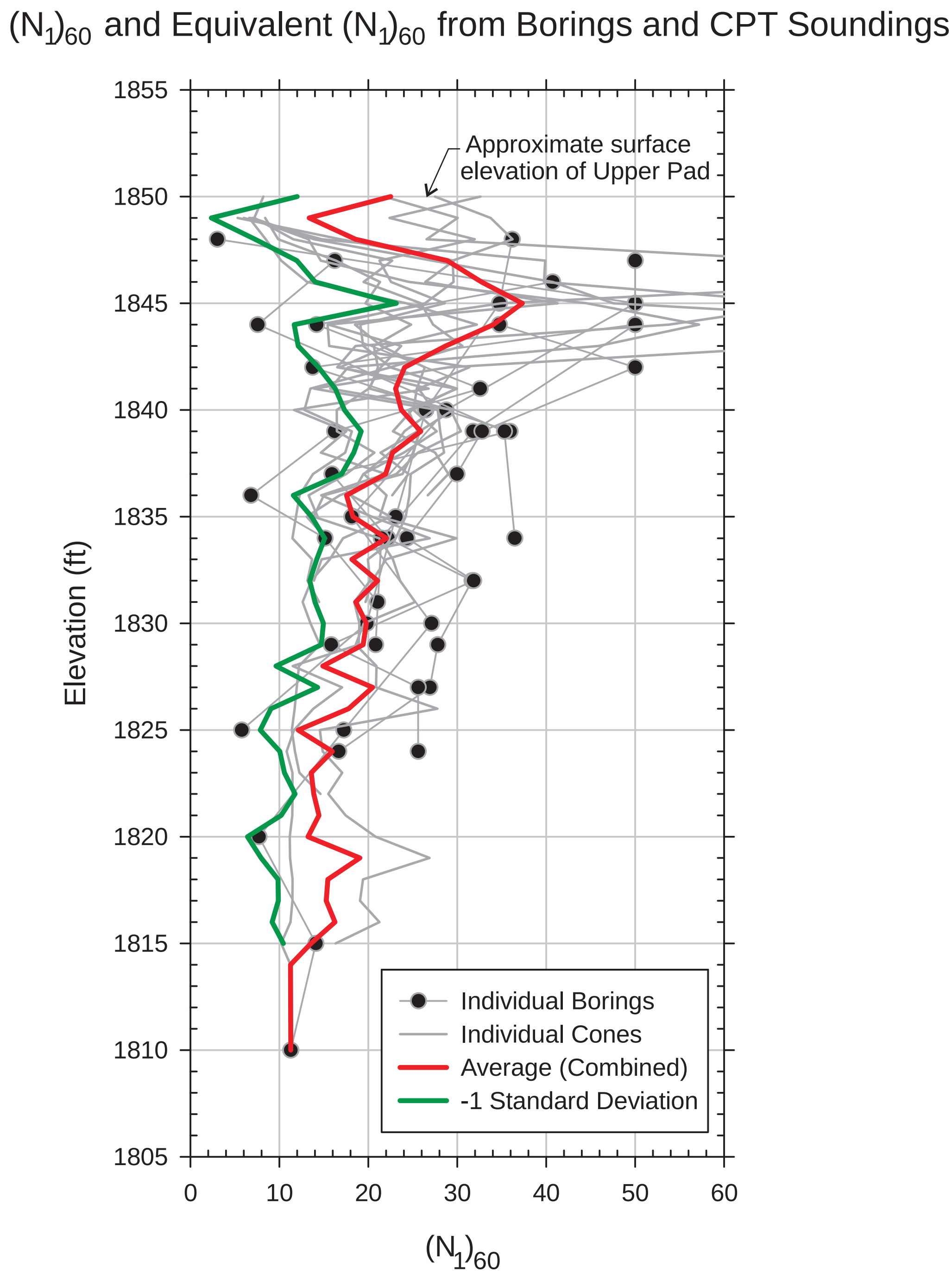
Project No. 4953-10-1751
By: JRK, 2-7-11; checked by: JAG 2-10-11

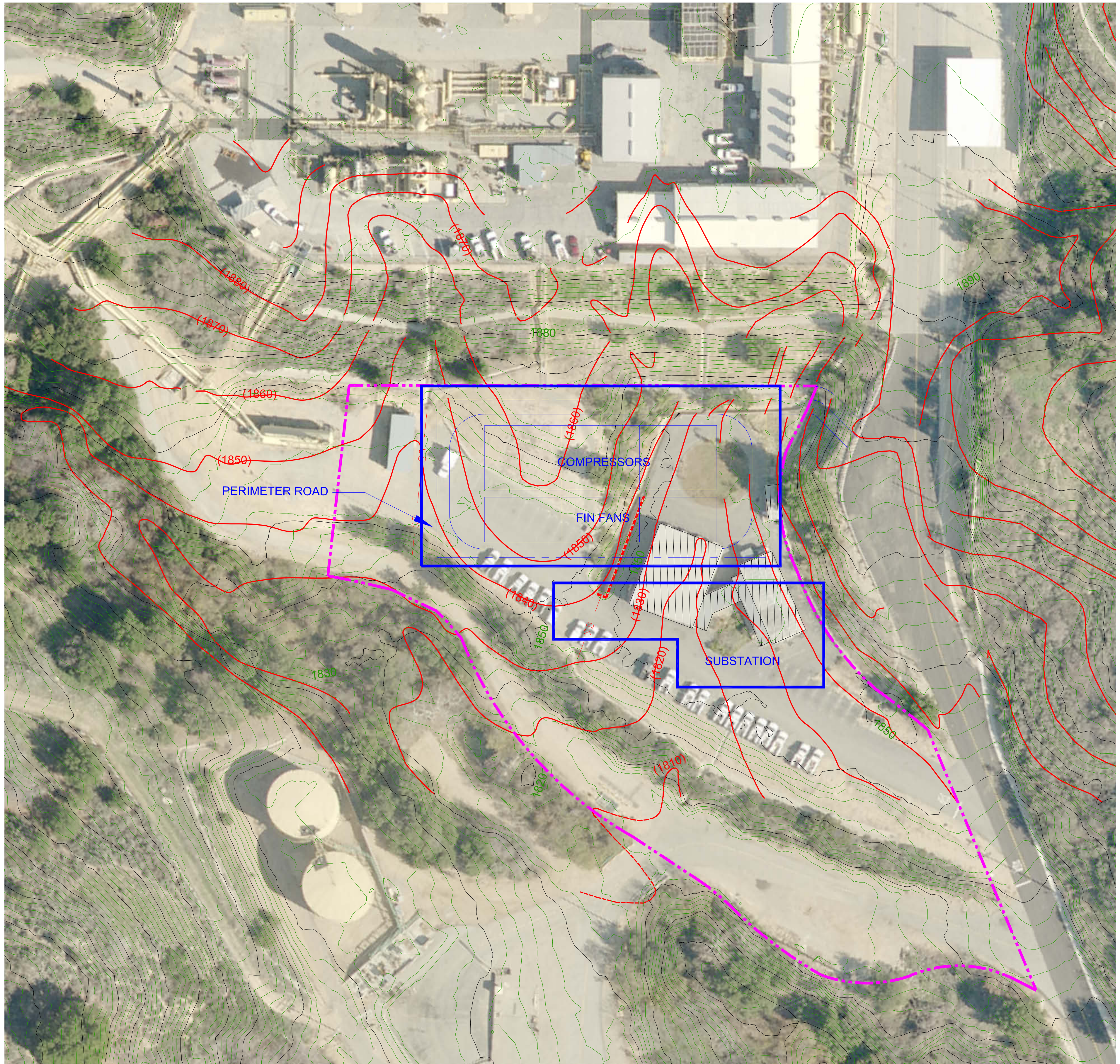
Figure 10.2
Average and 16th Percentile
$(N_1)_{60}$ Values in Main Canyon Fill Deposit
From Boring and CPT Data Separately



MACTEC

Project No. 4953-10-1751
By: JRK, 2-7-11; checked by: JAG 2-10-11

Figure 10.3
Average and 16th Percentile
$(N_1)_{60}$ Values in Main Canyon Fill Deposit
From Boring and CPT Data Combined



KEY:

- LIMITS OF PLANT LAYOUT
- 2002 TOPOGRAPHIC CONTOURS, 2-FOOT CONTOUR INTERVAL
- PRE-1971 TOPOGRAPHIC CONTOURS, 10-FOOT CONTOUR INTERVAL
- PROJECT BOUNDARY

REFERENCE: 2002 TOPOGRAPHICAL CONTOURS PROVIDED BY SOUTHERN CALIFORNIA GAS COMPANY. PRE-1971 TOPOGRAPHICAL CONTOURS EXTRACTED FROM 1971 GRADING PLAN BY SOUTHERN CALIFORNIA GAS COMPANY. 2008 AERIAL IMAGE PUBLISHED BY COUNTY OF LOS ANGELES.

0 40 80 160

Scale in Feet

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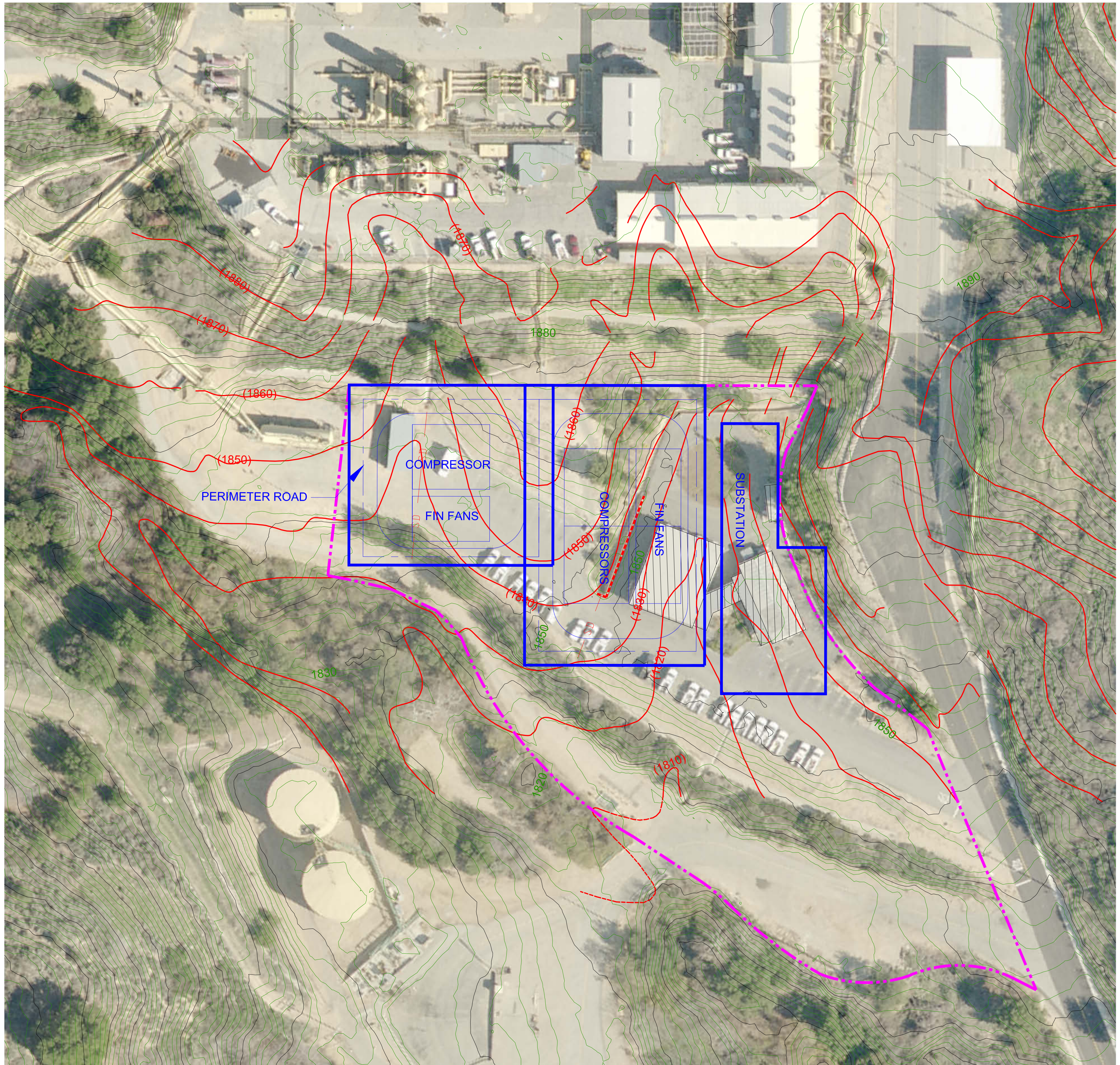
FIGURE 11.1

PLANT LAYOUT OPTION 1 (MODIFIED FROM RFP)

PROPOSED GAS TURBINE REPLACEMENT PROJECT
ALISO CANYON GAS STORAGE FIELD
LOS ANGELES COUNTY, CALIFORNIA

PROJECT NO.	4953-10-1751	REVISION:	
DATE:	2/11/2011		
SCALE:	1" = 80'		
DWG BY:	NH	CHECKED BY:	JAG



KEY:

LIMITS OF PLANT LAYOUT

2002 TOPOGRAPHIC CONTOURS, 2-FOOT CONTOUR INTERVAL

PRE-1971 TOPOGRAPHIC CONTOURS, 10-FOOT CONTOUR INTERVAL

PROJECT BOUNDARY

REFERENCE: 2002 TOPOGRAPHICAL CONTOURS PROVIDED BY SOUTHERN CALIFORNIA GAS COMPANY. PRE-1971 TOPOGRAPHICAL CONTOURS EXTRACTED FROM 1971 GRADING PLAN BY SOUTHERN CALIFORNIA GAS COMPANY. 2008 AERIAL IMAGE PUBLISHED BY COUNTY OF LOS ANGELES.

0 40 80 160

Scale in Feet

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FIGURE 11.2

ALTERNATIVE PLANT LAYOUT OPTION 2

GAS TURBINE REPLACEMENT PROJECT
ALISO CANYON GAS STORAGE FIELD
LOS ANGELES COUNTY, CALIFORNIA

PROJECT NO.	4953-10-1751	REVISION:	
DATE:	2/11/2011		
SCALE:	1" = 80'		
DWG BY:	NH	CHECKED BY:	JAG

APPENDIX A

EXPLORATIONS AND LABORATORY TESTS

APPENDIX A

CURRENT EXPLORATIONS AND LABORATORY TESTS

EXPLORATIONS

For the current investigation, site conditions were explored using a combination of borings and cone penetration tests (CPT). Prior to drilling, a geophysical survey of the proposed exploration locations was performed by GeoVision to identify possible buried utilities in the vicinity. As an added precaution, the top five feet of the exploration locations was hand-augured. The procedures used to perform the borings and CPTs are described in the following sections.

Exploratory Borings

The soil conditions beneath the site were explored by drilling six borings at the locations shown on Figure 2. The borings were drilled to depths of 12½ to 39 feet below the existing grade using truck-mounted hollow-stem auger drilling equipment. The average diameter of the drill holes was about 8 inches. Ground water was measured in one of the borings (Boring 1) at a depth of 12 feet below ground surface.

The soils encountered were logged by our geologist and undisturbed and bulk samples were obtained for laboratory inspection and testing. The logs of the borings are presented on Figures A-1.1 through A-1.6; the depths at which samples were obtained are indicated to the left of the boring logs. Relatively undisturbed samples were obtained using Modified California samplers. In addition to obtaining undisturbed samples; standard penetration tests (SPT) were also performed. The number of blows required to drive the samplers 12 inches using a 140-pound hammer falling 30 inches is indicated on the logs. The soils are classified in the accordance with the Unified Soil Classification System described on Figure A-2.

Cone Penetration Tests

In addition to the soil borings, seventeen Cone Penetration Tests (CPTs) were performed at the site by Kehoe Testing and Engineering under a subcontract with MACTEC. The CPT involves pushing a cone with a projected area of 15 square centimeters into the ground using a 30-ton CPT rig. The resistance to push the cone and sleeve were recorded electronically and the data was used to determine the Soil Behavior Type (SBT) of the subsurface materials. At locations CPT-1 and CPT-6, the shear wave velocity of the subsurface material was measured at 5-foot intervals. At the conclusion of each sounding, a probe was inserted into the hole to measure the depth to ground water. Where measured, the depth to ground water ranged from about 12 to 17 feet below ground surface. The results of the CPT soundings and interpretation of data in terms of SBT are presented in Appendix B.

LABORATORY TESTS

Laboratory tests were performed on selected samples obtained from the borings to aid in the classification of the soils and to determine their engineering properties.

The field moisture content and dry density of the soils encountered were determined by performing tests on the undisturbed samples. The results of the tests are shown to the left on the boring logs.

Direct shear tests were performed on selected undisturbed samples to determine the strength of the soils. The tests were performed after soaking the samples to near-saturated moisture content and at various surcharge pressures. Remolded samples, compacted to 90% of the maximum dry density obtainable by the ASTM Designation D1557 method of compaction at slightly above optimum moisture content, were tested after soaking to near-saturated moisture content. The peak and ultimate strength values obtained from the direct shear tests, along with associated stress-deformation curves, are presented on Figures A-3.1 to A-3.7, Direct Shear Test Data.

Confined consolidation tests were performed on four undisturbed samples to determine the compressibility of the soils. Water was added to the samples during the tests to illustrate the effect of moisture on the compressibility. The results of the tests are presented on Figures A-4.1 through A-4.2, Consolidation Test Data.

To determine the particle size distribution of the soils and to aid in classifying the soils, mechanical analyses were performed on nine samples. The results of the mechanical analyses are presented on Figures A-5.1 through A-5.5, Particle Size Distribution.

The Expansion Index of the soils was determined by testing one sample in accordance with the Uniform Building Code Standard No. 29-2 method. The results of the test are shown on Figure A-6, Expansion Index Test Data.

The optimum moisture content and maximum dry density of the near-surface soils were determined by performing compaction tests on five bulk samples obtained in the field. The tests were performed in accordance with the ASTM Designation D1557 method of compaction. The results of the tests are presented on Figures A-7.1 and A-7.2, Compaction Test Data.

After completion of the compaction tests, California Bearing Ratio tests were performed on two of these samples in accordance with the ASTM Designation D1883-73 method. The results of the tests are presented on Figures A-8.1 through A-8.12, C.B.R. Test Data. CBR tests and associated compaction tests were performed for us by AP Engineering.

In addition to the normal consolidation tests, a “quick” consolidation test was performed on an undisturbed sample to determine the hydrocompaction potential of the soils. The test was performed by confining the sample under a normal surcharge pressure, allowing the sample to consolidate at its field moisture content, and then saturating the sample and measuring the consolidation resulting from the addition of water. The results (percent hydrocompaction) of this test are presented on Figure A-9, Hydroconsolidation Test Data.

In addition to the full mechanical analyses, tests to determine the percentage of fines (material passing through a -200 sieve) in selected samples were performed. The results of these tests are presented on the boring logs.

Unconfined compression tests were performed on 3 samples of soil and bedrock to determine the shear strength of the material. The results of these tests are presented on Figures A-10.1 through A-10.3. The unconfined compression tests were performed for us by AP Engineering.

Soil corrosivity studies were performed on samples of the on-site soils by Schiff Associates. The results of the study and recommendations for corrosion mitigation measures are presented on Figures A-11.1 through A-11.7.

TABLE A-1 - SOIL LABORATORY TESTING SUMMARY
GAS TURBINE REPLACEMENT PROJECT
ALISO CANYON GAS STORAGE FIELD

Boring No.	Sample Depth (ft)	Sample Type	USCS Group Symbol	Moisture Content (%)	Dry Density (pcf)	Grain Size			Atterberg Limits			Expansion Index	Compaction		CBR			Corrosion				Compression Indices		Unconfined Compression		Direct Shear			
						Gravel (%)	Sand (%)	Fines (%)	LL	PL	PI		Max. Dry Density (pcf)	Opt. Moisture Content (%)	<90% RC	<95% RC	100%+ RC	pH	Sulfate (ppm)	Chloride (ppm)	Minimum Resistivity (ohm-cm)	C_c	C_r	Peak (psf)	Yield (psf)	c_{peak} (psf)	Φ_{peak} (°)	c_{ult} (psf)	Φ_{ult} (°)
1	5.5	MC	CL	19.8	102				36	23	13											0.08	0.015						
	8	SPT	CL	22.3					41	25	16																		
	10.5	MC	CL	16.0	109																								
	13	SPT	SC	17.5																									
	15.5	MC	SC	19.1	105				30	19	11											0.13	0.017			700	29	1000	15
	18	SPT	SC	20.0		7	57	36																					
	20.5	MC	Tt	23.8	102																								
	23	SPT	Tt	18.8																									
	25	MC	Tt	9.4	124																								
	30	SPT	Tt	15.6																									
	0-5	BULK	CL									15	120.3	11.3				7.7	191	11	1,348					500	29	200	32
2	5.5	SPT	ML	20.0					40	24	16																		
	8	MC	ML	19.4	106																								
	10.5	SPT	ML	22.2																									
	13	MC	CL	21.0	102	8	30	62	43	24	19											0.1	0.021						
	15.5	SPT	ML	21.1														7.8	211	12	1,225								
	18	MC	ML	21.0	103																								
	20.5	SPT	ML	21.6																									
	23	MC	ML	23.3	98																					1000	31	900	30
	25.5	SPT	ML	19.1																									
	35	MC	Tt	8.0																									
	35	SPT	Tt																										
	0-5	BULK	SM			10	49	41					122	10															
3	6	MC	CL	10.3																									
	8	SPT	CL	19.0																									
	11	MC	CL	16.8	104																								
	13	SPT	CL	19.8		15	33	52																					
	16	MC	CL	20.2	101																			5,300	3,600				
	18	SPT	CL	18.3														7.8	525	19	858								
	21	MC	SM	21.2	96				43	27	16											0.14	0.024						
	23	SPT	SM	15.1		10	41	49																					
	26	MC	ML	21.3	90																			4,700	1,500				
	30.5	SPT	CL	19.7					34	21	13																		
	36	MC	CL	12.7	115																								
	39	SPT	Tt																										
	0-5	BULK	SM									2	125.0	11.0	7	26	40												
	5-10	BULK	CL																							80	42	0	43
4	5.5	MC	CL	13.3	100																					200	32	50	33
	8	SPT	CL	12.9		2	18	80																					
	10.5	MC	CL	16.2	82																								
	13	SPT	SM	10.9		36	46	18	30	22	8																		
	15.5	MC	SM	13.4	78																								
	18	SPT	SM	17.4																									
	20.5	MC	SM	13.3	93																								
	23	SPT	ML	18.2																									
	25.5	MC	ML	24.9	81																								
	30.5	SPT	Tt	6.4																									
	34.5	MC	Tt	5.6	94																								
	0-10	BULK	SM & CL										125.10	9.80															
5	6	MC	CL	17.3	107																								
	8.5	SPT	CL	18.9					35	19	16																		
	11	MC	SM/SC	15.8	108																					300	31	100	33
	13.5	SPT	Tt	8.9																									
	16	MC	Tt	15.8	111																			2,200	1,100				
	18.5	SPT	Tt	4.4																									
	21	MC	Tt	8.3	117																								
	23	SPT	Tt	6.5																									
	25	MC	Tt	6.9	122																								
	31	SPT	Tt	5.4																									
	0-5	BULK	ML										122.5	11.0	4	13	48												
	5-10	BULK	SC																										
	25-30	BULK	Tt																										
6	5.5	MC	SM	17.8	108	16	37	47																					
	8	SPT	Tt	19.1																									
	10.5	MC	Tt	6.6	103																					0	36	0	32
	12	SPT	Tt	5.6																									
	0-5	BULK	SM			10	53	37																					

MC Modified California Sample
SPT Standard Penetration Test
"Gravel" Particle size greater than No. 4 sieve
"Sand" Particle size less than No. 4 sieve but greater than No. 200 sieve
"Fines" Particle size less than No. 200 Sieve
NP Nonplastic

By: JF 2/1/2011
Checked By: NH 2/7/2011

BORING 1

DATE DRILLED: December 21, 2010
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,852 **

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)
			19.8	102	27
		7	22.3		
			16.0	109	29
		10	17.5		
			19.1	105	6
		9	20.0		
			23.8	102	18
		50/3"	18.8		
			9.4	124	50/2"
		50/5"	15.6		

Elevation scale: 1850, 1845, 1840, 1835, 1830, 1825, 1820, 1815
Depth scale: 5, 10, 15, 20, 25, 30, 35, 40

4-inch thick Asphalt Concrete over 5½-inch thick Base Course

SM — FILL - SILTY SAND - moist, yellowish brown and gray brown, fine to medium-grained, some gravel up to 2-inch diameter

CL — FILL - SANDY LEAN CLAY - very stiff, moist, grayish brown, some gravel
Thin layer of medium stiff material (LL=36, PI=13)
(LL=41, PI=16)

SC — FILL - CLAYEY SAND - loose, moist, gray, fine-grained, some sandstone gravel, rust staining
(LL=30, PI=11)
(36% Passing No. 200 Sieve, 7% Gravel)

Tt — SANDSTONE - moist, gray, fine-grained, soft, friable, weak
Becomes light brown, massive, abundant rust staining

END OF BORING AT 30½ FEET

NOTES:

Hand augered upper 5 feet due to utilities. Ground water measured at 12 feet below ground surface 1½ hours after completion of drilling. Boring backfilled with soil cuttings, tamped, and patched with asphalt concrete.

* Number of blows required to drive Modified California sampler 12 inches using 140-pound automatic hammer falling 30 inches.

** Elevation obtained from site survey provided by Southern California Gas.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE; REFER TO PLOT PLAN FOR MORE ACCURATE LOCATION INFORMATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: DW
Prepared By: JF
Checked By: NH

BORING 2

DATE DRILLED: December 21, 2010
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,851 **

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE; REFER TO PLOT PLAN FOR MORE ACCURATE LOCATION INFORMATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	USCS	DESCRIPTION
1850	0						4-inch thick Asphalt Concrete over 5-inch thick Base Course
						SM	FILL - SILTY SAND - moist, yellowish brown, trace gravel (41% Passing No. 200 Sieve, 10% Gravel)
							Becomes gray
1845	5	15	20.0			ML	FILL - SANDY SILT with Gravel - stiff to very stiff, moist, gray, some sandstone gravel up to 1-inch diameter (LL=40, PI=16)
			19.4	106	43		Becomes dark brown
1840	10	19	22.2				
			21.0	102	29	CL	FILL - SANDY LEAN CLAY - very stiff, moist, brownish gray (62% Passing No. 200 Sieve, 8% Gravel, LL=43, PI=19)
1835	15	15	21.1			ML	FILL - SANDY SILT with Gravel - stiff to very stiff, moist, grayish brown
			21.0	103	32		
1830	20	10	21.6				Thin layer of Silty Sand
			23.3	98	26		Becomes dark brown
1825	25	18	19.1				
						Tt	SANDSTONE - moist, light olive brown, fine-grained, weak, soft, friable, rust staining
1820	30						
					50/2"		
1815	35	50/5"	8.0				
	40						

END OF BORING AT 35½ FEET

NOTES:

Hand augered upper 5 feet due to utilities. Ground water not encountered. Boring backfilled with soil cuttings, tamped, and patched with asphalt concrete.

Field Tech: DW
Prepared By: JF
Checked By: NH

B12SOIL_CRANDALL (NO DECIMAL) 4953-10-1751.GPJ LAW_CRAN.GDT 2/10/11

Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

MACTEC

LOG OF BORING

Project: 4953-10-1751 Figure: A-1.2

BORING 3

DATE DRILLED: December 27, 2010
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,851 **

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	USCS	DESCRIPTION
1850						SM	2-inch thick Asphalt Concrete, no Base Course FILL - SILTY SAND - moist, light brown to orange brown, fine-grained, some rootlets
	5					CL	FILL - SANDY LEAN CLAY with Gravel - very stiff, moist, gray to dark gray, trace gravel
1845			10.3		46		
		7	19.0				Becomes medium stiff
	10						
1840			16.8	104	32		Becomes stiff to very stiff
		9	19.8				Becomes brown (52% Passing No. 200 Sieve, 15% Gravel)
	15						
1835			20.2	101	21		Some rock fragments, asphalt, and concrete debris
		21	18.3				Thin layer of gray Silt Abundant rock fragments and concrete debris
	20					SM	FILL- SILTY SAND - medium dense, moist, mottled gray and brown, fine-grained, trace clay (LL=43, PI=16)
1830			21.2	96	27		
		18	15.1				(49% Passing No. 200 Sieve, 10% Gravel)
	25					ML	FILL - SANDY SILT - stiff, moist, dark brown and orange brown, trace clay, abundant rock fragments and concrete debris
1825			21.3	90	18		Becomes dark brown to dark gray
	30					CL	FILL - LEAN CLAY - hard, slightly moist, dark gray to black, some rock fragments (LL=34, PI=13)
1820		31	19.7				
	35						
1815			12.7	115	54	Tt	SANDSTONE - moist, brown to orange brown
		50/2"					END OF BORING AT 39½ FEET
	40						

NOTES:

Hand augered upper 5 feet due to utilities. Ground water not encountered. Boring backfilled with soil cuttings, tamped, and patched with asphalt concrete.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE; REFER TO PLOT PLAN FOR MORE ACCURATE LOCATION INFORMATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: MAE
Prepared By: JF
Checked By: NH

BORING 4

DATE DRILLED: December 27, 2010
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,825 **

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.		DESCRIPTION
							SM	FILL - SILTY SAND - slightly moist, orange brown, fine-grained, abundant pebbles and cobbles up to 4-inch diameter
								Some rootlets
1820	5						CL	FILL - LEAN CLAY with Sand - soft, moist, brown, some rock fragments
			13.3	100	8			
		23	12.9					(80% Passing No. 200 Sieve, 2% Gravel)
1815	10							Abundant rock fragments
			16.2	82	24			
		18	10.9				SM	SILTY SAND with Gravel - medium dense, moist, reddish brown to brown, possible slopewash (18 % Passing No. 200 Sieve, 36% Gravel, LL=30, PI=8)
1810	15							
			13.4	78	27			
		12	17.4					
1805	20							
			13.3	93	29			Alternating with layers of Sandy Silt
		18	18.2					
1800	25							
			24.9	81	19			
							Tt	SILTY SANDSTONE - slightly moist, gray, weathered
1795	30							
		50/2"	6.4					
1790	35		5.6	94	50/5"			
	40							

END OF BORING AT 35 FEET

NOTES:

Hand augered upper 5 feet due to utilities. Ground water not encountered. Boring backfilled with soil cuttings and tamped.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE; REFER TO PLOT PLAN FOR MORE ACCURATE LOCATION INFORMATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: MAE
Prepared By: JF
Checked By: NH

Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

MACTEC

LOG OF BORING
Project: 4953-10-1751 Figure: A-1.4

BORING 5

DATE DRILLED: December 27, 2010
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,854 **

"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)
	17.3	107	12
5	18.9		
	15.8	108	15
33	8.9		
	15.8	111	44
50/5"	4.4		
	8.3	117	50/3"
50	6.5		
	6.9	122	50/5"
71	5.4		

ELEVATION (ft): 1850, 1845, 1840, 1835, 1830, 1825, 1820, 1815

DEPTH (ft): 5, 10, 15, 20, 25, 30, 35, 40

SAMPLE LOC.

ML — FILL - CLAYEY SILT to SANDY SILT - slighly moist, brown to orange brown, abundant rock fragments up to 2-inch diameter

Becomes dark brown to gray, some sand, asphalt debris

CL — FILL - SANDY LEAN CLAY - soft to medium stiff, moist, mottled brown to orange brown, abundant rock fragments

Becomes greenish gray
(LL=35, PI=16)

SM/SC — FILL - SILTY SAND to CLAYEY SAND - loose to medium dense, moist, mottled brownish gray to greenish brown, some angular rock fragments

Tt — SANDSTONE - slightly moist, greenish gray to blue, highly weathered

Cemented, interbedded with grayish green Siltstone

END OF BORING AT 31½ FEET

NOTES:

Hand augered upper 5 feet due to utilities. Ground water not encountered. Boring backfilled with soil cuttings and tamped.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE; REFER TO PLOT PLAN FOR MORE ACCURATE LOCATION INFORMATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: MAE
Prepared By: JF
Checked By: NH

Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

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LOG OF BORING
Project: 4953-10-1751 Figure: A-1.5

B12SOIL_CRANDALL (NO DECIMAL) 4953-10-1751.GPJ LAW_CRAN.GDT 2/10/11

BORING 6

DATE DRILLED: December 21, 2010
EQUIPMENT USED: Hollow Stem Auger
HOLE DIAMETER (in.): 8
ELEVATION: 1,850 **

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.	USCS	DESCRIPTION
	0							3-inch thick Asphalt Concrete over 4½-inch thick Base Course
							SM	FILL - SILTY SAND - very dense, moist, yellowish brown, fine-grained, trace gravel, trace brick fragments (37% Passing No. 200 Sieve, 10% Gravel)
1845	5							FILL - SILTY SAND with Gravel - very dense, moist, gray (47% Passing No. 200 Sieve, 16% Gravel)
			17.8	108	98			
		67/11"	19.1				Tt	SANDSTONE - moist, gray, fine-grained, soft, friable, weak, highly weathered, rust staining
1840	10							
			6.6	103	50/5"			
		50/4½"	5.6					Vertical fracture observed
								END OF BORING AT 12½ FEET
1835	15							
1830	20							
1825	25							
1820	30							
1815	35							
	40							

NOTES:

Hand augered upper 5 feet due to utilities. Ground water not encountered. Boring backfilled with soil cuttings, tamped, and patched with asphalt.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE; REFER TO PLOT PLAN FOR MORE ACCURATE LOCATION INFORMATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Field Tech: DW
Prepared By: JF
Checked By: NH

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels, gravel - sand mixtures, little or no fines.
			GP	Poorly graded gravels or grave - sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)	GM	Silty gravels, gravel - sand - silt mixtures.
			GC	Clayey gravels, gravel - sand - clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 Sieve Size)	CLEAN SANDS (Little or no fines)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amount of fines)	SM	Silty sands, sand - silt mixtures
			SC	Clayey sands, sand - clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts and with slight plasticity.
			CL	Inorganic lays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic soils.

<u>BOUNDARY CLASSIFICATIONS:</u> Soils possessing characteristics of two groups are designated by combinations of group symbols.

SILT OR CLAY	SAND			GRAVEL		Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Coarse		

No.200 No.40 No.10 No.4 3/4" 3" 12"

U.S. STANDARD SIEVE SIZE

<u>Reference:</u> The Unified Soil Classification System, Corps of Engineers, U.S. Army Technical Memorandum No. 3-357, Vol. 1, March, 1953 (Revised April, 1960)

	Undisturbed Sample		Auger Cuttings
	Standard Penetration Test		Bulk Sample
	Rock Core		Modified California Sampler
	Dilatometer		Pressure Meter
	Packer		No Recovery
▽	Water Table at time of drilling	▼	Water Table after drilling

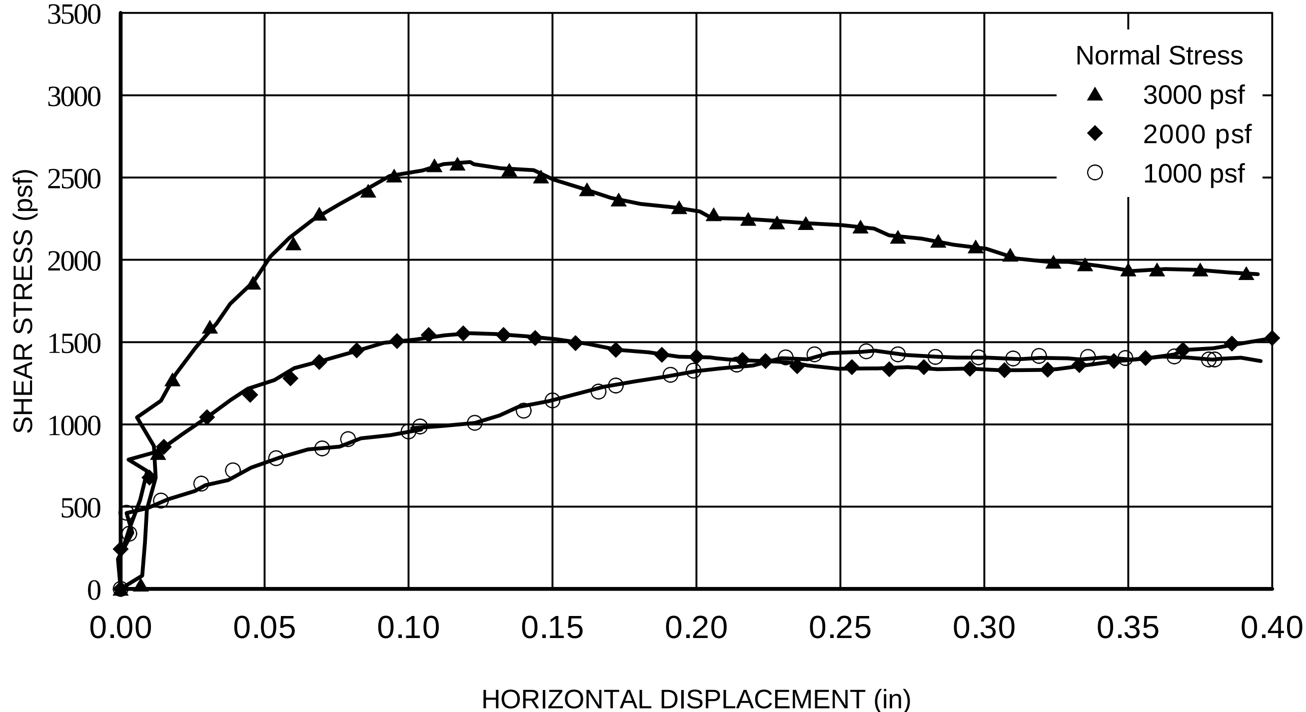
Correlation of Penetration Resistance with Relative Density and Consistency

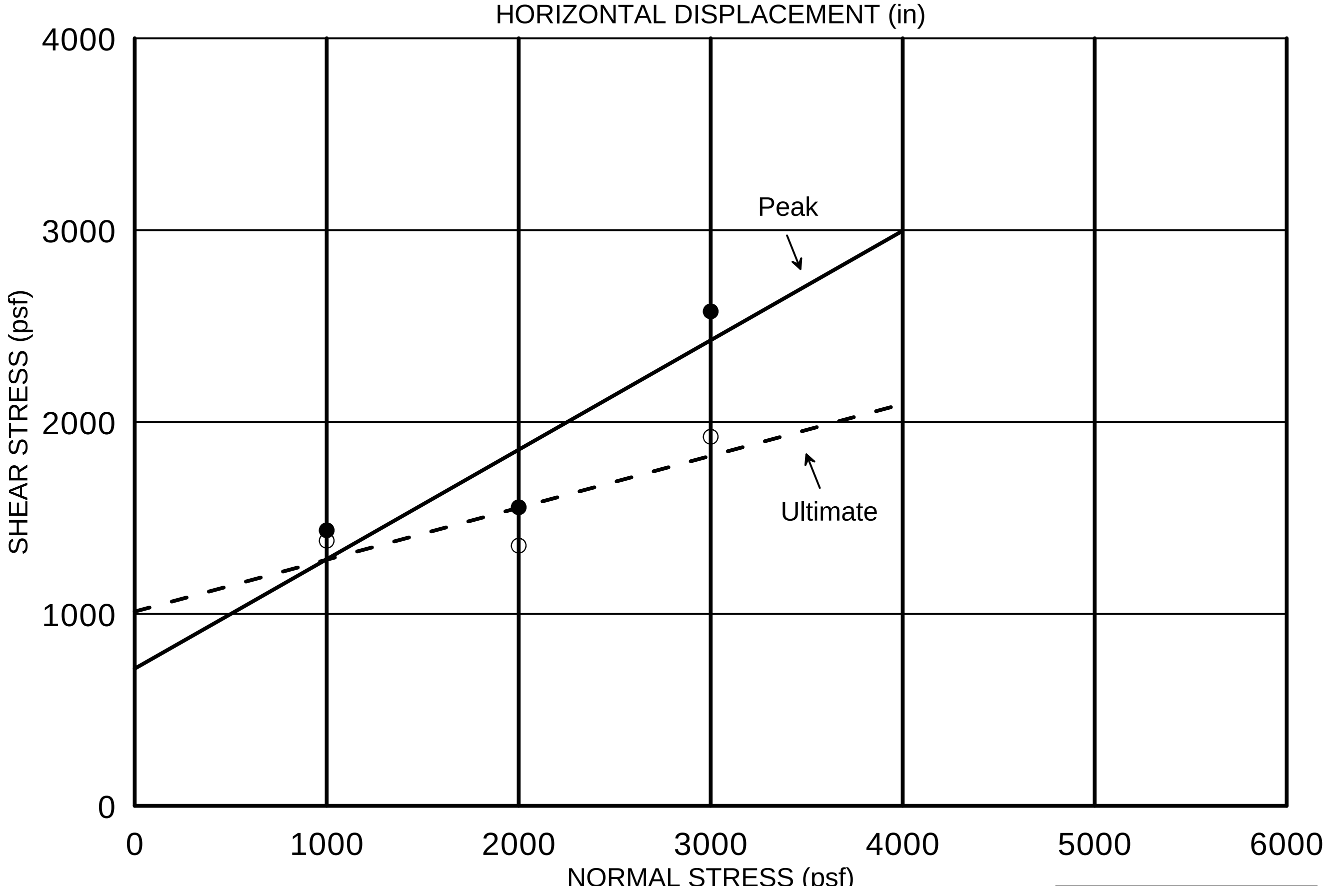
SAND & GRAVEL		SILT & CLAY	
No. of Blows	Relative Density	No. of Blows	Consistency
0 - 4	Very Loose	0 - 1	Very Soft
5 - 10	Loose	2 - 4	Soft
11 - 30	Medium Dense	5 - 8	Medium Stiff
31 - 50	Dense	9 - 15	Stiff
Over 50	Very Dense	16 - 30	Very Stiff
		Over 30	Hard

KEY TO SYMBOLS AND DESCRIPTIONS

MACTEC

Figure A-2





Note: Samples soaked to a moisture content near saturation prior to shearing.

Symbol		c (psf)	Φ
●	Peak	700	30°
○	Ultimate	1000	15°

Boring No.	B-1
Sample Depth	15½'

Prepared/Date: JF 1/21/11
Checked/Date: NH 2/9/11

Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

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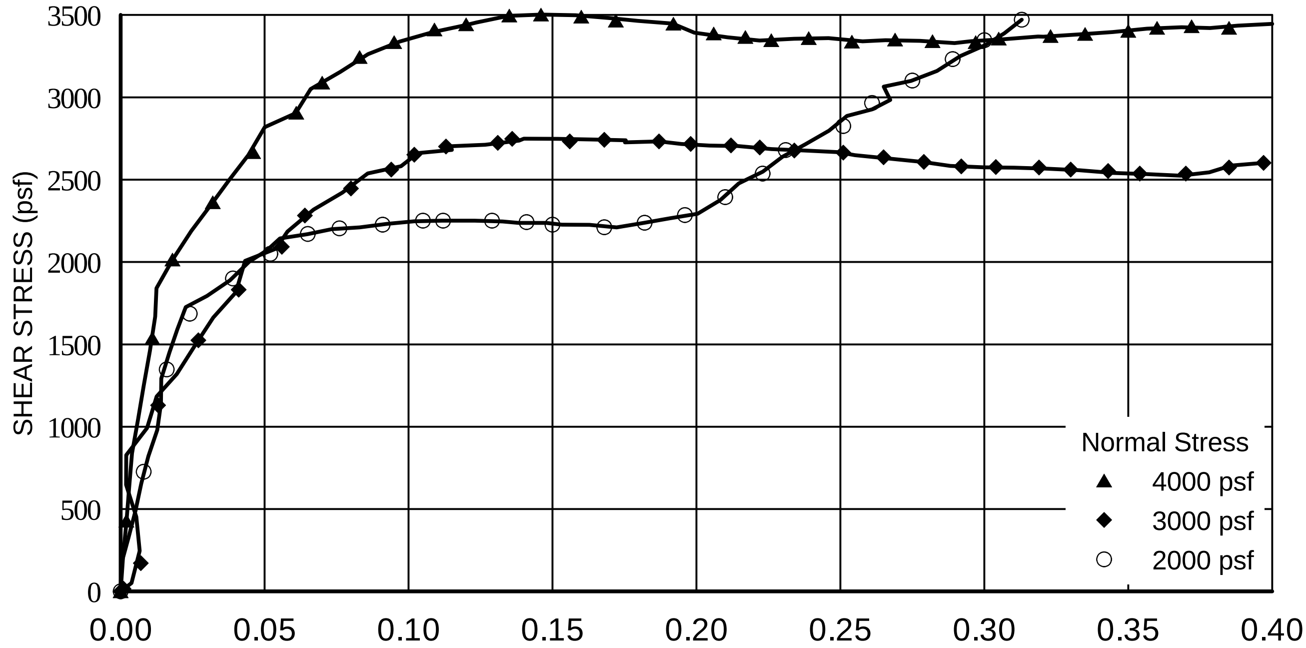
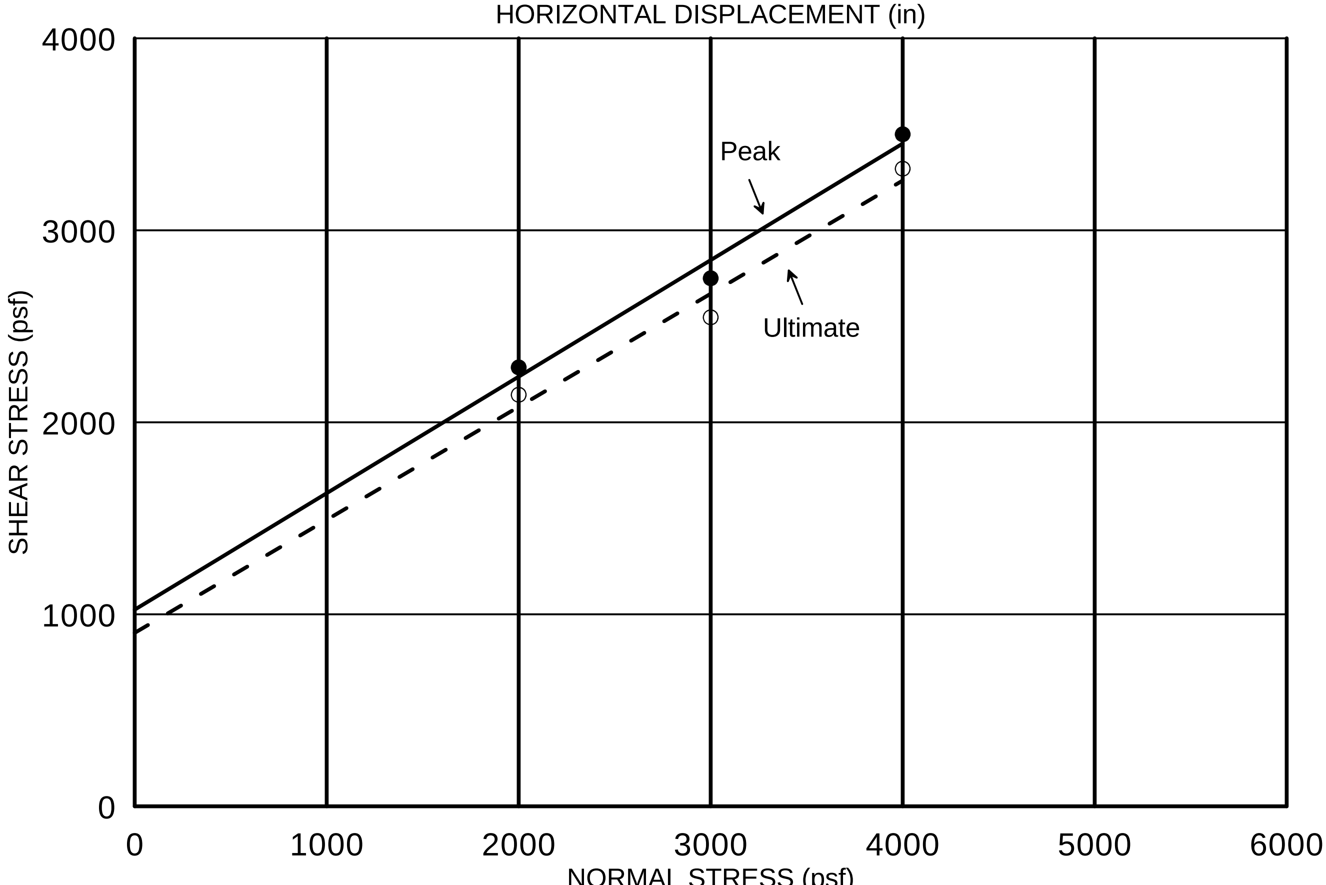
DIRECT SHEAR TEST DATA
Project No. 4953-10-1751
Figure A-3.1





Note: Samples soaked to a moisture content near saturation prior to shearing.

Symbol		c (psf)	ϕ
●	Peak	1000	31°
○	Ultimate	900	30°

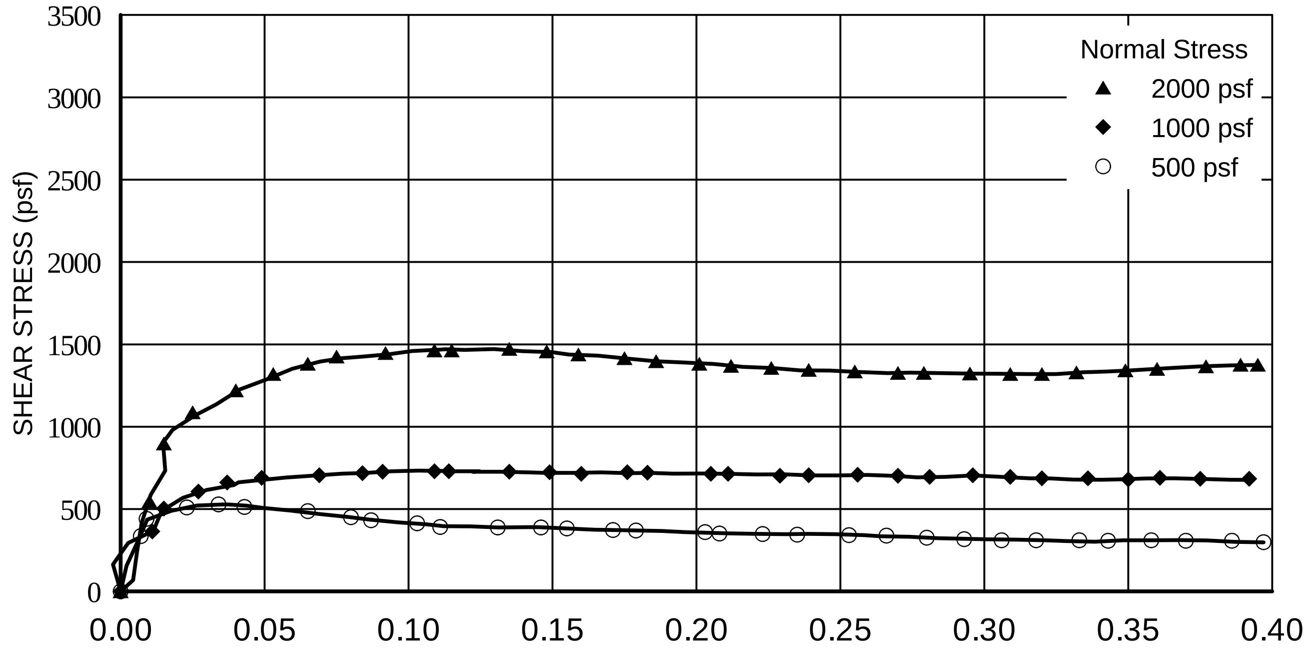
Boring No.	B-2
Sample Depth	23'

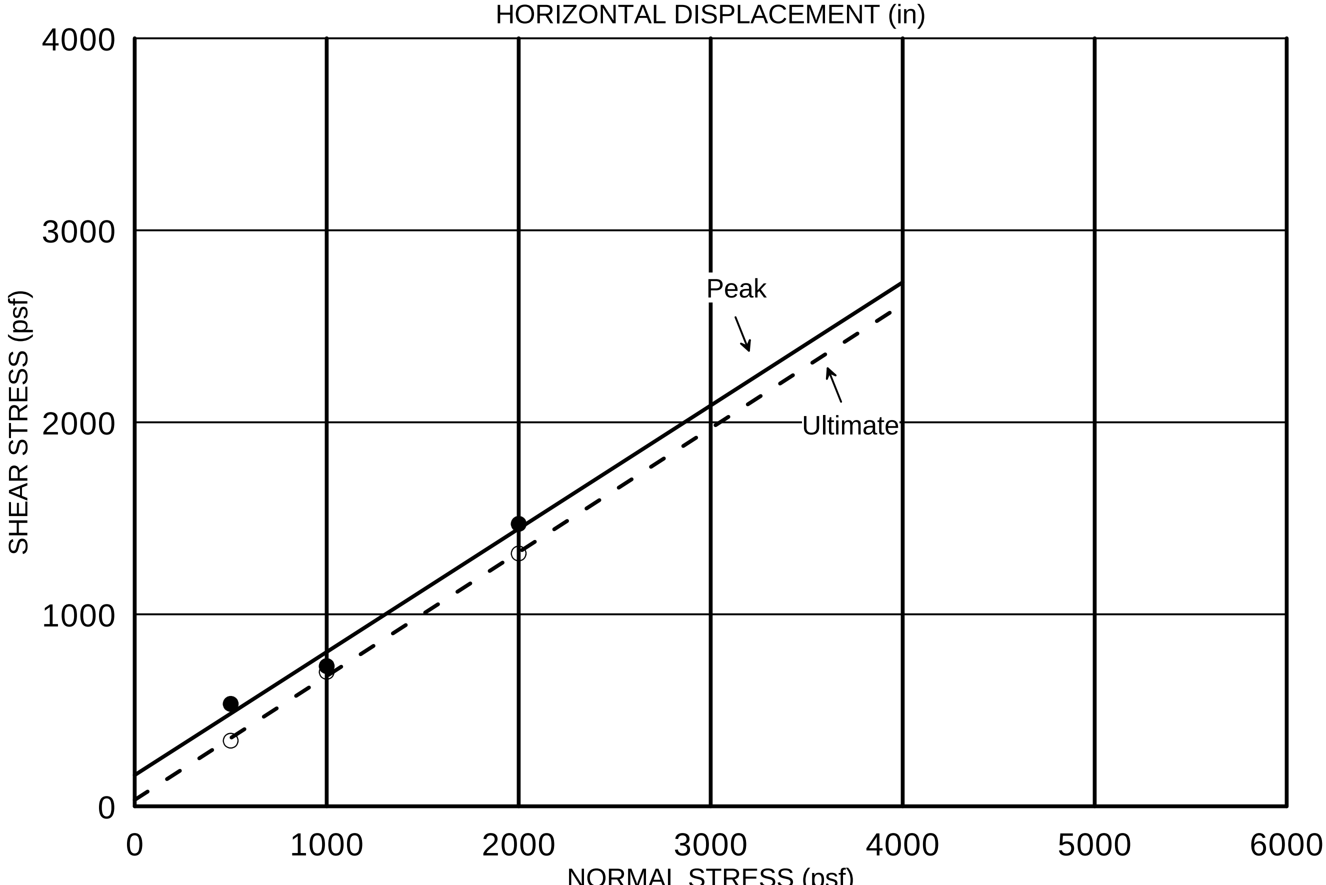
Prepared/Date: JF 2/8/11
Checked/Date: NH 2/9/11

Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

MACTEC

DIRECT SHEAR TEST DATA
Project No. 4953-10-1751
Figure A-3.2





Note: Samples soaked to a moisture content near saturation prior to shearing.

Symbol		c (psf)	φ
●	Peak	200	33°
○	Ultimate	50	33°

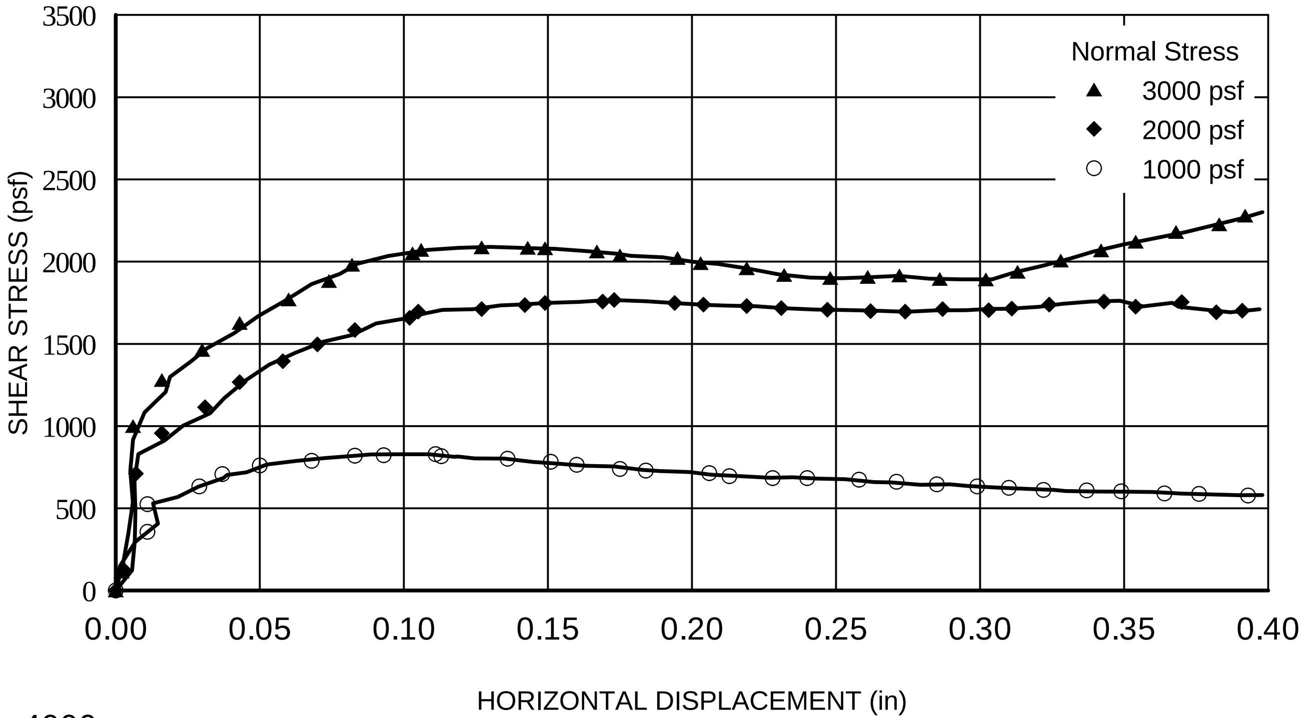
Boring No.	B-4
Sample Depth	5½'

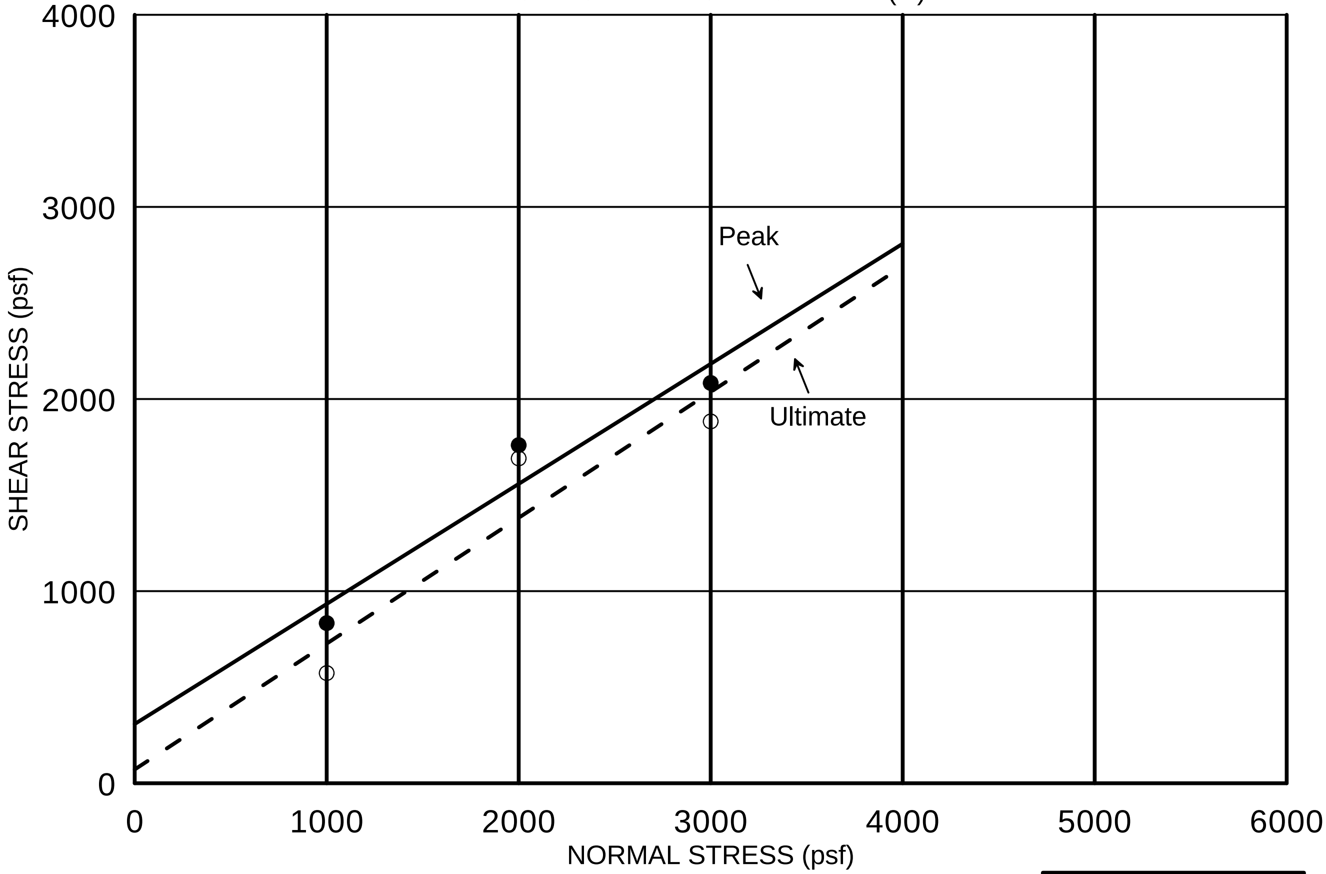
Prepared/Date: JF 2/8/11
Checked/Date: NH 2/9/11

Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

MACTEC

DIRECT SHEAR TEST DATA
Project No. 4953-10-1751
Figure A-3.3





Note: Samples soaked to a moisture content near saturation prior to shearing.

Symbol		c (psf)	Φ
●	Peak	300	32°
○	Ultimate	100	33°

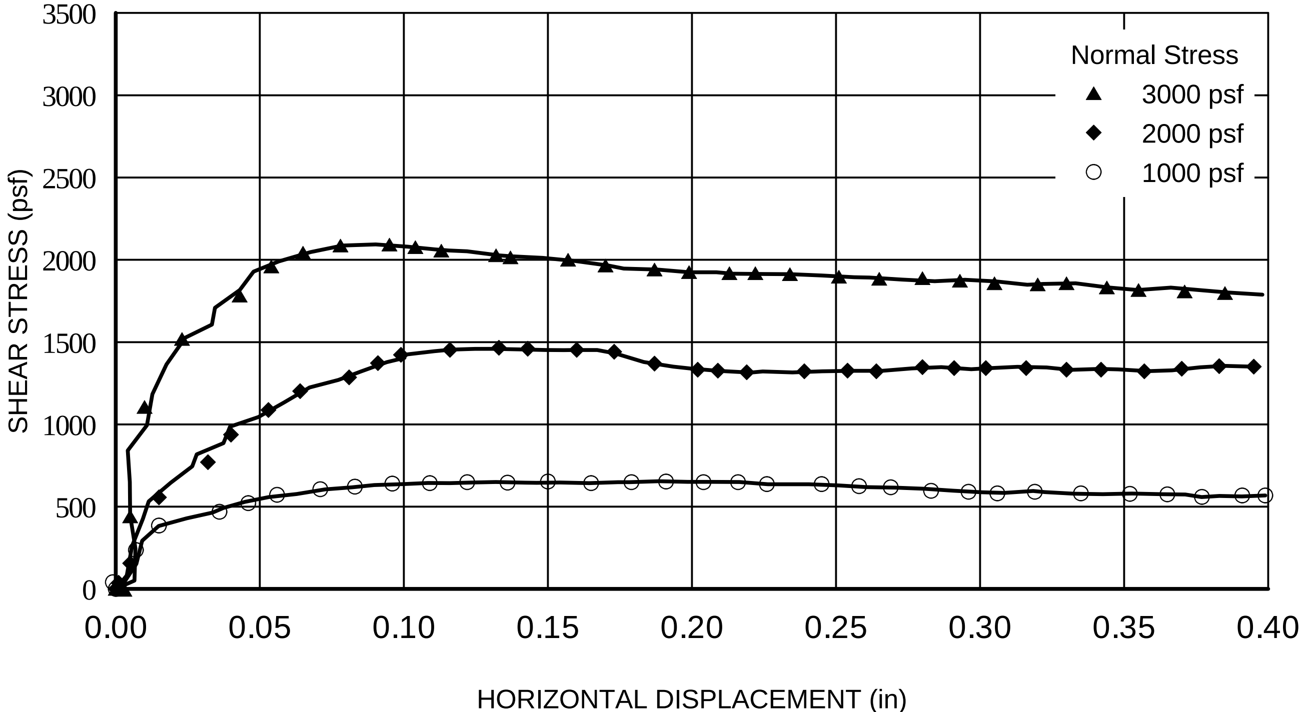
Boring No.	B-5
Sample Depth	11'

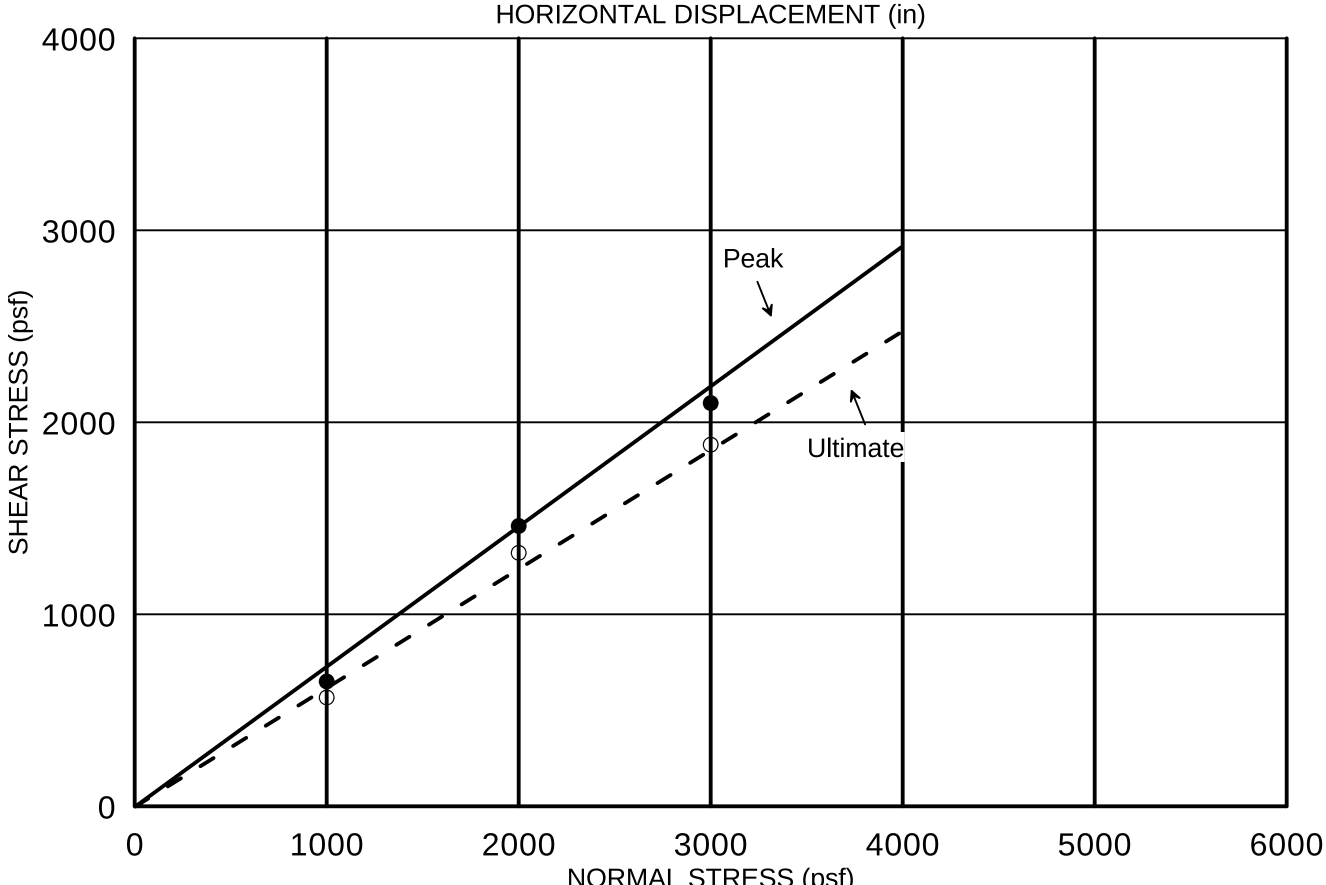
Prepared/Date: JF 2/8/11
Checked/Date: NH 2/9/11

Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

MACTEC

DIRECT SHEAR TEST DATA
Project No. 4953-10-1751
Figure A-3.4





Note: Samples soaked to a moisture content near saturation prior to shearing.

Symbol		c (psf)	ф
●	Peak	0	36°
○	Ultimate	0	32°

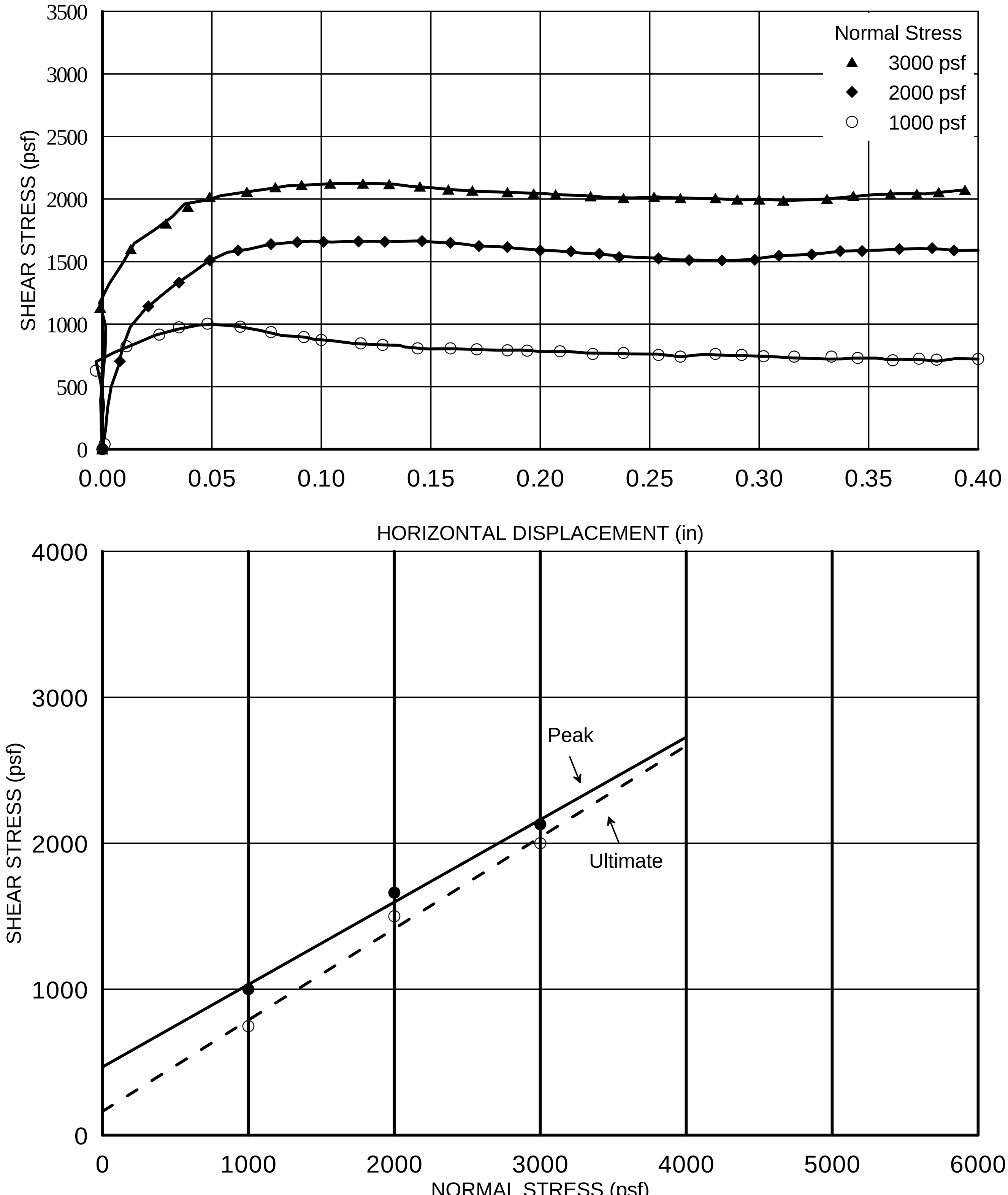
Boring No.	B-6
Sample Depth	10½'

Prepared/Date: JF 2/8/11
Checked/Date: NH 2/9/11

Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

MACTEC

DIRECT SHEAR TEST DATA
Project No. 4953-10-1751
Figure A-3.5



Note: Samples recompacted to 90% relative compaction at a moisture content within 2% of optimum. Recompacted samples soaked to a moisture content near saturation prior to shearing.

Symbol		c (psf)	φ
●	Peak	500	29°
○	Ultimate	200	32°

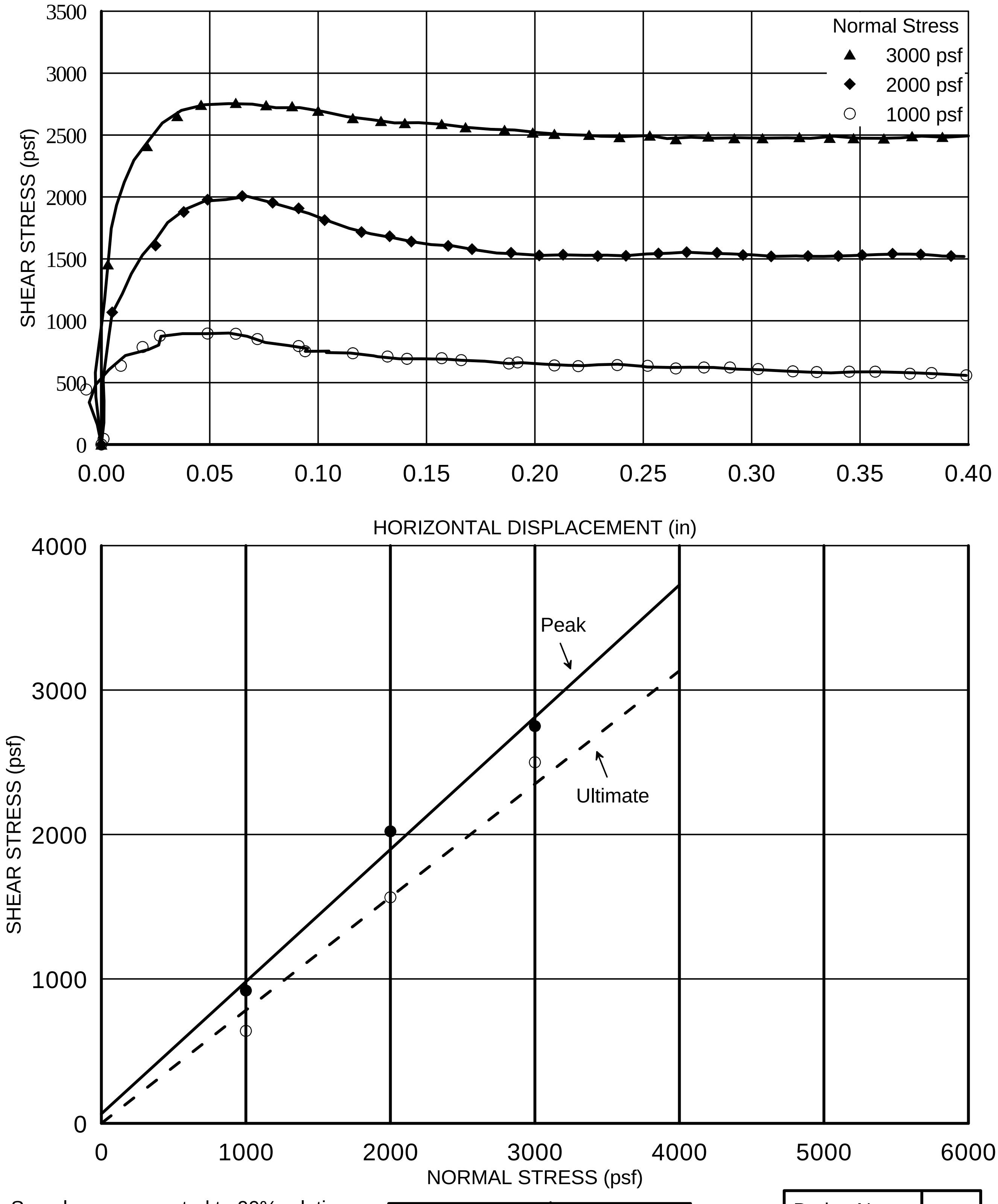
Boring No.	B-1
Sample Depth	0'-5'

Prepared/Date: JF 2/8/11
Checked/Date: NH 2/9/11

Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

MACTEC

DIRECT SHEAR TEST DATA
Project No. 4953-10-1751
Figure A-3.6



Note: Samples recompacted to 90% relative compaction at a moisture content within 2% of optimum. Recompacted samples soaked to a moisture content near saturation prior to shearing.

Symbol		c (psf)	ϕ
●	Peak	80	42°
○	Ultimate	0	38°

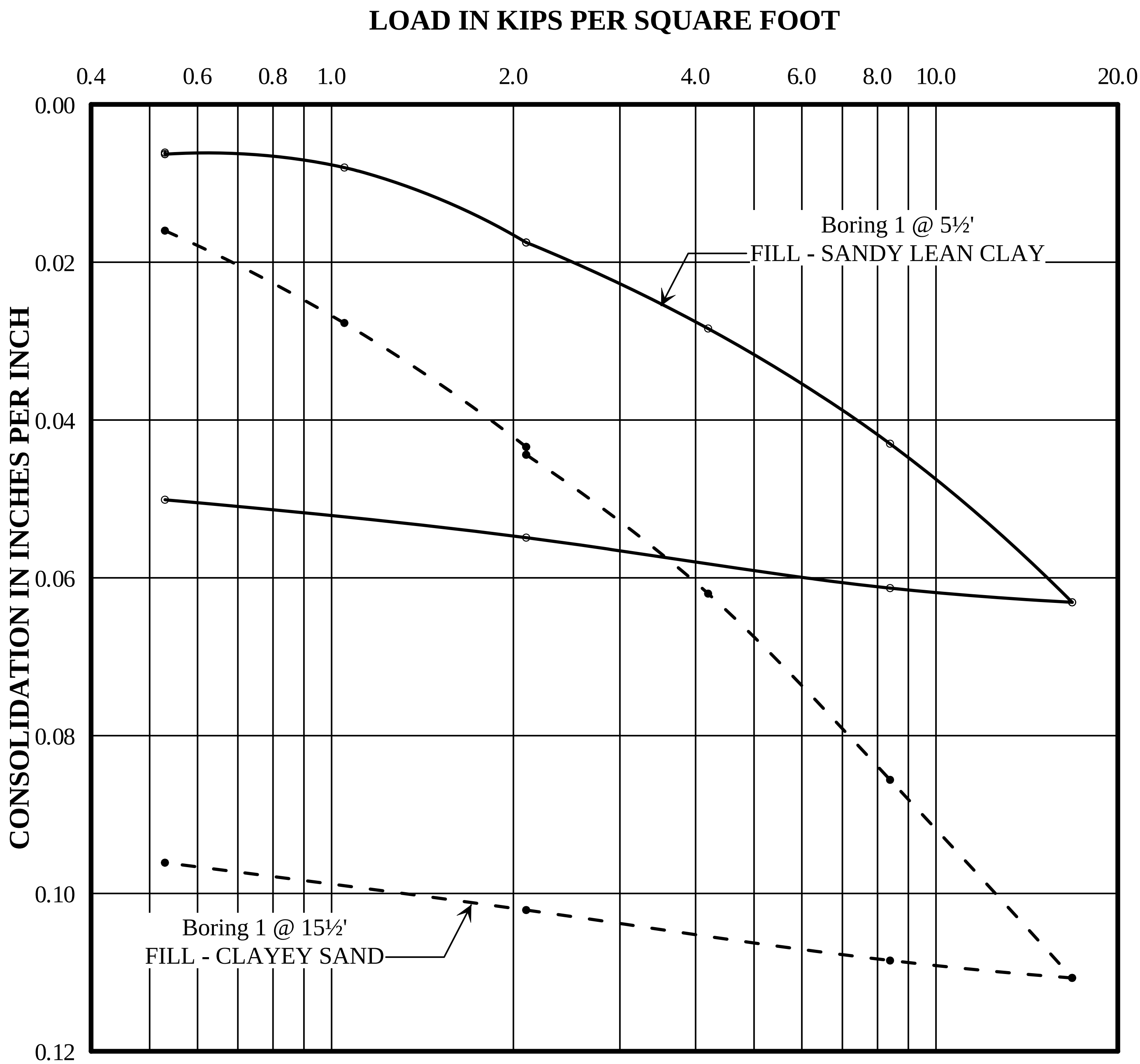
Boring No.	B-3
Sample Depth	0'-5'

Prepared/Date: JF 2/8/11
Checked/Date: NH 2/9/11

Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

MACTEC

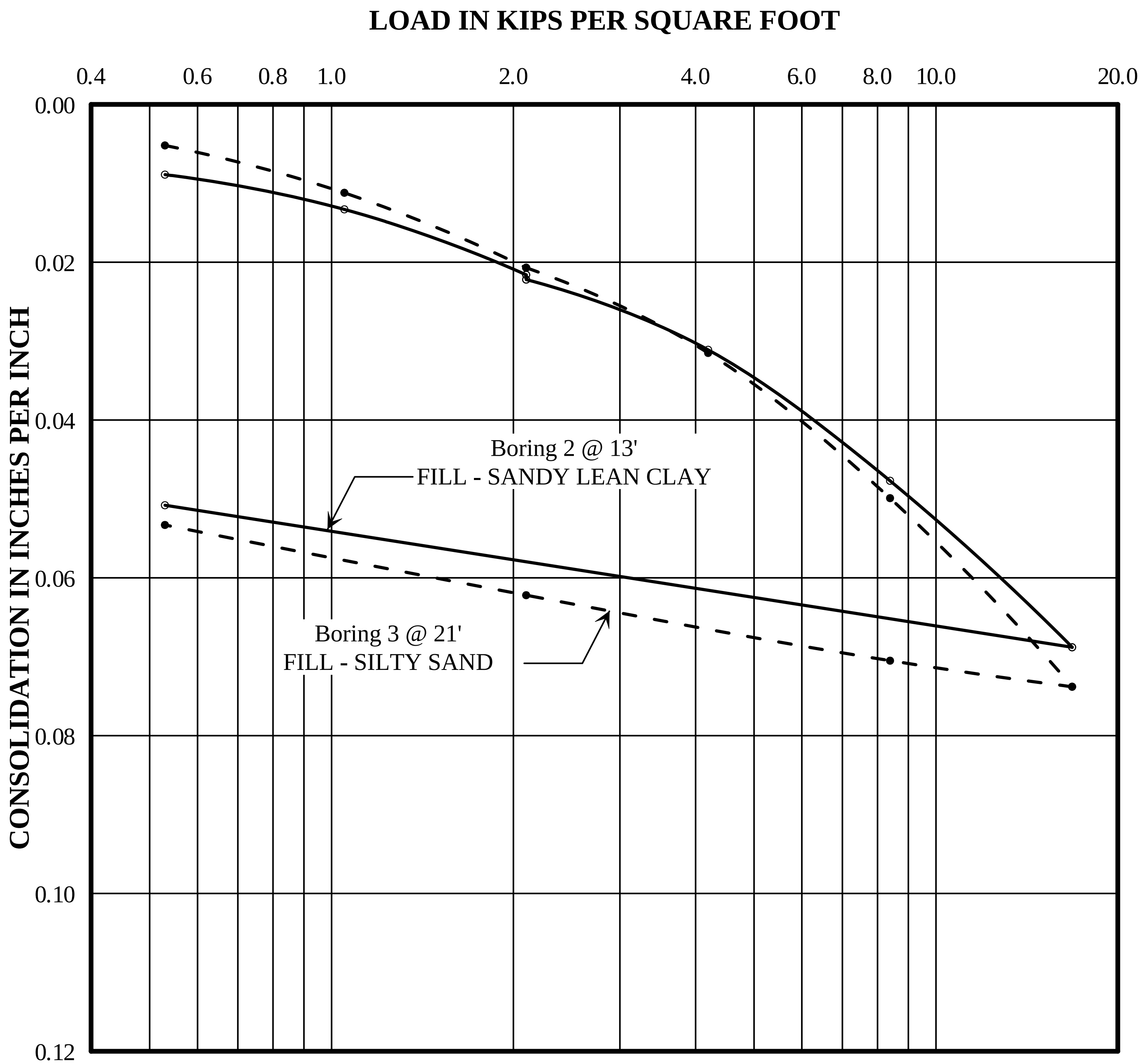
DIRECT SHEAR TEST DATA
Project No. 4953-10-1751
Figure A-3.7



Note: Water added to sample from Boring 1 at 5½' after consolidation under a load of 0.53 kips per square foot.
Water added to sample from Boring 1 at 15½' after consolidation under a load of 2.1 kips per square foot.

Prepared/Date: NH 2/7/11
Checked/Date: JF 2/9/11

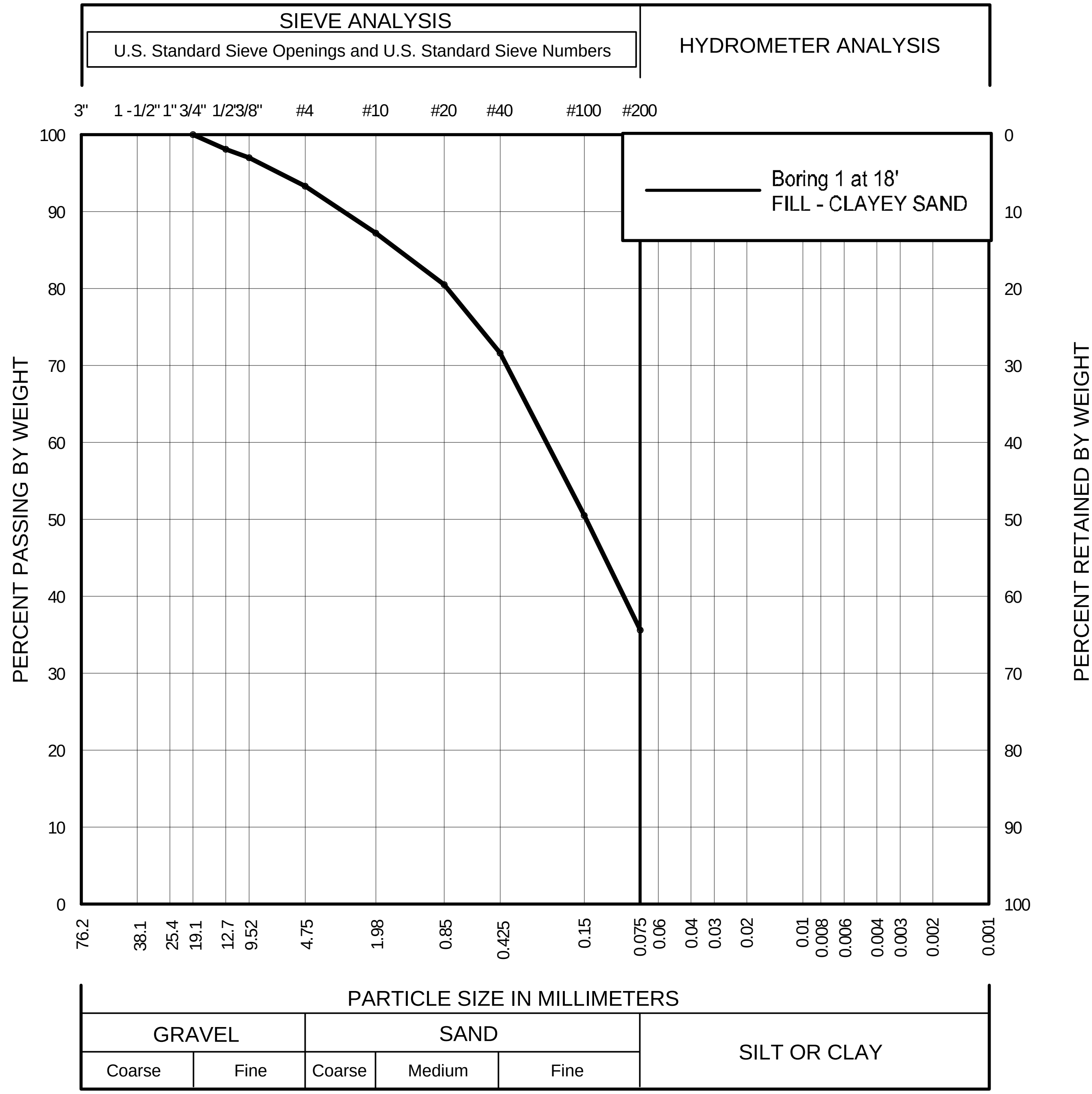
Gas Turbine Replacement Project Aliso Canyon Gas Storage Field Los Angeles County, California	MACTEC	CONSOLIDATION TEST DATA Project 4953-10-1751 Figure A-4.1



Note: Water added to samples after consolidation under a load of 2.1 kips per square foot.

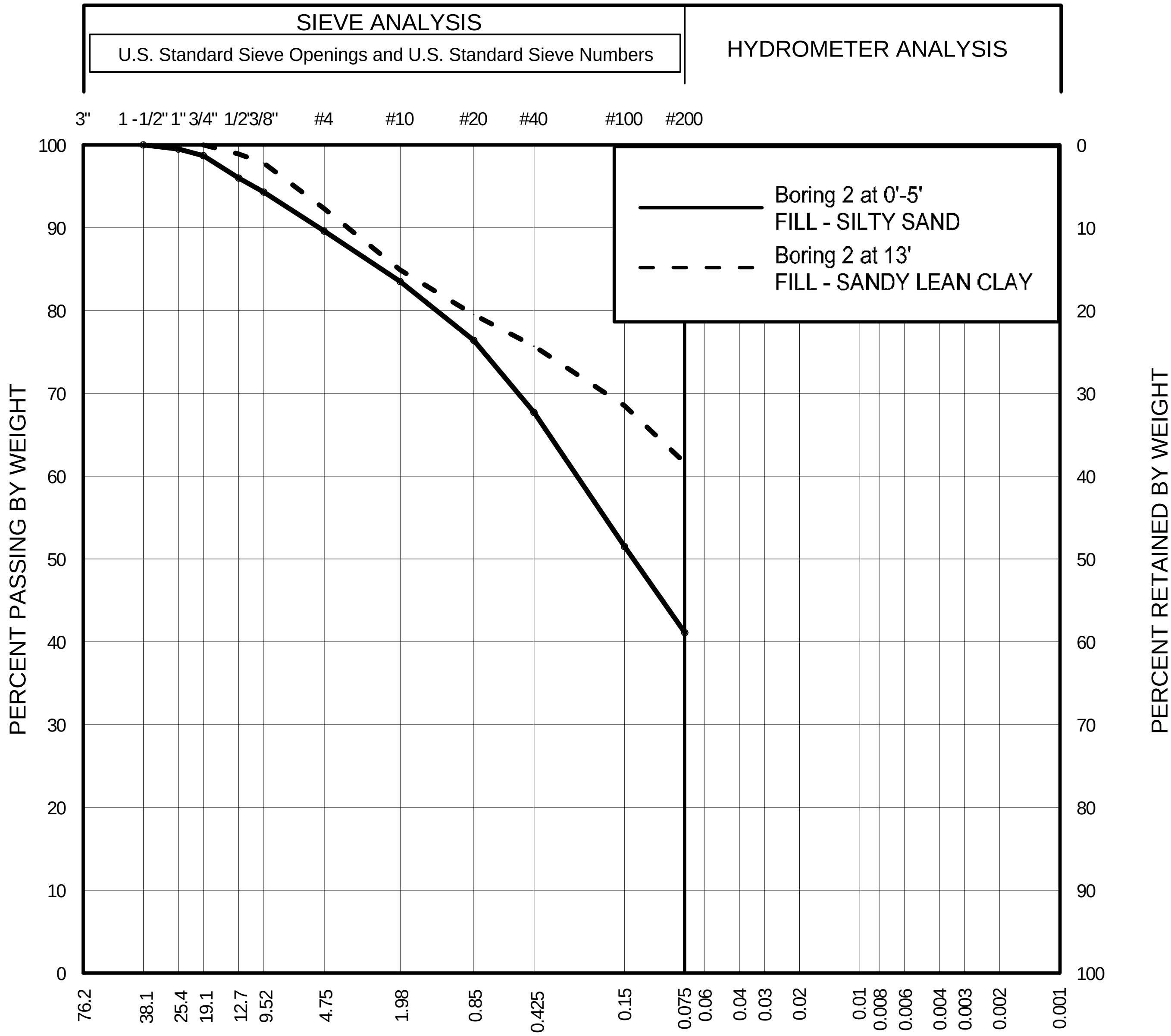
Prepared/Date: NH 2/7/11
Checked/Date: JF 2/9/11

Gas Turbine Replacement Project Aliso Canyon Gas Storage Field Los Angeles County, California	MACTEC	CONSOLIDATION TEST DATA Project 4953-10-1751 Figure A-4.2



Prepared/Date: JF 1/31/11
Checked/Date: NH 2/7/11

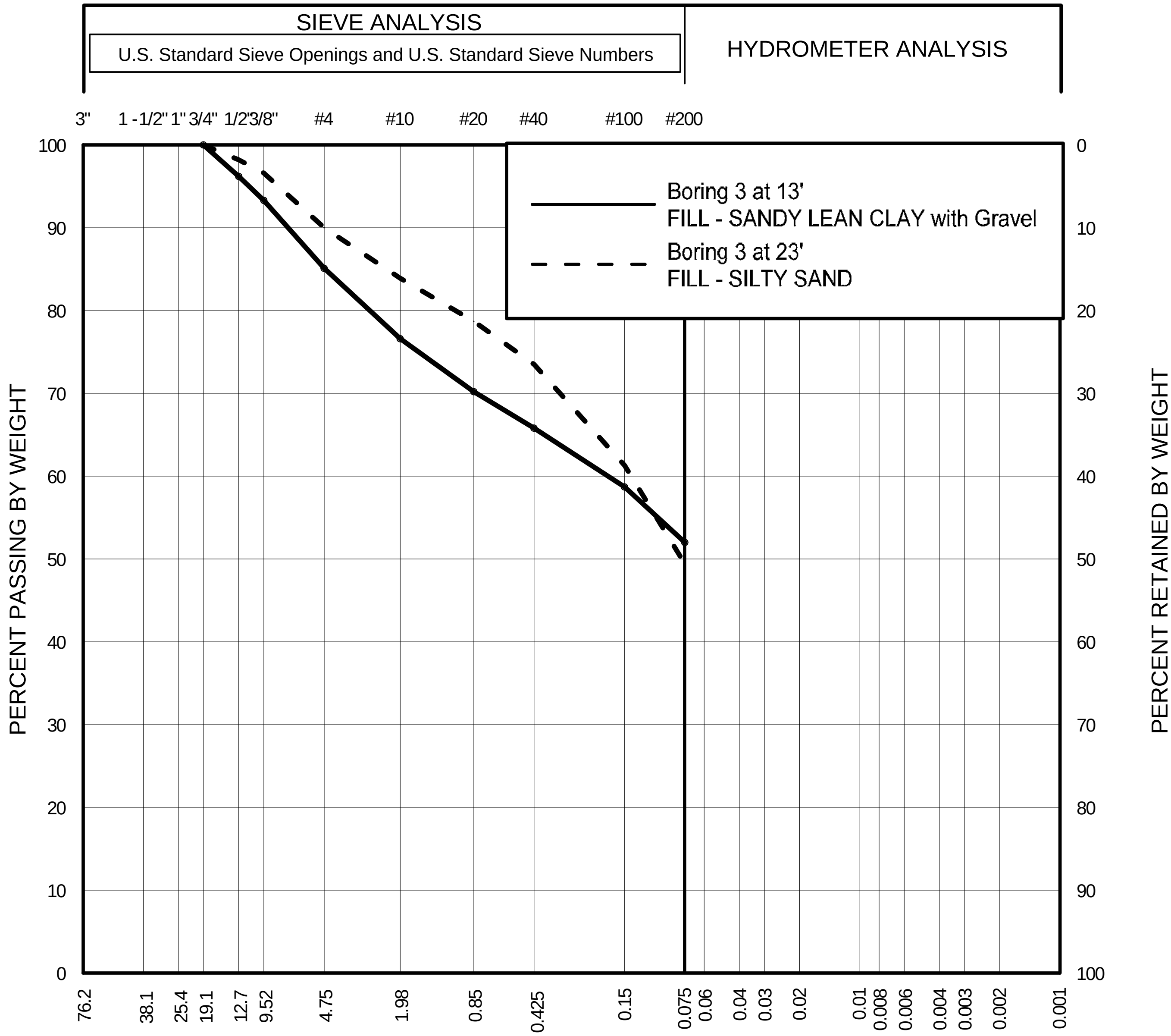
Gas Turbine Replacement Project Aliso Canyon Gas Storage Field Los Angeles County, California	MACTEC	PARTICLE SIZE DISTRIBUTION Project No. 4953-10-1751 Figure A-5.1



GRAVEL		SAND			SILT OR CLAY
Coarse	Fine	Coarse	Medium	Fine	

Prepared/Date: JF 1/31/11
Checked/Date: NH 2/7/11

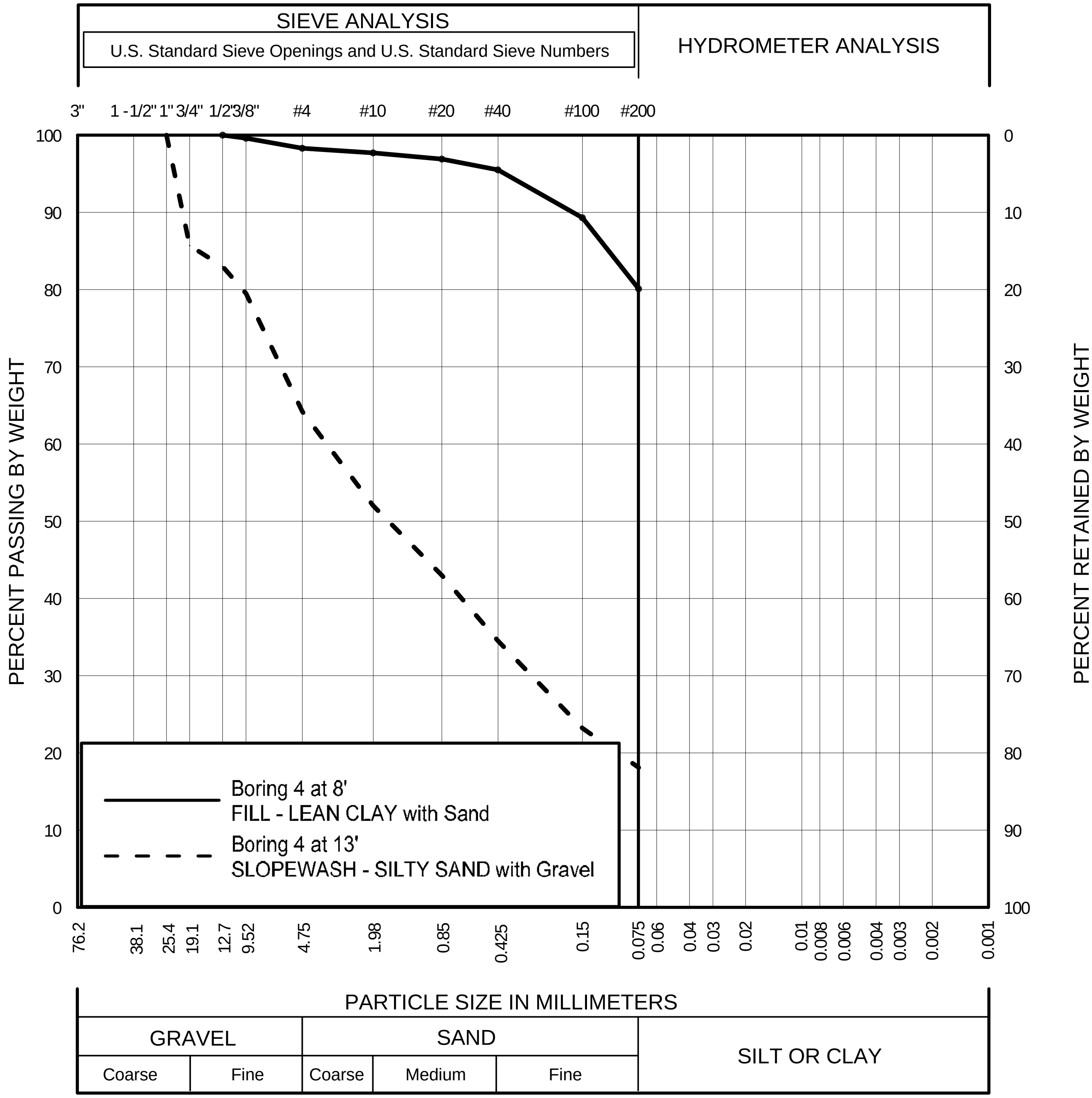
Gas Turbine Replacement Project Aliso Canyon Gas Storage Field Los Angeles County, California	MACTEC	PARTICLE SIZE DISTRIBUTION Project No. 4953-10-1751 Figure A-5.2



GRAVEL		SAND			SILT OR CLAY
Coarse	Fine	Coarse	Medium	Fine	

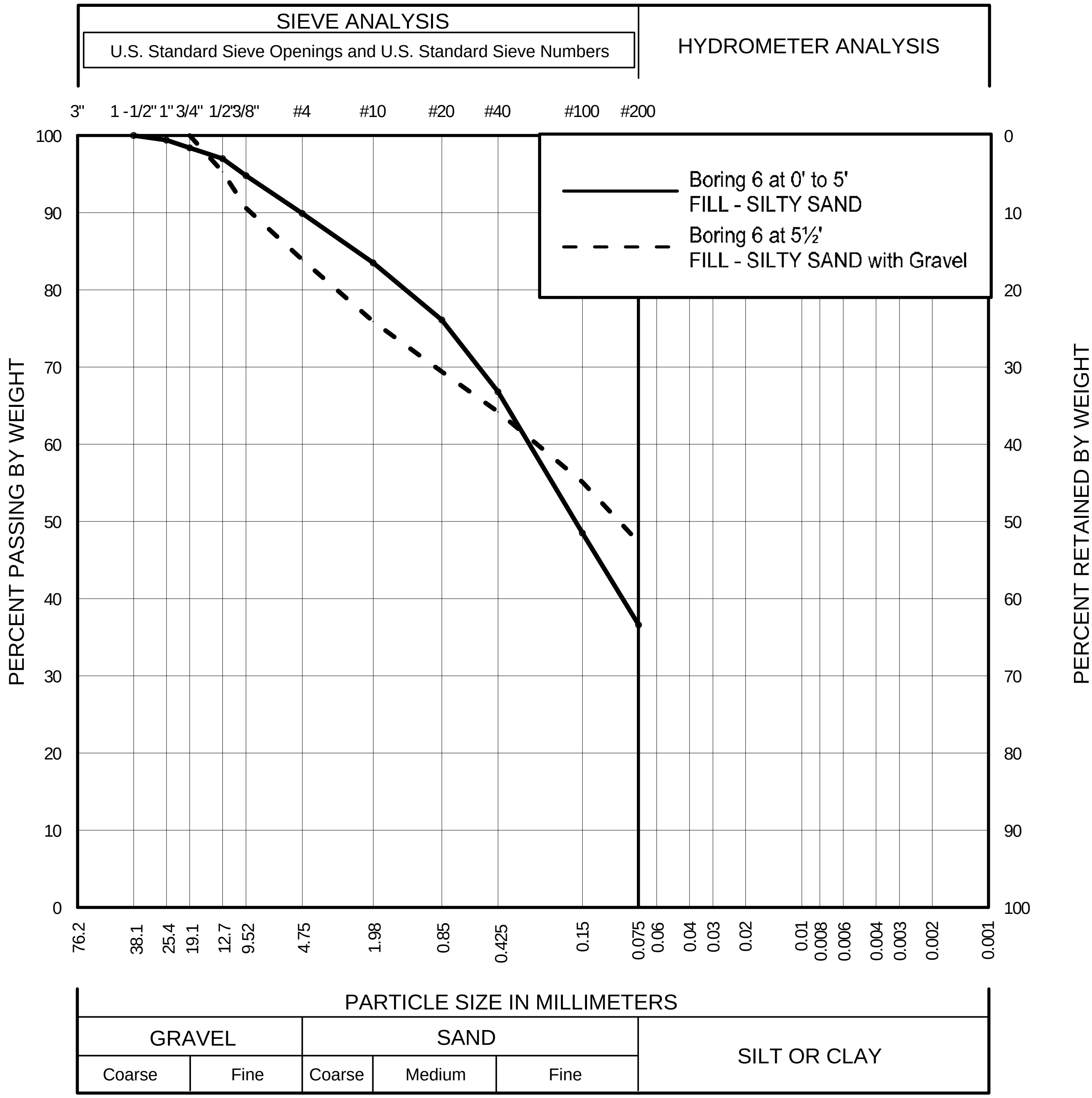
Prepared/Date: JF 1/31/11
Checked/Date: NH 2/7/11

Gas Turbine Replacement Project Aliso Canyon Gas Storage Field Los Angeles County, California	MACTEC	PARTICLE SIZE DISTRIBUTION Project No. 4953-10-1751 Figure A-5.3



Prepared/Date: JF 1/31/11
Checked/Date: NH 2/7/11

Gas Turbine Replacement Project Aliso Canyon Gas Storage Field Los Angeles County, California	MACTEC	PARTICLE SIZE DISTRIBUTION Project No. 4953-10-1751 Figure A-5.4



Prepared/Date: JF 1/31/11
Checked/Date: NH 2/7/11

Gas Turbine Replacement Project Aliso Canyon Gas Storage Field Los Angeles County, California	MACTEC	PARTICLE SIZE DISTRIBUTION Project No. 4953-10-1751 Figure A-5.5

BORING NUMBER AND SAMPLE DEPTH:	1 at 0' to 5'	3 at 0' to 5'
SOIL TYPE:	FILL - SILTY SAND	FILL - SILTY SAND
CONFINING PRESSURE: (lbs./sq. ft.)	144	144
INITIAL MOISTURE CONTENT: (% dry wt.)	11.4	9.4
FINAL MOISTURE CONTENT: (% dry wt.)	18.0	13.6
DRY DENSITY: (lbs/cu.ft.)	105.6	110.9
EXPANSION INDEX:	15	2

Prepared/Date: NH 2/7/11
Checked/Date: JF 2/9/11

Gas Turbine Replacement Project Aliso Canyon Gas Storage Field Los Angeles County, California	MACTEC	EXPANSION INDEX TEST Project 4953-10-1751 Figure A-6

BORING NUMBER AND SAMPLE DEPTH:	B-1 at 0' to 5'	B-2 at 0' to 5'	B-3 at 0' to 5'
SOIL TYPE:	FILL - SILTY SAND	FILL - SILTY SAND	FILL - SILTY SAND
MAXIMUM DRY DENSITY: (lbs./cu.ft.)	120.3	121.8	125.0
OPTIMUM MOISTURE CONTENT: (%)	11.3	9.5	11.0

TEST METHOD: ASTM Designation D1557

Prepared/Date: JF 1/28/11
Checked/Date: NH 2/7/11

Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

MACTEC

COMPACTION TEST DATA
Project 4953-10-1751
Figure A-7.1

BORING NUMBER AND SAMPLE DEPTH:	B-4 at 0' to 10'	B-5 at 0' to 5'
SOIL TYPE:	FILL (SM-ML)	FILL - SANDY SILT
MAXIMUM DRY DENSITY: (lbs./cu.ft.)	125.1	122.5
OPTIMUM MOISTURE CONTENT: (%)	9.8	11.0

TEST METHOD: ASTM Designation D1557

Prepared/Date: JF 1/28/11
Checked/Date: NH 2/7/11

Gas Turbine Replacement Project
Aliso Canyon Gas Storage Field
Los Angeles County, California

MACTEC

COMPACTION TEST DATA
Project 4953-10-1751
Figure A-7.2

AP Engineering & Testing, Inc.

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL

ASTM D 1883-92

Project Name: Aliso Canyon Compressor
Project No. : 4953-10-1751
Boring No.: 3
Sample No.: BULK
Depth (ft.): 0-5
Soil Description : Silty Sand

Tested By : ST Date 01/10/11
Input By: KM Date 01/13/11
Checked By: AP Date 01/15/11

SAMPLE DESCRIPTION BEFORE SOAKING

Mold Number	1
Blows Per Layer	10
Wt of Wet Soil & Mold (gm)	11774
Weight of Mold (gm)	7207
Weight of Wet Soil (gm)	4567
Mold Volume (cu.ft)	0.0818
Container No.	
Wet Wt. Soil + Container (gm)	367.02
Dry Wt. Soil + Container (gm)	356.5
Wt. Container (gm)	258.92
Moisture Content (%)	10.78
Wet Density (pcf)	123.1
Dry Density (pcf)	111.1

SAMPLE PREPARATION

Wt of Hammer (Lbs)	10
No. of Layers	5
No. of Blows/Layer	10
Drop Height (inches)	18
Surcharge Weight (Lbs)	10
Max. Dry Density (pcf)	125.5
Molded Relative Comp (%)	88.5
Req'd % Moisture	11.0
No. of Trials	1
% Retained 3/4" Sieve	2.00%

DEFORMATION DURING SOAKING PERIOD

Sample Length (inch) 5

DATE	TIME	Mold No.: 1	
		Dial Rdgs	Swell (in)
01/10/11	14:45	0.5460	
01/12/11	12:36	0.5550	
			-0.0090
Percent Swell/Collapse (+/-)		-0.18	

AFTER SOAKING

Mold Number	1	
Wt. of Wet Soil + Mold (gm)	11991	
Weight of Mold (gm)	7207	
Weight of Wet Soil (gm)	4784	
Mold Volume (cu.ft)	0.0817	
Moisture Sample	Top	Bottom
Container No.		
Wet Wt. Soil + Container (gm)	736.14	686.68
Dry Wt. Soil + Container (gm)	661.89	617.55
Wt. Container (gm)	188.09	196.82
Mosture Content (%)	15.7	16.4
Average Moisture Content (%)	16.1	
Wet Density (pcf)	129.2	
After Test Dry Density (pcf)	111.3	

TEST LOAD DATA

Piston Diameter (inches): 1.954

Penetration (inch)	Mold No.: 1	
	LOAD (lb)	Stress (psi)
0.000	0	0.00
0.025	109	36.35
0.050	170	56.69
0.075	212	70.70
0.100	245	81.70
0.125	272	90.70
0.150	295	98.37
0.175	323	107.71
0.200	336	112.05
0.225	355	118.38
0.250	370	123.39
0.275	386	128.72
0.300	402	134.06
0.325	415	138.39
0.350	430	143.39
0.375	446	148.73
0.400	461	153.73
0.425	479	159.73
0.450	495	165.07
0.475	515	171.74
0.500	533	177.74

TEST RESULTS

CBR @ .1": 8

CBR @ .2": 7

FIGURE A-8.1

AP Engineering & Testing, Inc.

CALIFORNIA BEARING RATIO (CBR)
OF LABORATORY-COMPACTED SOIL
ASTM D 1883-92

Project Name:	Aliso Canyon Compressor	Tested By :	ST	Date	01/10/11
Project No. :	4953-10-1751	Input By:	KM	Date	01/13/11
Boring No.:	3	Checked By:	AP	Date	01/15/11
Sample No.:	BULK				
Depth (ft.):	0-5				
Soil Description :	Silty Sand				

SAMPLE DESCRIPTION BEFORE SOAKING

Mold Number	2
Blows Per Layer	25
Wt of Wet Soil & Mold & Spacer (gm)	12068
Weight of Mold & Spacer (gm)	7198
Weight of Wet Soil (gm)	4870
Mold Volume (cu.ft)	0.0818
Container No.	
Wet Wt. Soil + Container (gm)	367.02
Dry Wt. Soil + Container (gm)	356.5
Wt. Container (gm)	258.92
Moisture Content (%)	10.78
Wet Density (pcf)	131.3
Dry Density (pcf)	118.5

SAMPLE PREPARATION

Wt of Hammer (Lbs)	10
No. of Layers	5
No. of Blows/Layer	25
Drop Height (inches)	18
Surcharge Weight (Lbs)	10
Max. Dry Density (pcf)	125.5
Molded Relative Comp (%)	94.4
Req'd % Moisture	11.0
No. of Trials	1
% Retained 3/4" Sieve	2.00%

DEFORMATION DURING SOAKING PERIOD

Sample Length (inch) 5

DATE	TIME	Mold No.:	2
		Dial Rdgs	Swell (in)
01/10/11	14:45	0.5670	
01/12/11	12:36	0.5680	
			-0.0010
Percent Swell/Collapse (+/-)			-0.02

AFTER SOAKING

Mold Number	2	
Wt. of Wet Soil + Mold + Base Plate (gm)	12200	
Weight of Mold+ Base Plate (gm)	7198	
Weight of Wet Soil (gm)	5002	
Mold Volume (cu.ft)	0.0818	
Moisture Sample	Top	Bottom
Container No.		
Wet Wt. Soil + Container (gm)	534.80	748.12
Dry Wt. Soil + Container (gm)	492.13	678.07
Wt. Container (gm)	187.29	178.28
Mosture Content (%)	14.0	14.0
Average Moisture Content (%)	14.0	
Wet Density (pcf)	134.8	
After Test Dry Density (pcf)	118.3	

TEST LOAD DATA

Piston Diameter (inches): 1.954

Penetration	Mold No.:	2
(inch)	LOAD (lb)	Stress (psi)
0.000	0	0.00
0.025	278	92.71
0.050	516	172.07
0.078	685	228.43
0.100	821	273.78
0.125	935	311.80
0.150	1032	344.14
0.175	1110	370.16
0.200	1189	396.50
0.225	1277	425.85
0.250	1357	452.52
0.275	1426	475.53
0.300	1485	495.21
0.325	1546	515.55
0.350	1616	538.89
0.375	1684	561.57
0.400	1748	582.91
0.425	1807	602.59
0.450	1874	624.93
0.475	1949	649.94
0.500	2024	674.95

TEST RESULTS

CBR @ .1": **27**

CBR @ .2": **26**

FIGURE A-8.2

AP Engineering & Testing, Inc.

CALIFORNIA BEARING RATIO (CBR)
OF LABORATORY-COMPACTED SOIL
ASTM D 1883-92

Project Name:	Aliso Canyon Compressor	Tested By :	ST	Date	01/10/11
Project No. :	4953-10-1751	Input By:	KM	Date	01/13/11
Boring No.:	3	Checked By:	AP	Date	01/15/11
Sample No.:	BULK				
Depth (ft.):	0-5				
Soil Description :	Silty Sand				

SAMPLE DESCRIPTION BEFORE SOAKING

Mold Number	3
Blows Per Layer	75
Wt of Wet Soil & Mold (gm)	12420
Weight of Mold (gm)	7238
Weight of Wet Soil (gm)	5280
Mold Volume (cu.ft)	0.0818
Container No.	
Wet Wt. Soil + Container (gm)	367.02
Dry Wt. Soil + Container (gm)	356.5
Wt. Container (gm)	258.92
Moisture Content (%)	10.78
Wet Density (pcf)	142.3
Dry Density (pcf)	128.5

SAMPLE PREPARATION

Wt of Hammer (Lbs)	10
No. of Layers	5
No. of Blows/Layer	75
Drop Height (inches)	18
Surcharge Weight (Lbs)	10
Max. Dry Density (pcf)	125.5
Molded Relative Comp (%)	102.4
Req'd % Moisture	11.0
No. of Trials	1
% Retained 3/4" Sieve	2.00%

DEFORMATION DURING SOAKING PERIOD

Sample Length (inch) 5

DATE	TIME	Mold No.:	3
		Dial Rdgs	Swell (in)
01/10/11	14:45	0.6740	
01/12/11	12:36	0.6743	
			-0.0003
Percent Swell/Collapse (+/-)			-0.01

AFTER SOAKING

Mold Number	3	
Wt. of Wet Soil + Mold + Base Plate (gm)	12446	
Weight of Mold+ Base Plate (gm)	7238	
Weight of Wet Soil (gm)	5208	
Mold Volume (cu.ft)	0.0818	
Moisture Sample	Top	Bottom
Container No.		
Wet Wt. Soil + Container (gm)	415.48	399.79
Dry Wt. Soil + Container (gm)	381.48	365.78
Wt. Container (gm)	105.21	106.55
Mosture Content (%)	12.3	13.1
Average Moisture Content (%)	12.7	
Wet Density (pcf)	140.4	
After Test Dry Density (pcf)	124.5	

TEST LOAD DATA

Piston Diameter (inches): 1.954

Penetration	Mold No.:	3
(inch)	LOAD (lb)	Stress (psi)
0.000	0	0.00
0.025	495	165.07
0.050	888	296.12
0.075	1128	376.16
0.100	1319	439.85
0.125	1457	485.87
0.150	1595	531.89
0.175	1712	570.91
0.200	1796	598.92
0.225	1898	632.93
0.250	1979	659.94
0.275	2057	685.95
0.300	2117	705.96
0.325	2186	728.97
0.350	2243	747.98
0.375	2282	760.99
0.400	2345	781.99
0.425	2414	805.00
0.450	2483	828.01
0.475	2546	849.02
0.500	2625	875.37

TEST RESULTS

CBR @ .1": 44

CBR @ .2": 40

FIGURE A-8.3

AP Engineering & Testing, Inc.

CALIFORNIA BEARING RATIO (CBR)
OF LABORATORY-COMPACTED SOIL
ASTM D 1883-92

Project Name:	Aliso Canyon Compressor	Tested By :	ST	Date:	01/10/11
Project No. :	4953-10-1751	Data Input By:	KM	Date:	01/13/11
Boring No.:	3	Checked By:	AP	Date:	01/15/11
Sample No.:	BULK				
Sample Date:	0-5				
Soil Description :	Silty Sand				

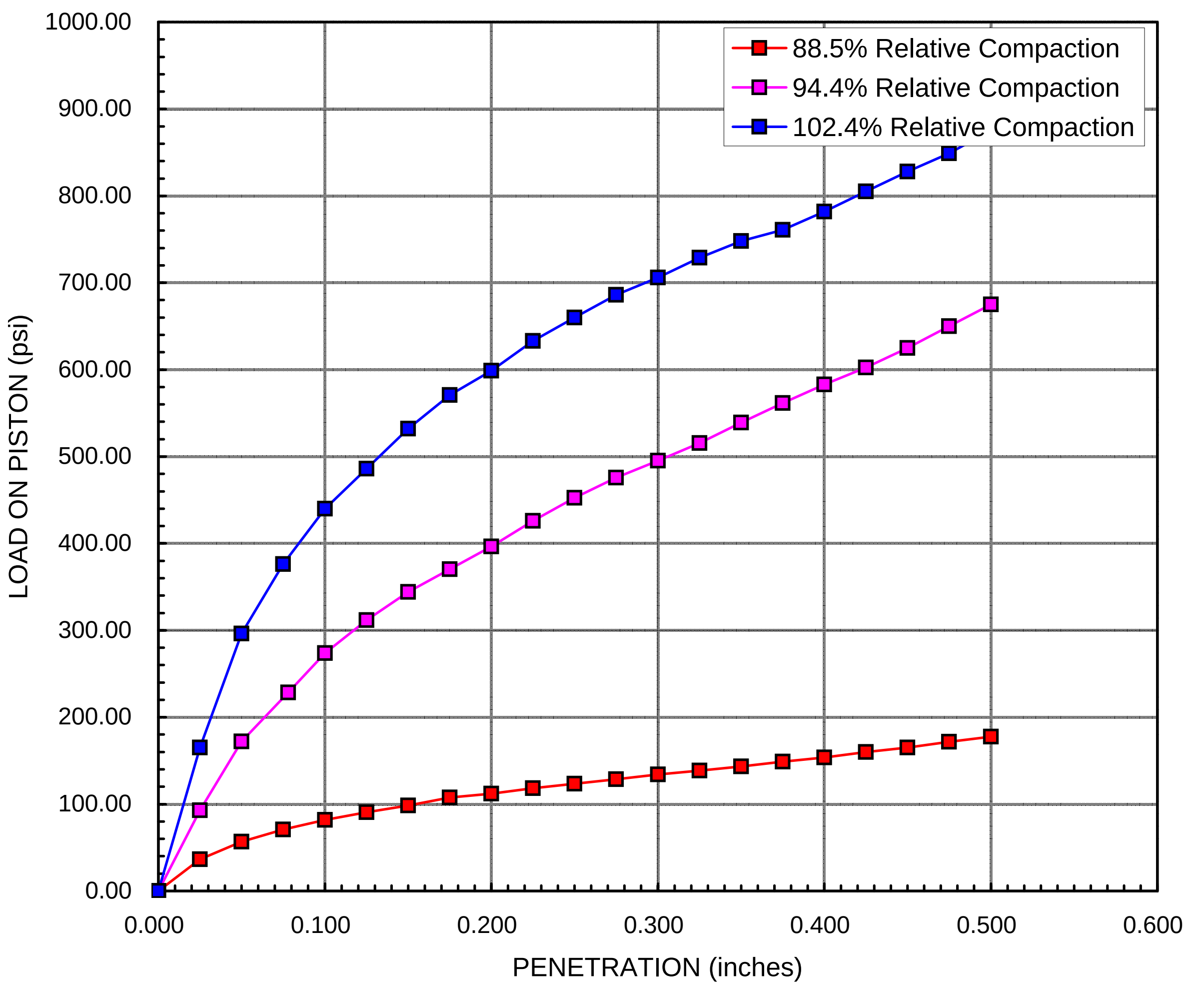


FIGURE A-8.4

AP Engineering & Testing, Inc.

CALIFORNIA BEARING RATIO (CBR)
OF LABORATORY-COMPACTED SOIL
ASTM D 1883-92

Project Name:	Aliso Canyon Compressor	Tested By :	ST	Date:	01/10/11
Project No. :	4953-10-1751	Data Input By:	KM	Date:	01/13/11
Boring No.:	3	Checked By:	AP	Date:	01/15/11
Sample No.:	BULK				
Sample Date:	0-5				
Soil Description :	Silty Sand				

TEST RESULTS

Dry Density (pcf)	Maximum Dry Density by ASTM D 1557 (pcf)	Relative Compaction (%)	Blow Per Layer	CBR @0.1"	CBR @0.2"
111.1	125.5	88.5	10	8	7
118.5	125.5	94.4	25	27	26
128.5	125.5	102.4	75	44	40

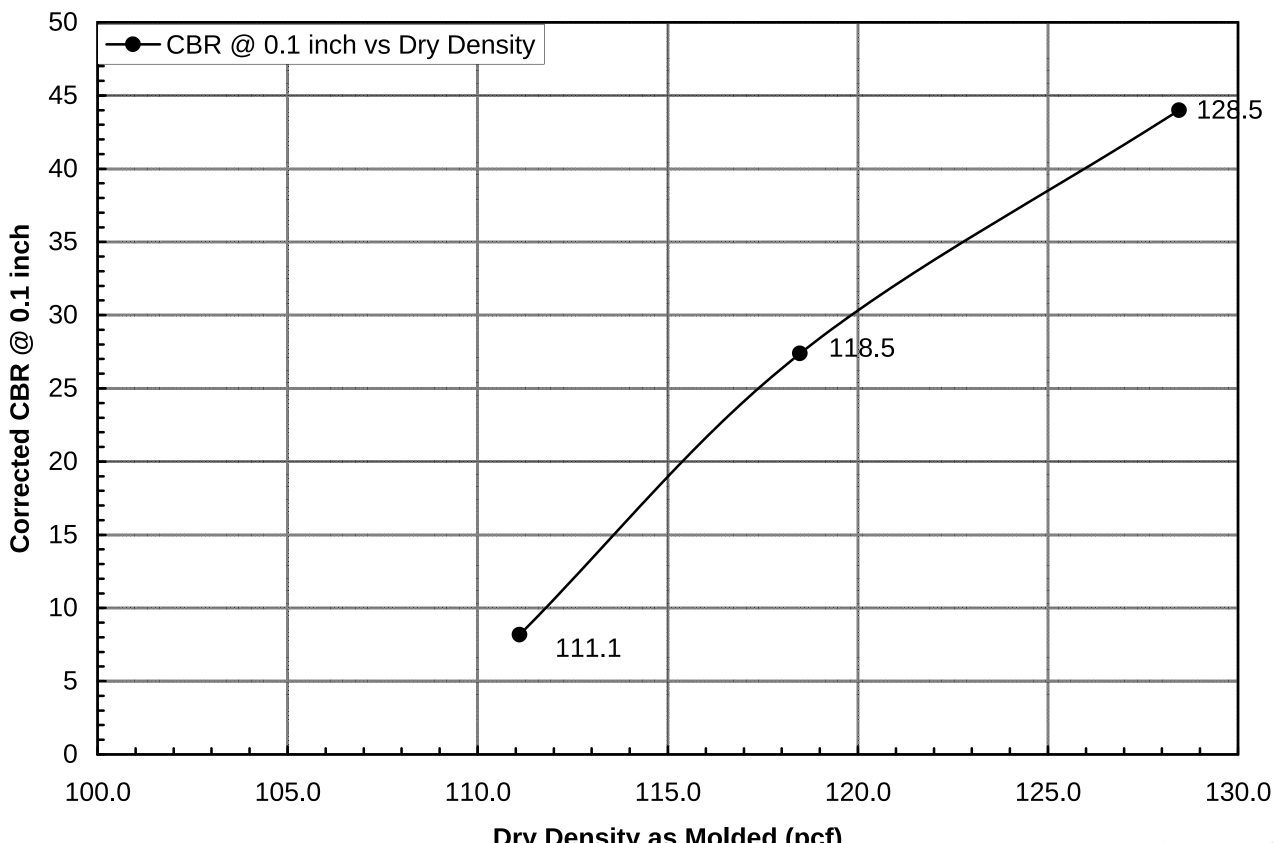


FIGURE A-8.5

AP Engineering & Testing, Inc.

CALIFORNIA BEARING RATIO (CBR)
OF LABORATORY-COMPACTED SOIL
ASTM D 1883-92

Project Name:	Aliso Canyon Compressor	Tested By :	ST	Date:	01/10/11
Project No. :	4953-10-1751	Data Input By:	KM	Date:	01/13/11
Boring No.:	3	Checked By:	AP	Date:	01/15/11
Sample No.:	BULK				
Sample Date:	0-5				
Soil Description :	Silty Sand				

TEST RESULTS

Dry Density (pcf)	Maximum Dry Density by ASTM D 1557 (pcf)	Relative Compaction (%)	Blow Per Layer	CBR @0.1"	CBR @0.2"
111.1	125.5	88.5	10.0	8	7
118.5	125.5	94.4	25.0	27	26
128.5	125.5	102.4	75.0	44	40

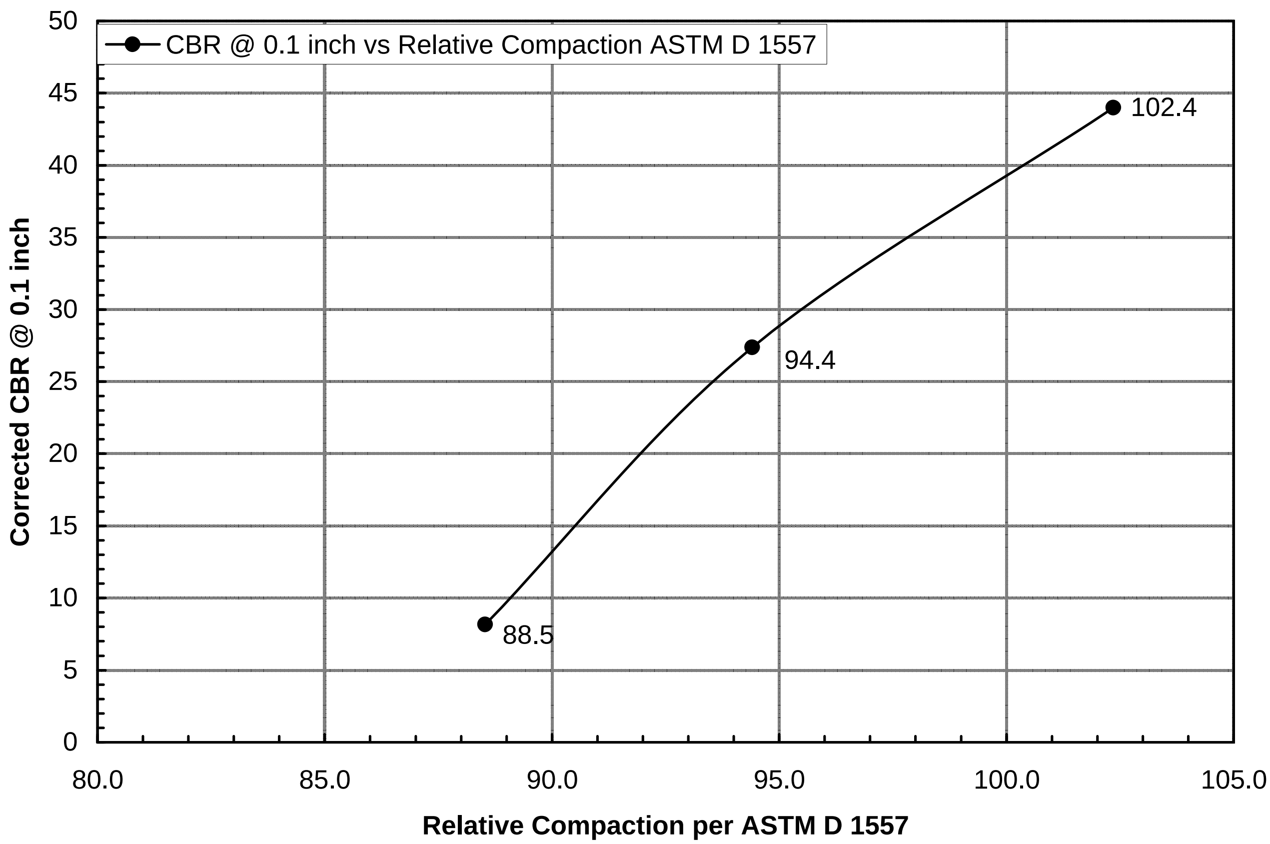


FIGURE A-8.6

AP Engineering & Testing, Inc.

CALIFORNIA BEARING RATIO (CBR)
OF LABORATORY-COMPACTED SOIL
ASTM D 1883-92

Project Name:	Aliso Canyon Compressor	Tested By :	ST	Date	01/10/11
Project No. :	4953-10-1751	Input By:	KM	Date	01/13/11
Boring No.:	5	Checked By:	AP	Date	01/15/11
Sample No.:	BULK				
Depth (ft.):	0-5				
Soil Description :	Silty Sand				

SAMPLE DESCRIPTION BEFORE SOAKING

Mold Number	C
Blows Per Layer	10
Wt of Wet Soil & Mold (gm)	11535
Weight of Mold (gm)	7146
Weight of Wet Soil (gm)	4389
Mold Volume (cu.ft)	0.0818
Container No.	
Wet Wt. Soil + Container (gm)	457.94
Dry Wt. Soil + Container (gm)	438.06
Wt. Container (gm)	258.98
Moisture Content (%)	11.10
Wet Density (pcf)	118.3
Dry Density (pcf)	106.5

SAMPLE PREPARATION

Wt of Hammer (Lbs)	10
No. of Layers	5
No. of Blows/Layer	10
Drop Height (inches)	18
Surcharge Weight (Lbs)	10
Max. Dry Density (pcf)	123.0
Molded Relative Comp (%)	86.6
Req'd % Moisture	11.0
No. of Trials	1
% Retained 3/4" Sieve	0.00%

DEFORMATION DURING SOAKING PERIOD

Sample Length (inch) 5

DATE	TIME	Mold No.:	C
		Dial Rdgs	Swell (in)
01/10/11	14:45	0.2670	
01/12/11	12:36	0.3190	
			-0.0520
Percent Swell/Collapse (+/-)			-1.04

AFTER SOAKING

Mold Number	C	
Wt. of Wet Soil + Mold (gm)	12537	
Weight of Mold (gm)	7146	
Weight of Wet Soil (gm)	5391	
Mold Volume (cu.ft)	0.0809	
Moisture Sample	Top	Bottom
Container No.		
Wet Wt. Soil + Container (gm)	495.96	483.68
Dry Wt. Soil + Container (gm)	430.71	420.81
Wt. Container (gm)	105.60	103.44
Mosture Content (%)	20.1	19.8
Average Moisture Content (%)	19.9	
Wet Density (pcf)	146.8	
After Test Dry Density (pcf)	122.4	

TEST LOAD DATA

Piston Diameter (inches): 1.954

Penetration	Mold No.:	C
(inch)	LOAD (lb)	Stress (psi)
0.000	0	0.00
0.025	44	14.67
0.050	71	23.68
0.075	95	31.68
0.100	108	36.02
0.125	122	40.68
0.150	137	45.69
0.175	151	50.35
0.200	166	55.36
0.225	180	60.03
0.250	193	64.36
0.275	206	68.70
0.300	220	73.36
0.325	233	77.70
0.350	244	81.37
0.375	255	85.04
0.400	267	89.04
0.425	279	93.04
0.450	289	96.37
0.475	300	100.04
0.500	310	103.38

TEST RESULTS

CBR @ .1": 4

CBR @ .2": 4

AP Engineering & Testing, Inc.

CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOIL

ASTM D 1883-92

Project Name:	Aliso Canyon Compressor	Tested By :	ST	Date	01/10/11
Project No. :	4953-10-1751	Input By:	KM	Date	01/13/11
Boring No.:	5	Checked By:	AP	Date	01/15/11
Sample No.:	BULK				
Depth (ft.):	0-5				
Soil Description :	Silty Sand				

SAMPLE DESCRIPTION BEFORE SOAKING

Mold Number	A
Blows Per Layer	25
Wt of Wet Soil & Mold & Spacer (gm)	11870
Weight of Mold & Spacer (gm)	7170
Weight of Wet Soil (gm)	4700
Mold Volume (cu.ft)	0.0818
Container No.	
Wet Wt. Soil + Container (gm)	457.94
Dry Wt. Soil + Container (gm)	438.06
Wt. Container (gm)	258.98
Moisture Content (%)	11.10
Wet Density (pcf)	126.7
Dry Density (pcf)	114.0

SAMPLE PREPARATION

Wt of Hammer (Lbs)	10
No. of Layers	5
No. of Blows/Layer	25
Drop Height (inches)	18
Surcharge Weight (Lbs)	10
Max. Dry Density (pcf)	123.0
Molded Relative Comp (%)	92.7
Req'd % Moisture	11.0
No. of Trials	1
% Retained 3/4" Sieve	0.00%

DEFORMATION DURING SOAKING PERIOD

Sample Length (inch) 5

DATE	TIME	Mold No.:	A
		Dial Rdgs	Swell (in)
01/10/11	14:45	0.2880	
01/12/11	12:36	0.3250	
			-0.0370
Percent Swell/Collapse (+/-)			-0.74

AFTER SOAKING

Mold Number	A	
Wt. of Wet Soil + Mold + Base Plate (gm)	12754	
Weight of Mold+ Base Plate (gm)	7170	
Weight of Wet Soil (gm)	5584	
Mold Volume (cu.ft)	0.0812	
Moisture Sample	Top	Bottom
Container No.		
Wet Wt. Soil + Container (gm)	477.63	454.67
Dry Wt. Soil + Container (gm)	423.32	402.85
Wt. Container (gm)	105.57	106.77
Mosture Content (%)	17.1	17.5
Average Moisture Content (%)	17.3	
Wet Density (pcf)	151.6	
After Test Dry Density (pcf)	129.3	

TEST LOAD DATA

Piston Diameter (inches): 1.954

Penetration (inch)	Mold No.: A LOAD (lb)	Stress (psi)
0.000	0	0.00
0.025	96	32.01
0.050	203	67.70
0.078	303	101.04
0.100	379	126.39
0.125	438	146.06
0.150	495	165.07
0.175	557	185.74
0.200	612	204.09
0.225	659	219.76
0.250	698	232.76
0.275	738	246.10
0.300	781	260.44
0.325	819	273.11
0.350	857	285.79
0.375	888	296.12
0.400	919	306.46
0.425	955	318.47
0.450	988	329.47
0.475	1021	340.48
0.500	1050	350.15

TEST RESULTS

CBR @ .1": 13

CBR @ .2": 14

FIGURE A-8.8

AP Engineering & Testing, Inc.

CALIFORNIA BEARING RATIO (CBR)
OF LABORATORY-COMPACTED SOIL
ASTM D 1883-92

Project Name:	Aliso Canyon Compressor	Tested By :	ST	Date	01/10/11
Project No. :	4953-10-1751	Input By:	KM	Date	01/13/11
Boring No.:	5	Checked By:	AP	Date	01/15/11
Sample No.:	BULK				
Depth (ft.):	0-5				
Soil Description :	Silty Sand				

SAMPLE DESCRIPTION BEFORE SOAKING

Mold Number	B
Blows Per Layer	75
Wt of Wet Soil & Mold (gm)	12209
Weight of Mold (gm)	7154
Weight of Wet Soil (gm)	5280
Mold Volume (cu.ft)	0.0818
Container No.	
Wet Wt. Soil + Container (gm)	457.94
Dry Wt. Soil + Container (gm)	438.06
Wt. Container (gm)	258.98
Moisture Content (%)	11.10
Wet Density (pcf)	142.3
Dry Density (pcf)	128.1

SAMPLE PREPARATION

Wt of Hammer (Lbs)	10
No. of Layers	5
No. of Blows/Layer	75
Drop Height (inches)	18
Surcharge Weight (Lbs)	10
Max. Dry Density (pcf)	123.0
Molded Relative Comp (%)	104.1
Req'd % Moisture	11.0
No. of Trials	1
% Retained 3/4" Sieve	0.00%

DEFORMATION DURING SOAKING PERIOD

Sample Length (inch) 5

DATE	TIME	Mold No.:	B
		Dial Rdgs	Swell (in)
01/10/11	14:45	0.3170	
01/12/11	12:36	0.3230	
			-0.0060
Percent Swell/Collapse (+/-)			-0.12

AFTER SOAKING

Mold Number	B	
Wt. of Wet Soil + Mold + Base Plate (gm)	12999	
Weight of Mold+ Base Plate (gm)	7154	
Weight of Wet Soil (gm)	5845	
Mold Volume (cu.ft)	0.0817	
Moisture Sample	Top	Bottom
Container No.		
Wet Wt. Soil + Container (gm)	385.52	505.09
Dry Wt. Soil + Container (gm)	348.75	454.25
Wt. Container (gm)	105.37	104.13
Mosture Content (%)	15.1	14.5
Average Moisture Content (%)	14.8	
Wet Density (pcf)	157.7	
After Test Dry Density (pcf)	137.4	

TEST LOAD DATA

Piston Diameter (inches): 1.954

Penetration	Mold No.:	B
(inch)	LOAD (lb)	Stress (psi)
0.000	0	0.00
0.025	120	40.02
0.050	388	129.39
0.075	812	270.78
0.100	1177	392.50
0.125	1445	481.87
0.150	1698	566.24
0.175	1947	649.27
0.200	2136	712.30
0.225	2292	764.32
0.250	2431	810.67
0.275	2579	860.03
0.300	2724	908.38
0.325	2852	951.07
0.350	2966	989.08
0.375	3086	1029.10
0.400	3209	1070.12
0.425	3337	1112.80
0.450	3454	1151.82
0.475	3580	1193.83
0.500	3667	1222.85

TEST RESULTS

CBR @ .1": **48**

CBR @ .2": **51**

FIGURE A-8.9

AP Engineering & Testing, Inc.

CALIFORNIA BEARING RATIO (CBR)
OF LABORATORY-COMPACTED SOIL
ASTM D 1883-92

Project Name:	Aliso Canyon Compressor	Tested By :	ST	Date:	01/10/11
Project No. :	4953-10-1751	Data Input By:	KM	Date:	01/13/11
Boring No.:	5	Checked By:	AP	Date:	01/15/11
Sample No.:	BULK				
Sample Date:	0-5				
Soil Description :	Silty Sand				

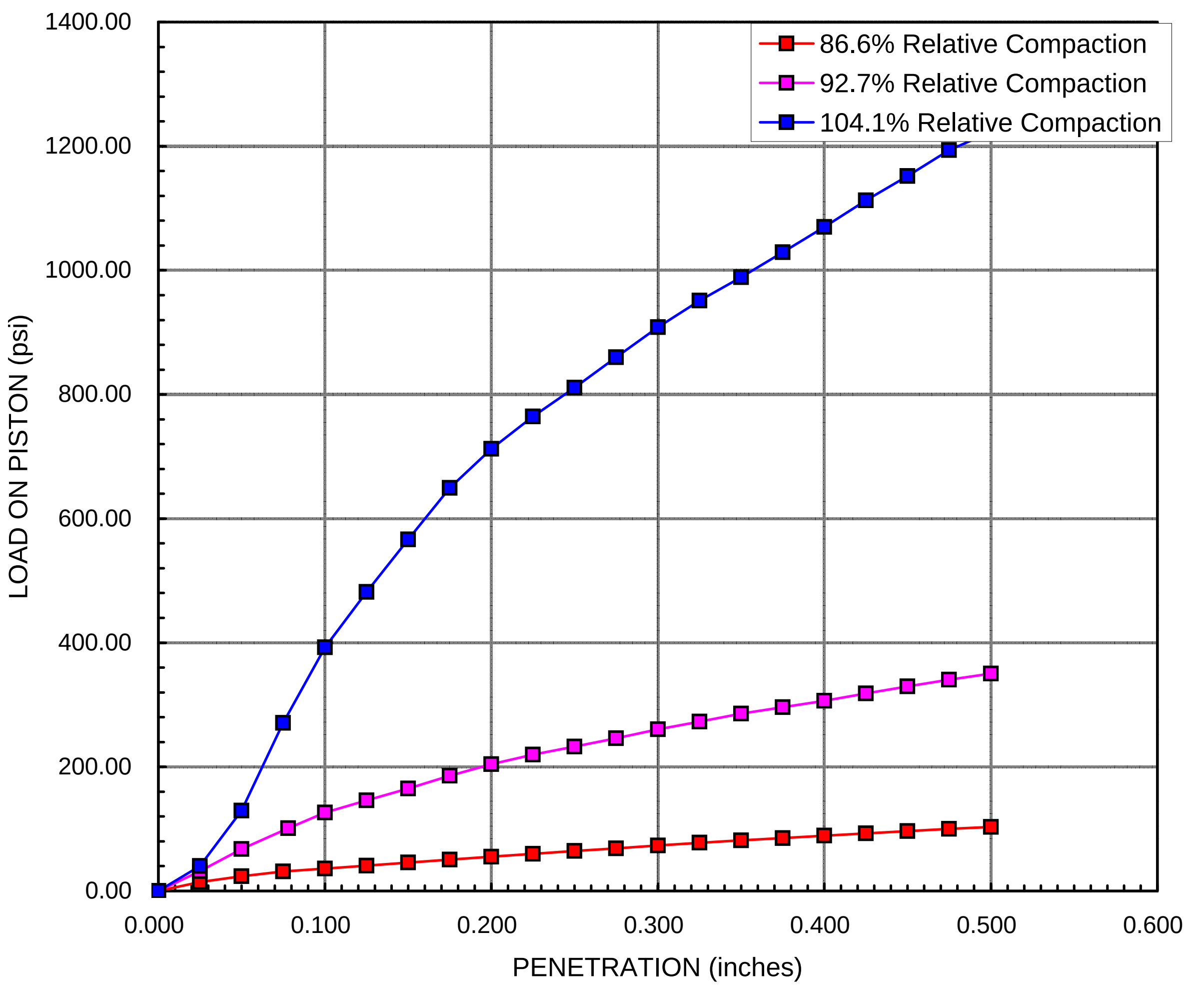


FIGURE A-8.10

AP Engineering & Testing, Inc.

CALIFORNIA BEARING RATIO (CBR)
OF LABORATORY-COMPACTED SOIL
ASTM D 1883-92

Project Name:	Aliso Canyon Compressor	Tested By :	ST	Date:	01/10/11
Project No. :	4953-10-1751	Data Input By:	KM	Date:	01/13/11
Boring No.:	5	Checked By:	AP	Date:	01/15/11
Sample No.:	BULK				
Sample Date:	0-5				
Soil Description :	Silty Sand				

TEST RESULTS

Dry Density (pcf)	Maximum Dry Density by ASTM D 1557 (pcf)	Relative Compaction (%)	Blow Per Layer	CBR @0.1"	CBR @0.2"
106.5	123.0	86.6	10	4	4
114.0	123.0	92.7	25	13	14
128.1	123.0	104.1	75	48	51

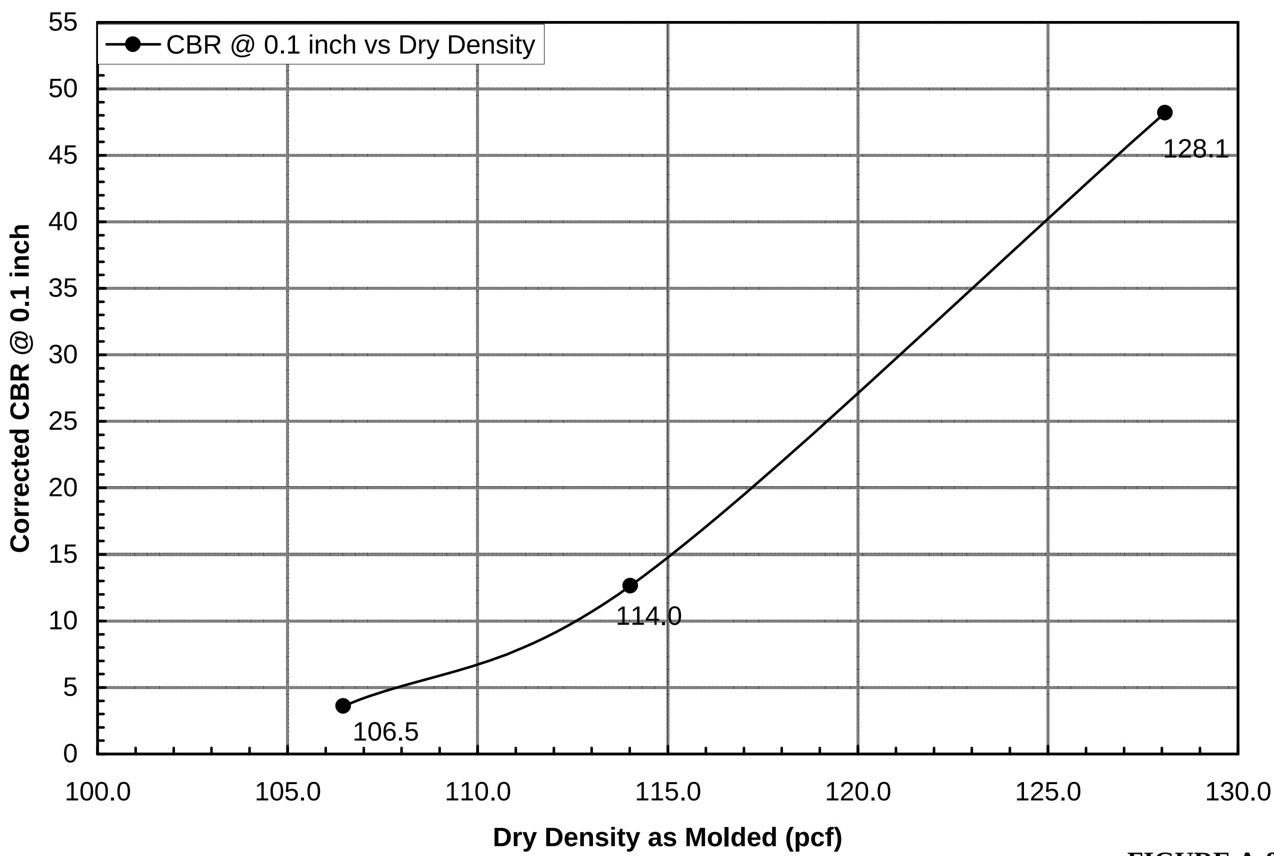


FIGURE A-8.11

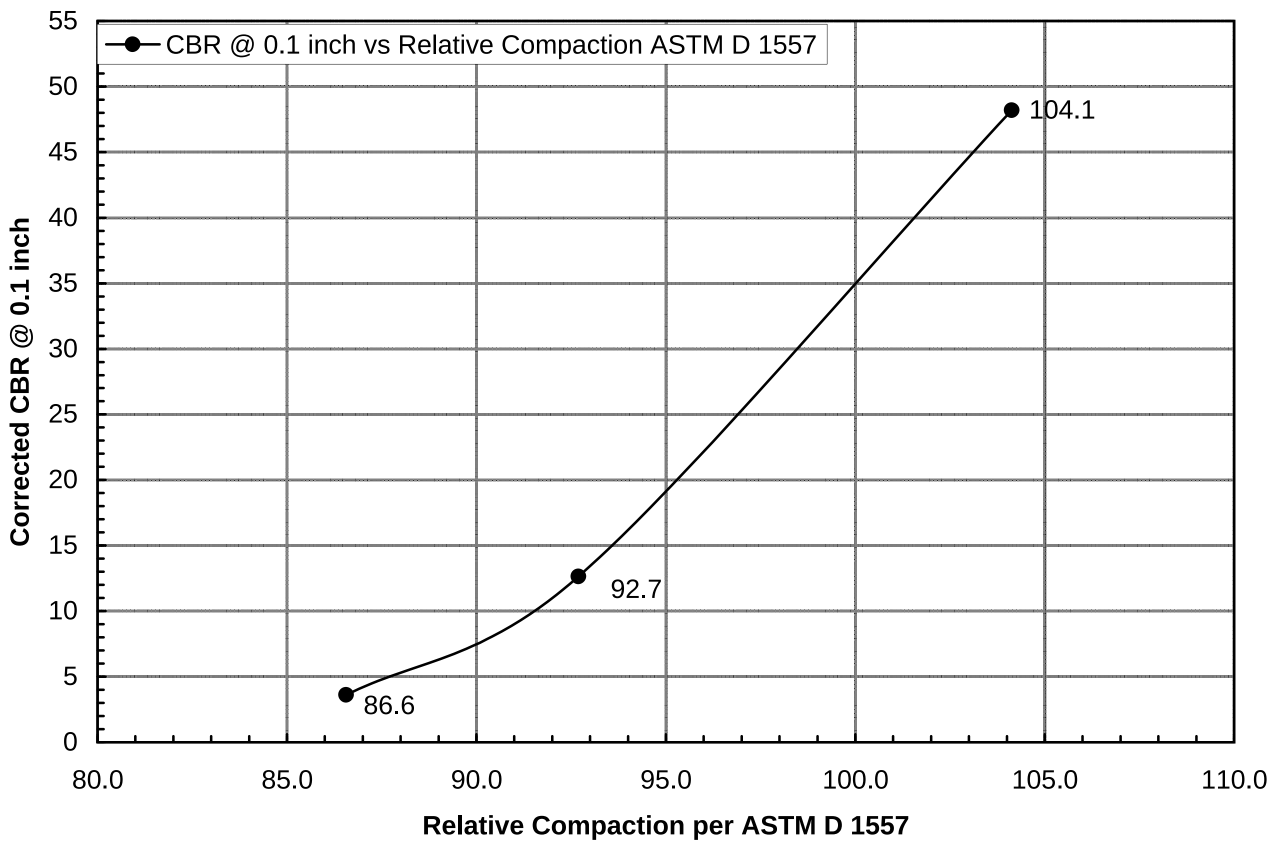
AP Engineering & Testing, Inc.

CALIFORNIA BEARING RATIO (CBR)
OF LABORATORY-COMPACTED SOIL
ASTM D 1883-92

Project Name:	Aliso Canyon Compressor	Tested By :	ST	Date:	01/10/11
Project No. :	4953-10-1751	Data Input By:	KM	Date:	01/13/11
Boring No.:	5	Checked By:	AP	Date:	01/15/11
Sample No.:	BULK				
Sample Date:	0-5				
Soil Description :	Silty Sand				

TEST RESULTS

Dry Density (pcf)	Maximum Dry Density by ASTM D 1557 (pcf)	Relative Compaction (%)	Blow Per Layer	CBR @0.1"	CBR @0.2"
106.5	123.0	86.6	10.0	4	4
114.0	123.0	92.7	25.0	13	14
128.1	123.0	104.1	75.0	48	51



BORING NUMBER AND SAMPLE DEPTH:	B-3 at 25'
SOIL TYPE:	FILL - SANDY SILT
SURCHARGE PRESSURE: (lbs./sq.ft.)	3,000
PERCENT HYDROCONSOLIDATION: (%)	0.04

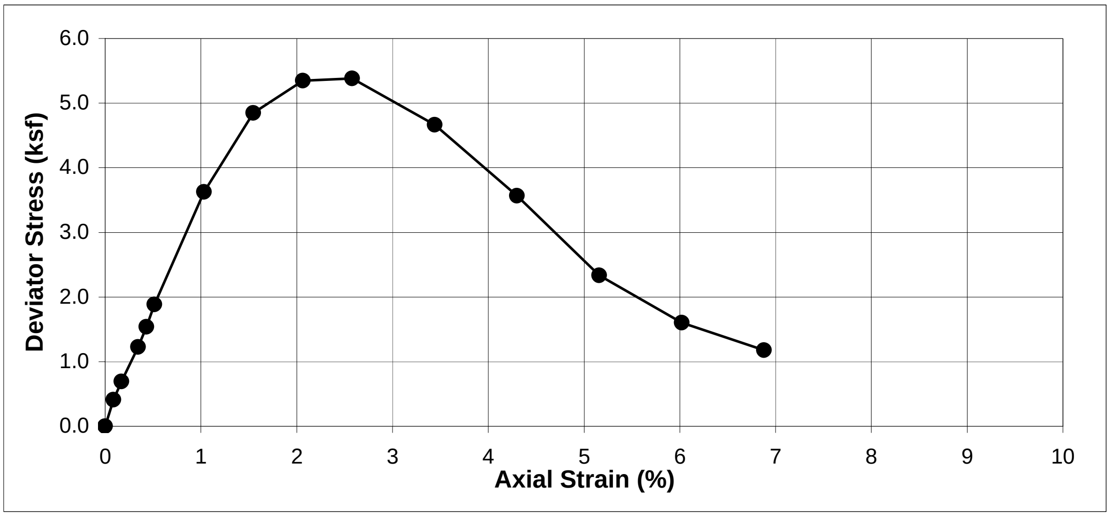
Prepared/Date: JF 2/3/11
Checked/Date: NH 2/7/11

AP Engineering & Testing, Inc.

UNCONFINED COMPRESSION TEST RESULTS

Project Name:	Aliso Canyon Compressor	Sample Type:	Cal Mod
Project No.:	4953-10-1751	Soil Description	Sandy Clay
Boring No.:	3	Dry Density (pcf):	100.6
Sample No.:	CM3	Moisture Content (%)	20.2
Depth (feet):	15	Test Date:	01/13/11

Sample Diameter (inch):	2.410	Wt. Wet Soil+Container(gms)	984.58
Sample Hieght (inch):	5.814	Wt. Dry Soil+Container(gms)	844.14
Sample Weight (gms):	842.36	Wt. Container (gms)	149.01



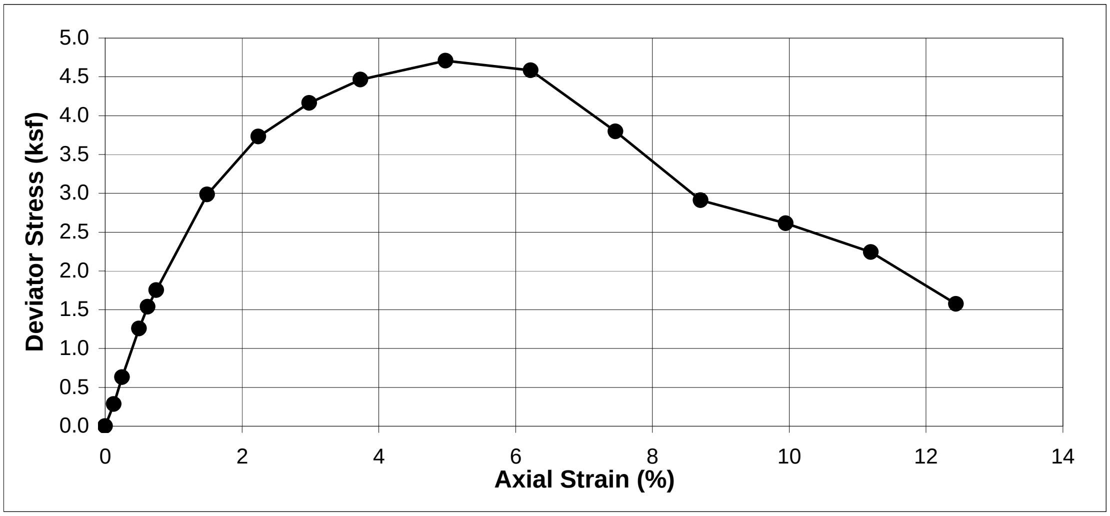
Load (lbs)	Deformation (inch)	Area (sq.in)	Deviator Stress (ksf)	Axial Strain (%)
0	0.00	4.56	0.00	0.00
13	0.01	4.57	0.41	0.09
22	0.01	4.57	0.69	0.17
39	0.02	4.58	1.23	0.34
49	0.03	4.58	1.54	0.43
60	0.03	4.59	1.88	0.52
116	0.06	4.61	3.62	1.03
156	0.09	4.63	4.85	1.55
173	0.12	4.66	5.35	2.06
175	0.15	4.68	5.38	2.58
153	0.20	4.72	4.66	3.44
118	0.25	4.77	3.56	4.30
78	0.30	4.81	2.34	5.16
54	0.35	4.85	1.60	6.02
40	0.40	4.90	1.18	6.88

AP Engineering & Testing, Inc.

UNCONFINED COMPRESSION TEST RESULTS

Project Name:	Aliso Canyon Compressor	Sample Type:	Cal Mod
Project No.:	4953-10-1751	Soil Description	Sandy Clay
Boring No.:	3	Dry Density (pcf):	119.8
Sample No.:	CM5	Moisture Content (%)	21.4
Depth (feet):	25	Test Date:	01/13/11

Sample Diameter (inch):	2.411	Wt. Wet Soil+Container(gms)	843.52
Sample Hieght (inch):	4.020	Wt. Dry Soil+Container(gms)	720.71
Sample Weight (gms):	700.76	Wt. Container (gms)	147.95



Load (lbs)	Deformation (inch)	Area (sq.in)	Deviator Stress (ksf)	Axial Strain (%)
0	0.00	4.57	0.00	0.00
9	0.01	4.57	0.28	0.12
20	0.01	4.58	0.63	0.25
40	0.02	4.59	1.26	0.50
49	0.03	4.59	1.54	0.62
56	0.03	4.60	1.75	0.75
96	0.06	4.63	2.98	1.49
121	0.09	4.67	3.73	2.24
136	0.12	4.71	4.16	2.99
147	0.15	4.74	4.46	3.73
157	0.20	4.80	4.71	4.98
155	0.25	4.87	4.58	6.22
130	0.30	4.93	3.79	7.46
101	0.35	5.00	2.91	8.71
92	0.40	5.07	2.61	9.95
80	0.45	5.14	2.24	11.19
57	0.50	5.21	1.57	12.44

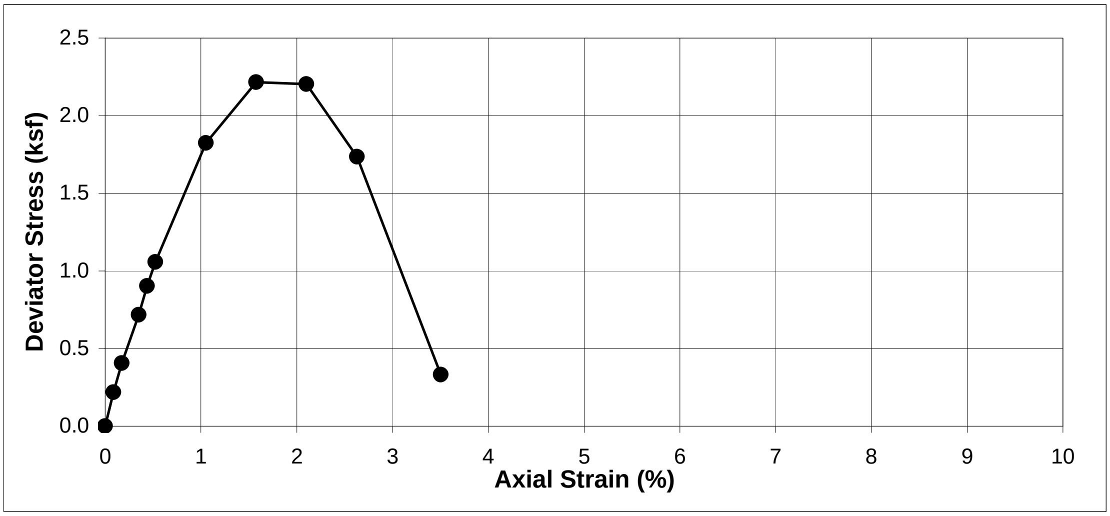
FIGURE A-10.2

AP Engineering & Testing, Inc.

UNCONFINED COMPRESSION TEST RESULTS

Project Name:	Aliso Canyon Compressor	Sample Type:	Cal Mod
Project No.:	4953-10-1751	Soil Description	Weater Bedrock
Boring No.:	5	Dry Density (pcf):	110.9
Sample No.:	CM3	Moisture Content (%)	15.8
Depth (feet):	15	Test Date:	01/13/11

Sample Diameter (inch):	2.422	Wt. Wet Soil+Container(gms)	1031.07
Sample Hieght (inch):	5.707	Wt. Dry Soil+Container(gms)	910.52
Sample Weight (gms):	886.64	Wt. Container (gms)	149.63



Load (lbs)	Deformation (inch)	Area (sq.in)	Deviator Stress (ksf)	Axial Strain (%)
0	0.00	4.61	0.00	0.00
7	0.01	4.61	0.22	0.09
13	0.01	4.62	0.41	0.18
23	0.02	4.62	0.72	0.35
29	0.03	4.63	0.90	0.44
34	0.03	4.63	1.06	0.53
59	0.06	4.66	1.82	1.05
72	0.09	4.68	2.21	1.58
72	0.12	4.71	2.20	2.10
57	0.15	4.73	1.73	2.63
11	0.20	4.77	0.33	3.50

FIGURE A-10.3

January 24, 2011 via email: DChaudhuri@mactec.com

MACTEC
5628 East Slauson Avenue
Los Angeles, CA 90040

Attention: Mr. Debanik Chaudhuri, Ph.D., P.E., G.E.

Re: Soil Corrosivity Study
Southern California Gas-Aliso Canyon
Compressor Station
Chatsworth, California
SA #11-0027SCS, MACTEC #4953-10-1751

INTRODUCTION

Laboratory tests have been completed on three soil samples provided for the referenced project. The purpose of these tests was to determine if the soils might have deleterious effects on underground utility piping and concrete structures. Schiff Associates assumes that the samples provided are representative of the most corrosive soils at the site.

The proposed construction consists of a compressor and associated equipment. The site is located near Chatsworth, California. The water table is reportedly 15 feet deep.

The scope of this study is limited to a determination of soil corrosivity and general corrosion control recommendations for materials likely to be used for construction. Our recommendations do not constitute, and are not meant as a substitute for, design documents for the purpose of construction. If the architects and/or engineers desire more specific information, designs, specifications, or review of design, Schiff Associates will be happy to work with them as a separate phase of this project.

LABORATORY SOIL CORROSIVITY TESTS

The electrical resistivity of each sample was measured in a soil box in its as-received condition and again per CTM 643 with incremental additions of distilled water. The pH of the saturated samples was also measured per CTM 643. A 5:1 water:soil extract from each sample was chemically analyzed for the major soluble salts commonly found in soil per CTM 422 and 417. Test results are shown in Table 1.

SOIL CORROSIVITY

A major factor in determining soil corrosivity is electrical resistivity. The electrical resistivity of a soil is a measure of its resistance to the flow of electrical current. Corrosion of buried metal is an electrochemical process in which the amount of metal loss due to corrosion is directly proportional to the flow of electrical current (DC) from the metal into the soil. Corrosion currents, following Ohm's Law, are inversely proportional to soil resistivity. Lower electrical resistivities result from higher moisture and soluble salt contents and indicate corrosive soil.

A correlation between electrical resistivity and corrosivity toward ferrous metals is:[1]

Soil Resistivity in ohm-centimeters	Corrosivity Category
Greater than 10,000	Mildly Corrosive
2,000 to 10,000	Moderately Corrosive
1,000 to 2,000	Corrosive
0 to 1,000	Severely Corrosive

Other soil characteristics that may influence corrosivity towards metals are pH, soluble salt content, soil types, aeration, anaerobic conditions, and site drainage.

Electrical resistivities were in the mildly corrosive category with as-received moisture. When saturated, the resistivities were in the corrosive to severely corrosive categories. The resistivities dropped considerably with added moisture because the samples were dry as-received.

Soil pH values varied from 7.7 to 7.8. This range is mildly alkaline.[2] These values do not particularly increase soil corrosivity.

The soluble salt content of the samples ranged from low to moderate.

Ammonium and nitrate were detected in low concentrations.

Tests were not made for sulfide and negative oxidation-reduction (redox) potential because these samples did not exhibit characteristics typically associated with anaerobic conditions.

This soil is classified as corrosive to ferrous metals.

CORROSION CONTROL RECOMMENDATIONS

The life of buried materials depends on thickness, strength, loads, construction details, soil moisture, etc., in addition to soil corrosivity, and is, therefore, difficult to predict. Of more practical value are corrosion control methods that will increase the life of materials that would be subject to significant corrosion.

---

[1] *Romanoff, Melvin. Underground Corrosion, NBS Circular 579. Reprinted by NACE. Houston, TX, 1989, pp. 166–167.*

[2] *Romanoff, Melvin. Underground Corrosion, NBS Circular 579. Reprinted by NACE. Houston, TX, 1989, p. 8.*

The following recommendations are based on the soil conditions discussed in the Soil Corrosivity section above. Unless otherwise indicated, these recommendations apply to the entire site or alignment.

Steel Pipe

Implement *all* the following measures:

1. Underground steel pipe with rubber gasketed, mechanical, grooved end, or other nonconductive type joints should be bonded for electrical continuity. Electrical continuity is necessary for corrosion monitoring and cathodic protection.
2. Install corrosion monitoring test stations to facilitate corrosion monitoring and the application of cathodic protection:
   a. At each end of the pipeline.
   b. At each end of all casings.
   c. Other locations as necessary so the interval between test stations does not exceed 1,200 feet.
3. To prevent dissimilar metal corrosion cells and to facilitate the application of cathodic protection, electrically isolate each buried steel pipeline per NACE Standard SP0286 from:
   a. Dissimilar metals.
   b. Dissimilarly coated piping (cement-mortar vs. dielectric).
   c. Above ground steel pipe.
   d. All existing piping.
4. Choose one of the following corrosion control options:

   OPTION 1

   a. Apply a suitable dielectric coating intended for underground use such as:
      i. Polyurethane per AWWA C222 *or*
      ii. Extruded polyethylene per AWWA C215 *or*
      iii. A tape coating system per AWWA C214 *or*
      iv. Hot applied coal tar enamel per AWWA C203 *or*
      v. Fusion bonded epoxy per AWWA C213.
   b. Apply cathodic protection to steel piping as per NACE Standard SP0169.

   OPTION 2 (For waterlines only)

   a. As an alternative to dielectric coating and cathodic protection, apply a ¾-inch cement mortar coating per AWWA C205 or encase in concrete 3 inches thick, using any type of cement. Joint bonds, test stations, and insulated joints are still required for these alternatives.

NOTE: Some steel piping systems, such as for oil, gas, and high-pressure piping systems, have special corrosion and cathodic protection requirements that must be evaluated for each specific application. Federal Regulation 192 (Transportation of Natural Gas and Other Gases by Pipeline) applies to corrosion control of all natural gas piping.

Iron Pipe

Implement *all* the following measures:

1. Electrically insulate underground iron pipe from dissimilar metals and from above ground iron pipe with insulating joints per NACE Standard SP0286.
2. Bond all nonconductive type joints for electrical continuity. Electrical continuity is necessary for corrosion monitoring and cathodic protection.
3. Install corrosion monitoring test stations to facilitate corrosion monitoring and the application of cathodic protection:
   a. At each end of the pipeline.
   b. At each end of any casings.
   c. Other locations as necessary so the interval between test stations does not exceed 1,200 feet.
4. Choose one of the following corrosion control options:

   OPTION 1

   a. Apply a suitable coating intended for underground use such as:
      i. Polyethylene encasement per AWWA C105; *or*
      ii. Epoxy coating; *or*
      iii. Polyurethane; *or*
      iv. Wax tape.

      NOTE: The thin factory-applied asphaltic coating applied to ductile iron pipe for transportation and aesthetic purposes does not constitute a corrosion control coating.

   b. Apply cathodic protection to cast and ductile iron piping as per NACE Standard SP0169.

   OPTION 2 (For waterlines only)

   a. As an alternative to dielectric coating and cathodic protection, concrete encase all buried portions of metallic piping so that there is a minimum of 3 inches of concrete cover provided over and around surfaces of pipe, fittings, and valves using any type of cement.

Copper Tubing

Implement *all* the following measures:

1. Place cold water copper tubing in an 8-mil polyethylene sleeve or encase in double 4-mil thick polyethylene sleeves and bed and backfill with clean sand at least 2 inches thick surrounding the tubing. Clean sand should have a minimum resistivity of no less than 3000 ohm-cm, and a pH of 6.0–8.0. Copper tubing for cold water can also be treated the same as for hot water.
2. Hot water tubing may be subject to a higher corrosion rate. Protect hot copper tubing by one of the following measures:
   a. Preventing soil contact. Soil contact may be prevented by placing the tubing above ground or encasing the tubing with PVC pipe with solvent-welded joints. *or*
   b. Applying cathodic protection per NACE Standard SP0169. The amount of cathodic protection current needed can be minimized by coating the tubing.

Plastic and Vitrified Clay Pipe

1. No special precautions are required for plastic and vitrified clay piping placed underground from a corrosion viewpoint.

2. Protect all metallic fittings and valves with wax tape per AWWA C217 or epoxy.

All Pipe

1. On all pipes, appurtenances, and fittings not protected by cathodic protection, coat bare metal such as valves, bolts, flange joints, joint harnesses, and flexible couplings with wax tape per AWWA C217 after assembly.

2. Where metallic pipelines penetrate concrete structures such as building floors, vault walls, and thrust blocks use plastic sleeves, rubber seals, or other dielectric material to prevent pipe contact with the concrete and reinforcing steel.

Concrete

1. From a corrosion standpoint, any type of cement may be used for concrete structures and pipe because the sulfate concentration is negligible, 0 to 0.1 percent.[3,4,5,6]
2. Standard concrete cover over reinforcing steel may be used for concrete structures and pipe in contact with these soils due to the low chloride concentration[7] found onsite.

---

[3] 1997 Uniform Building Code (UBC) Table 19-A-4
[4] 2006 International Building Code (IBC) which refers to American Concrete Institute (ACI-318) Table 4.3.1
[5] 2006 International Residential Code (IRC) which refers to American Concrete Institute (ACI-318) Table 4.3.1
[6] 2007 California Building Code (CBC) which refers to American Concrete Institute (ACI-318) Table 4.3.1
[7] Design Manual 303: Concrete Cylinder Pipe. Ameron. p.65

Concrete Piles

1. It is assumed that prestressed concrete piles will contain about 8 sacks of type V cement per cubic yard of concrete, a water/cement ratio not exceeding 0.45, and 2 inches of concrete cover. No further corrosion control measures are required for such piles.

2. If ground water is present, solid steel lifting lugs are recommended to prevent ground water from wicking into the pile interior. If wire rope lifting lugs are used, they should be carefully drilled out 1.5 inches deep and the hole filled with epoxy.

Steel Reinforced Cast in Place Concrete Piles

1. Protect steel reinforced cast-in-place and cast-in-drilled-hole concrete piles the same way as concrete structures mentioned under the concrete structures section in this report.

CLOSURE

Our services have been performed with the usual thoroughness and competence of the engineering profession. No other warranty or representation, either expressed or implied, is included or intended.

Please call if you have any questions.

Respectfully Submitted,
SCHIFF ASSOCIATES

Leobardo Solis

Ronald Z. Hodgman, P.E.

Enc: Table 1

Table 1 - Laboratory Tests on Soil Sample(s)

MACTEC
Southern California Gas - Aliso Canyon Compressor Station
Your #4953-10-1751, SA #11-0027SCS
10-Jan-11

Sample ID			B1 @ 0-5' ML	B2 @ 15.5' ML	B3 @ 17.5' ML/CL
Resistivity		**Units**			
as-received		ohm-cm	35,000	15,000	21,000
minimum		ohm-cm	1,348	1,225	858
pH			7.7	7.8	7.8
Electrical Conductivity		mS/cm	0.18	0.20	0.32
Chemical Analyses					
Cations					
calcium	Ca^{2+}	mg/kg	120	150	234
magnesium	Mg^{2+}	mg/kg	10	16	27
sodium	Na^{1+}	mg/kg	50	45	43
potassium	K^{1+}	mg/kg	23	23	33
Anions					
carbonate	CO_3^{2-}	mg/kg	ND	ND	ND
bicarbonate	HCO_3^{1-}	mg/kg	247	290	217
fluoride	F^{1-}	mg/kg	4.8	6.7	5.6
chloride	Cl^{1-}	mg/kg	11	12	19
sulfate	SO_4^{2-}	mg/kg	191	211	525
phosphate	PO_4^{3-}	mg/kg	1.6	0.6	0.5
Other Tests					
ammonium	NH_4^{1+}	mg/kg	1.3	0.8	1.5
nitrate	NO_3^{1-}	mg/kg	4.3	0.5	ND
sulfide	S^{2-}	qual	na	na	na
Redox		mV	na	na	na

Minimum resistivity per CTM 643, Chlorides per CTM 422, Sulfates per CTM 417

Electrical conductivity in millisiemens/cm and chemical analysis were made on a 1:5 soil-to-water extract.
mg/kg = milligrams per kilogram (parts per million) of dry soil.
Redox = oxidation-reduction potential in millivolts
ND = not detected
na = not analyzed

APPENDIX B

Reviewed and acceptable for use

NAME: [signature] DATE: 2/10/11

MACTEC Engineering and Consulting, Inc.

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

Southern California Gas Company
Tampa Avenue & Sesnon Blvd.
Chatsworth, CA
December 21-22, 2010

Prepared for:

Mr. Debanik Chaudhuri
MACTEC Engineering & Consulting, Inc.
5628 E. Slauson Avenue
Los Angeles, CA 90040-2922
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Prepared by:

KTE

KEHOE TESTING & ENGINEERING
5415 Industrial Drive
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Office (714) 901-7270 / Fax (714) 901-7289

TABLE OF CONTENTS

SUMMARY

OF

CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the Southern California Gas Company project located at Tampa Avenue & Sesnon Blvd. in Chatsworth, California. The work was performed by Kehoe Testing & Engineering (KTE) on December 21-22, 2010. The scope of work was performed as directed by MACTEC Engineering & Consulting, Inc. personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at 17 locations to determine the soil lithology. Groundwater measurements and hole collapse depths provided in **TABLE 2.1** are for information only. The readings indicate the apparent depth to which the hole is open and the apparent water level (if encountered) in the CPT probe hole at the time of measurement upon completion of the CPT. KTE does not warranty the accuracy of the measurements and the reported water levels may not represent the true or stabilized groundwater levels.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-1	22	Refusal, groundwater @ 13 ft
CPT-2	18	Refusal, hole open to 17 ft (dry)
CPT-3	16	Refusal, groundwater @ 13 ft
CPT-4	17	Refusal, groundwater @ 13 ft
CPT-5	32	Refusal, groundwater @ 15 ft
CPT-6	19	Refusal, groundwater @ 12 ft
CPT-7	21	Refusal, groundwater @ 15 ft
CPT-8	32	Refusal, groundwater @ 15 ft
CPT-9	38	Refusal, groundwater @ 15 ft
CPT-10	29	Refusal, hole open to 6 ft (dry)
CPT-11	23	Refusal, groundwater @ 12 ft
CPT-12	37	Refusal, groundwater @ 12 ft
CPT-13	30	Refusal, hole open to 7 ft (dry)
CPT-14	28	Refusal, hole open to 7 ft (dry)
CPT-15	6	Refusal, hole open to 5 ft (dry)
CPT-16	22	Refusal, hole open to 6 ft (dry)

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-17	18	Refusal, hole open to 6 ft (dry)

TABLE 2.1 - Summary of CPT Soundings

3. FIELD EQUIPMENT & PROCEDURES

The CPT soundings were carried out by **KTE** using an integrated electronic cone system manufactured by Vertek. The CPT soundings were performed in accordance with ASTM standards (D5778). The cone penetrometers were pushed using a 30-ton CPT rig. The cone used during the program was a 15 cm^2 cone and recorded the following parameters at approximately 2.5 cm depth intervals:

- Cone Resistance (qc)
- Sleeve Friction (fs)
- Dynamic Pore Pressure (u)
- Inclination
- Penetration Speed
- Pore Pressure Dissipation (at selected depths)

At location CPT-1 & CPT-6, shear wave measurements were obtained at approximately 5-foot intervals. The shear wave is generated using an air-actuated hammer, which is located inside the front jack of the CPT rig. The cone has a triaxial geophone, which recorded the shear wave signal generated by the air hammer.

The above parameters were recorded and viewed in real time using a portable computer and stored on a diskette for future analysis and reference. A complete set of baseline readings was taken prior to each sounding to determine temperature shifts and any zero load offsets. Monitoring base line readings ensures that the cone electronics are operating properly.

4. CONE PENETRATION TEST DATA & INTERPRETATION

The Cone Penetration Test data is presented in graphical form in the attached Appendix. Penetration depths are referenced to ground surface. The soil classification on the CPT plots is derived from the CPT Classification Chart (Robertson, 1986) and presents major soil lithologic changes. The stratigraphic interpretation is based on relationships between cone resistance (qc), sleeve friction (fs), and penetration pore pressure (u). The friction ratio (Rf), which is sleeve friction divided by cone resistance, is a calculated parameter that is used to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone resistance and generate excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate little (or negative) excess pore water pressures.

Output from the interpretation program CPTINT provides averaged CPT data over one-foot intervals. The CPTINT output includes Soil Classification Zones, SPT N Values and Undrained Shear Strength (Su). A summary of the equations used for the tabulated parameters is provided in the CPTINT Correlation Table in the Appendix.

The interpretation of soils encountered on this project was carried out using correlations developed by Robertson et al, 1986. It should be noted that it is not always possible to clearly identify a soil type based on qc, fs and u. In these situations, experience, judgment and an assessment of the pore pressure data should be used to infer the soil behavior type.

If you have any questions regarding this information, please do not hesitate to call our office at (714) 901-7270.

Sincerely,

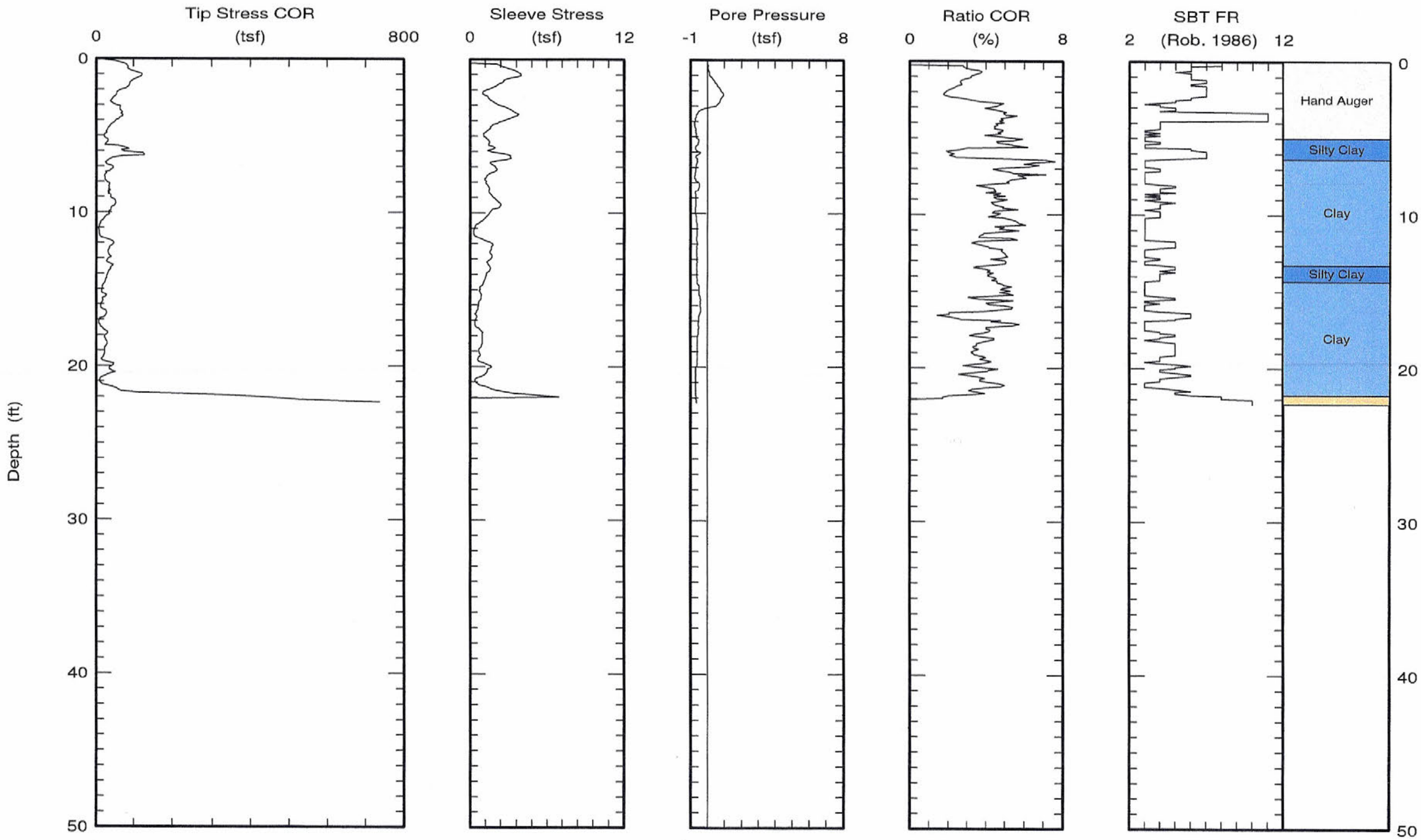
KEHOE TESTING & ENGINEERING

Richard W. Koester, Jr.
General Manager

12/29/10-at-99-0930

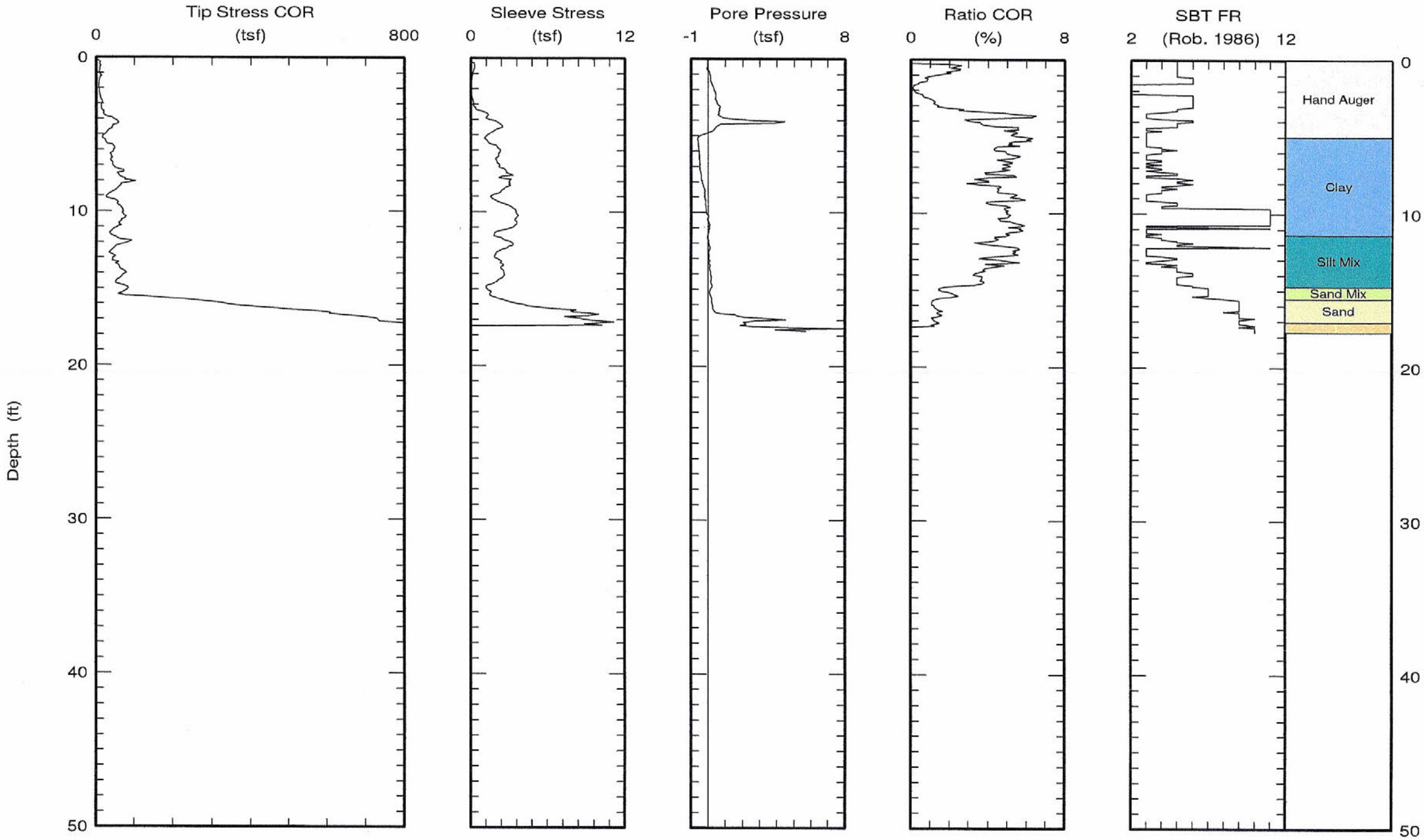
APPENDIX

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 22/Dec/2010 Test ID: CPT-1 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



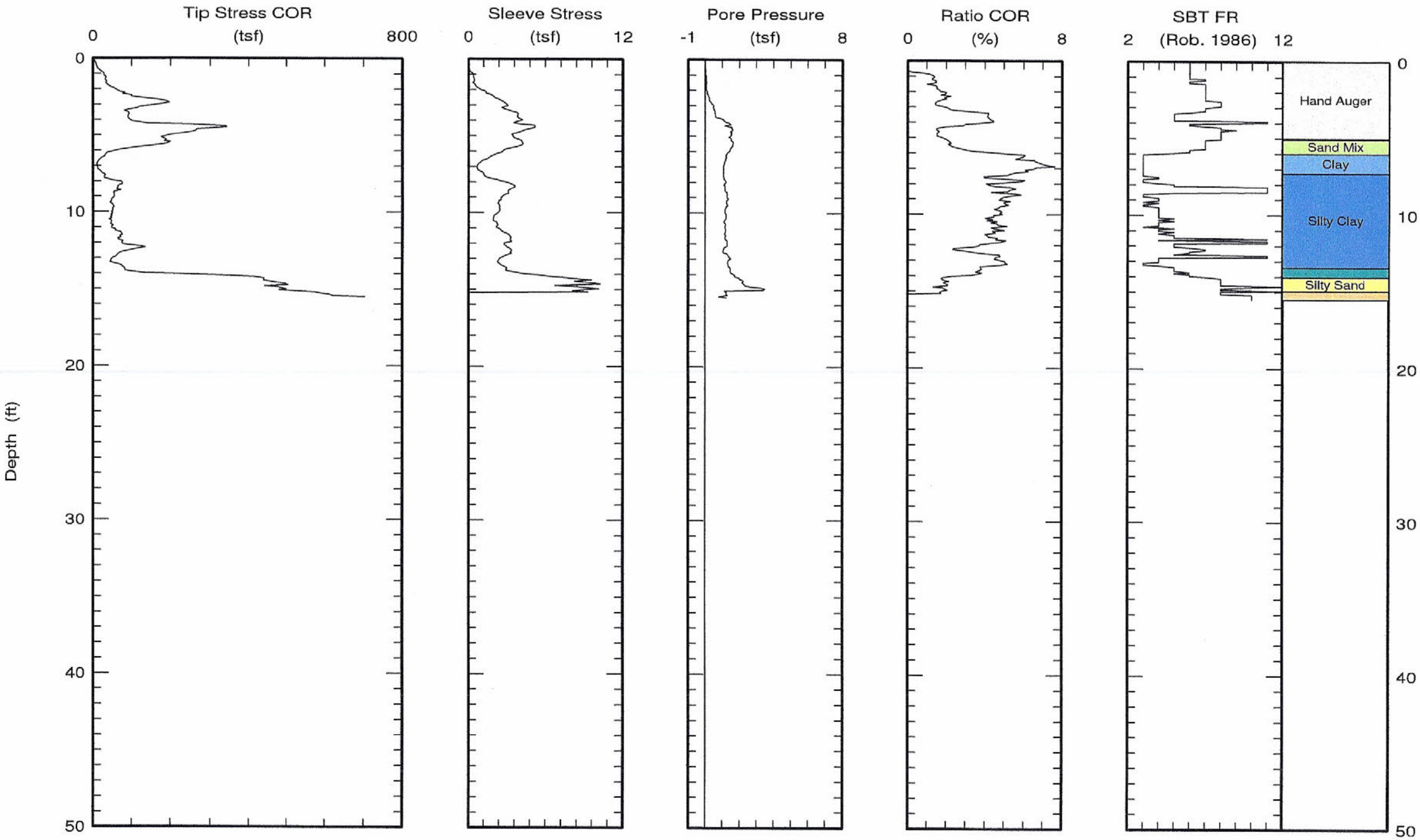
Maximum depth: 22.34 (ft)

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 21/Dec/2010 Test ID: CPT-2 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



Maximum depth: 17.71 (ft)

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 22/Dec/2010 Test ID: CPT-3 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



Maximum depth: 15.51 (ft)

Kehoe Testing & Engineering
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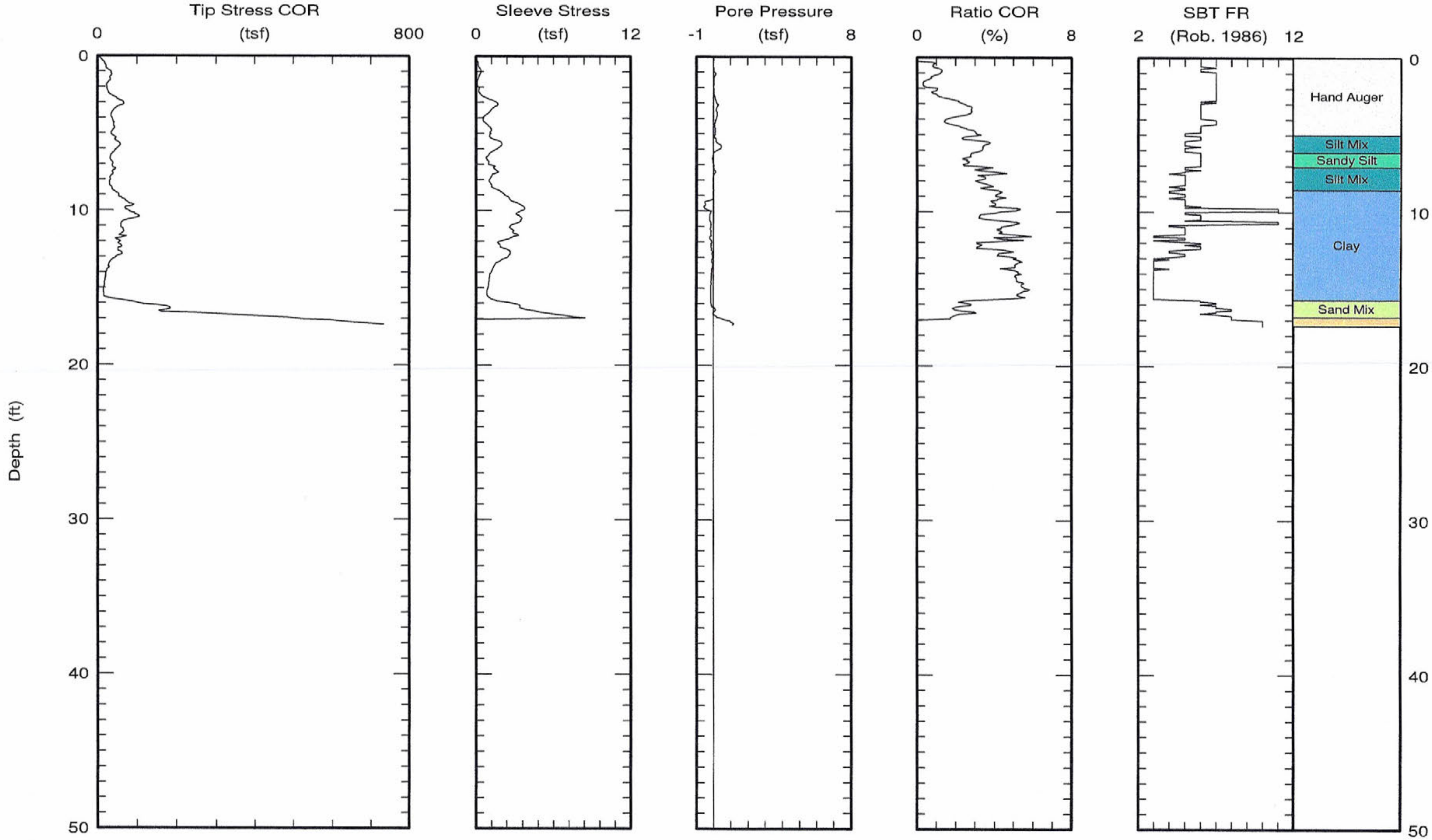
www.kehoetesting.com

CPT Data
30 ton rig

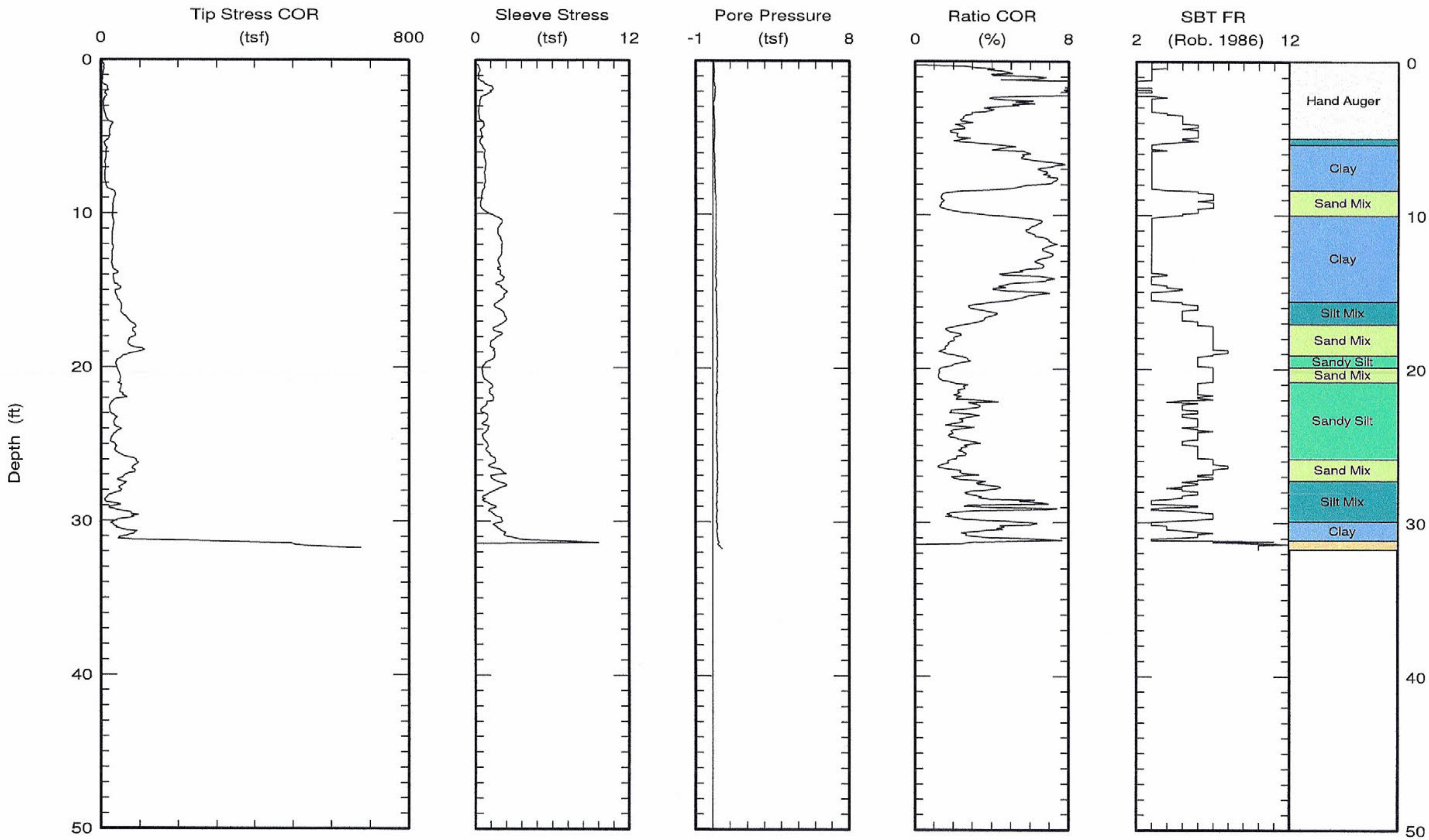
Date: 22/Dec/2010
Test ID: CPT-4
Project: Chatsworth

Customer: MACTEC
Job Site: Southern California Gas Company



Maximum depth: 17.38 (ft)

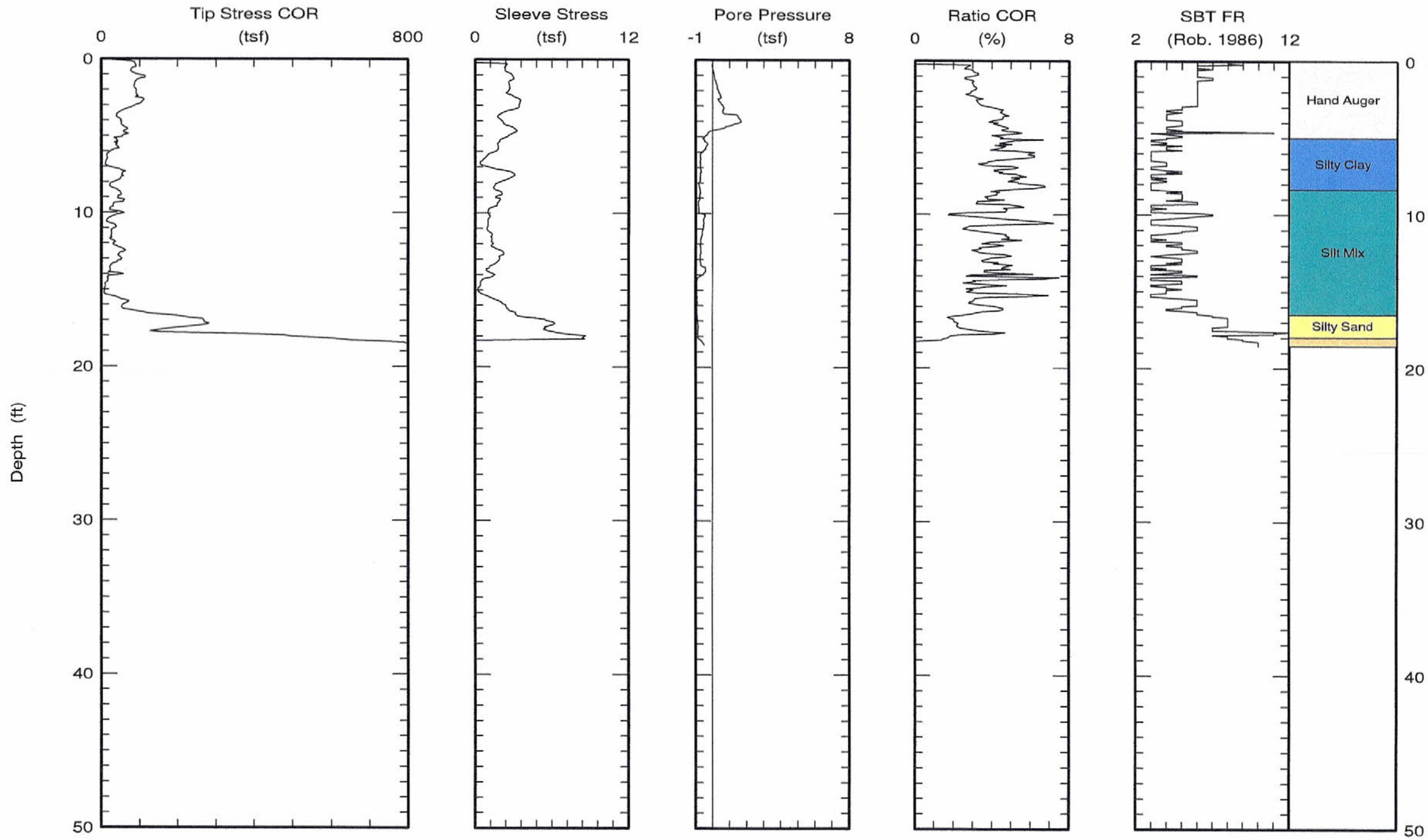
Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 21/Dec/2010 Test ID: CPT-5 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



Maximum depth: 31.75 (ft)

Test ID: Cl

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 22/Dec/2010 Test ID: CPT-6 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



Maximum depth: 18.56 (ft)

Kehoe Testing & Engineering
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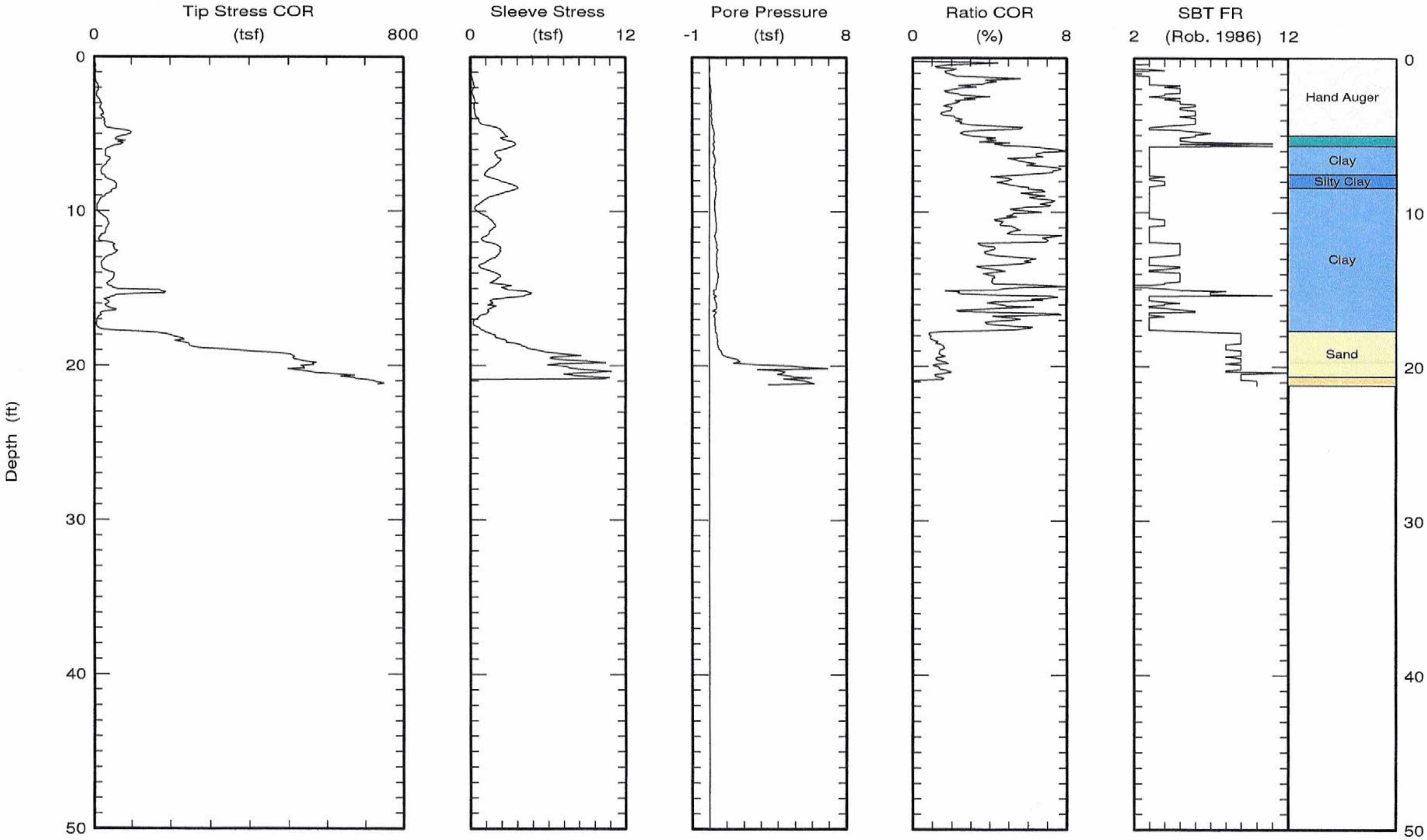
www.kehoetesting.com

CPT Data
30 ton rig

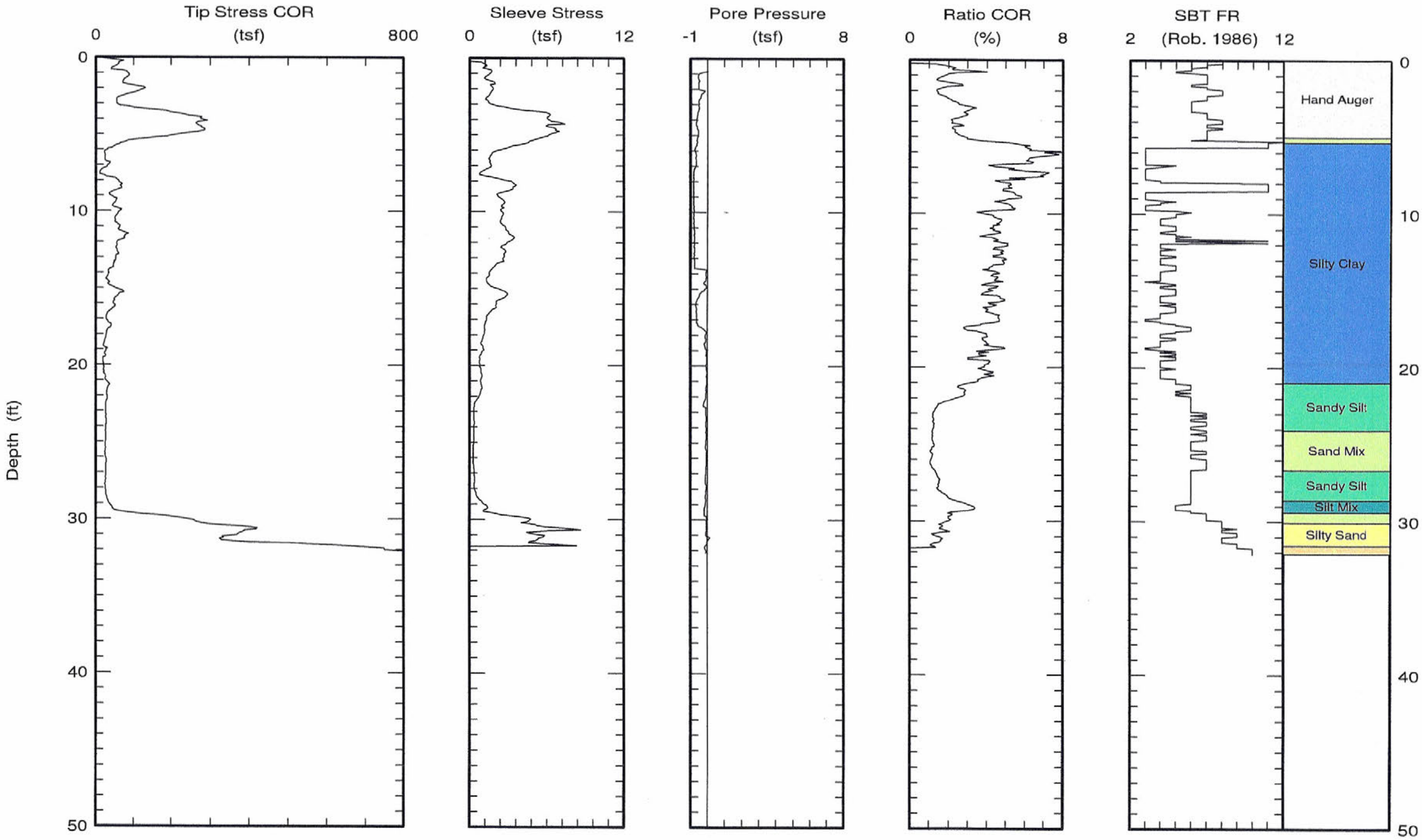
Date: 21/Dec/2010
Test ID: CPT-7
Project: Chatsworth

Customer: MACTEC
Job Site: Southern California Gas Company



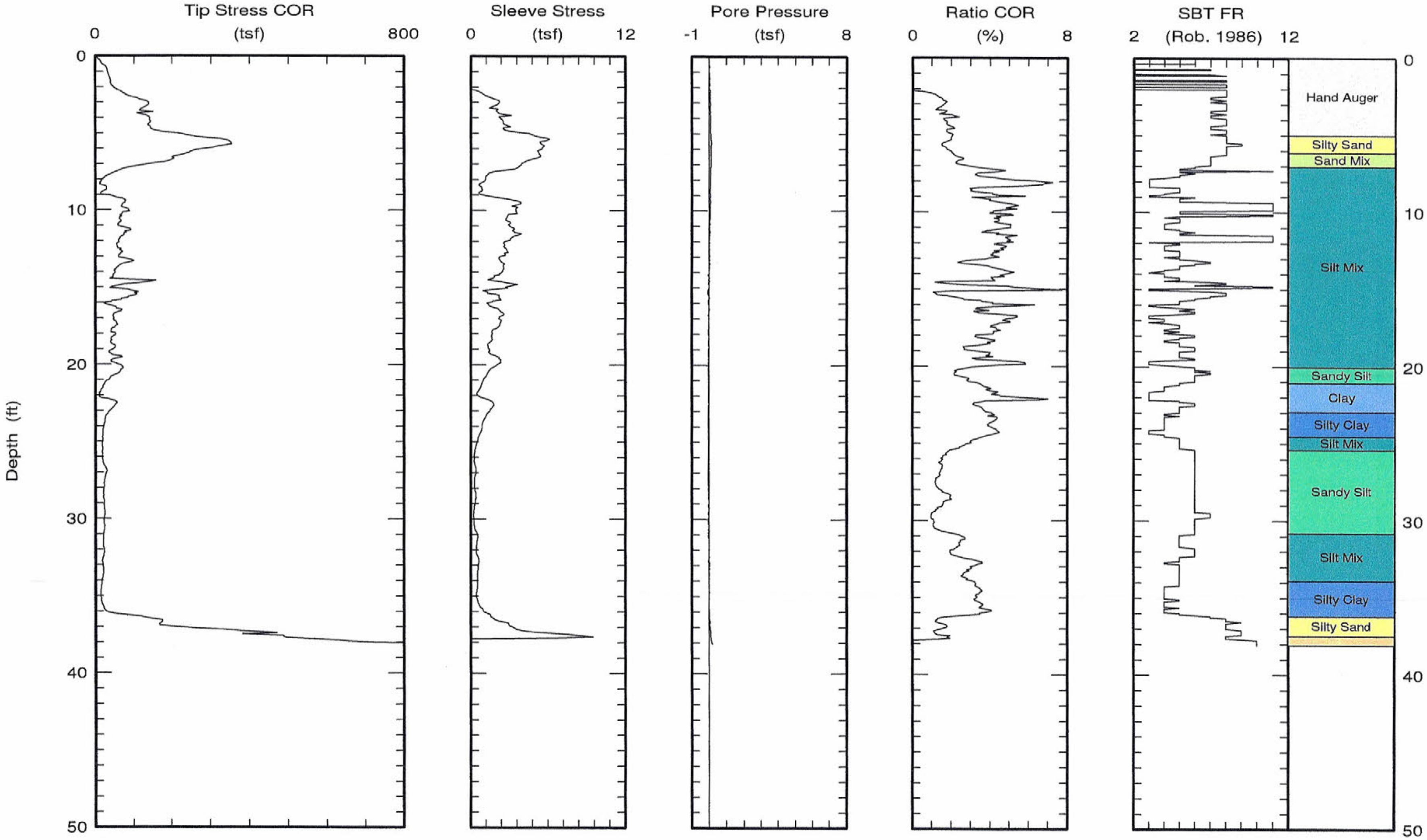
Maximum depth: 21.21 (ft)

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 22/Dec/2010 Test ID: CPT-8 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



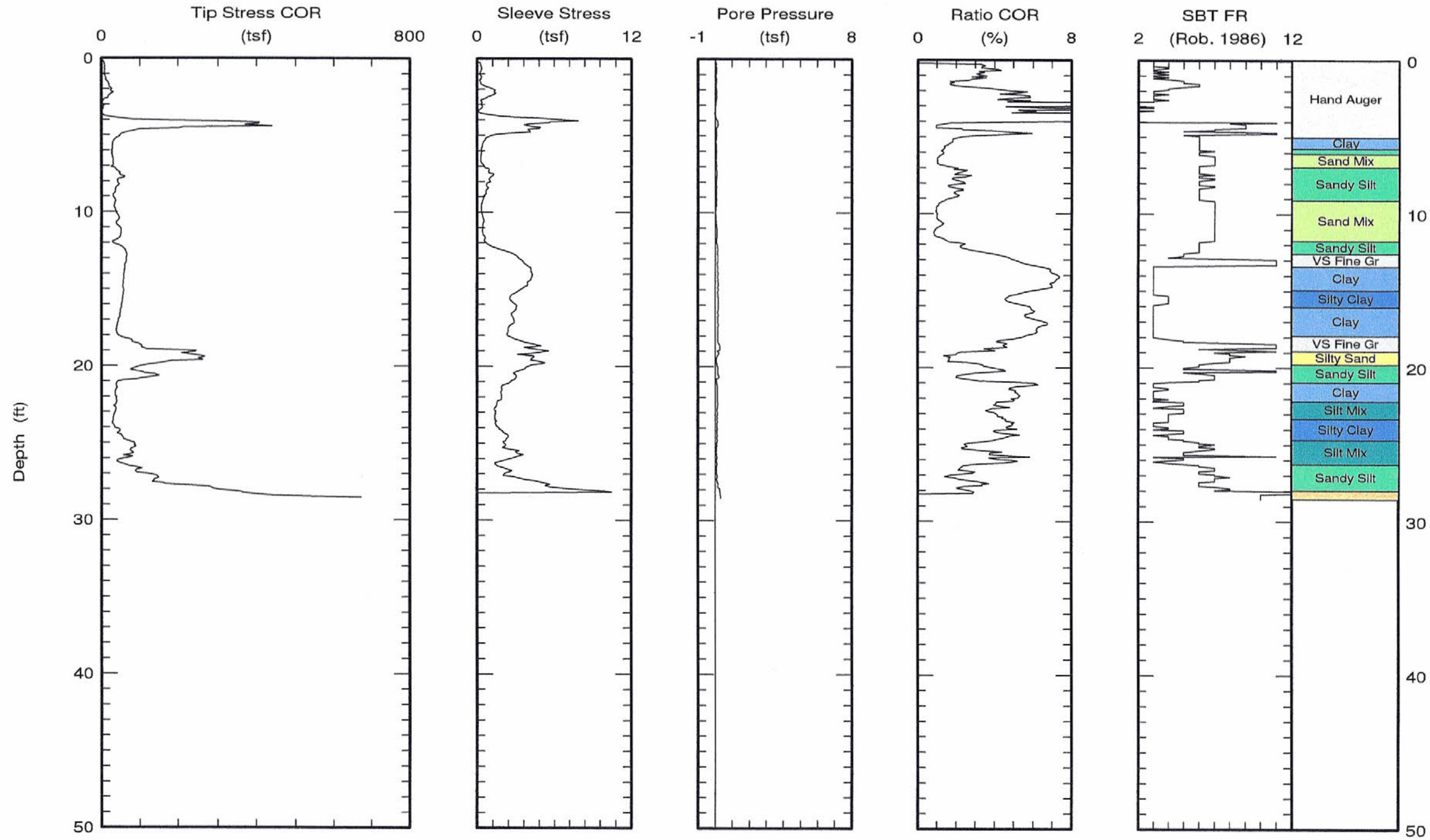
Maximum depth: 32.13 (ft)

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 22/Dec/2010 Test ID: CPT-9 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



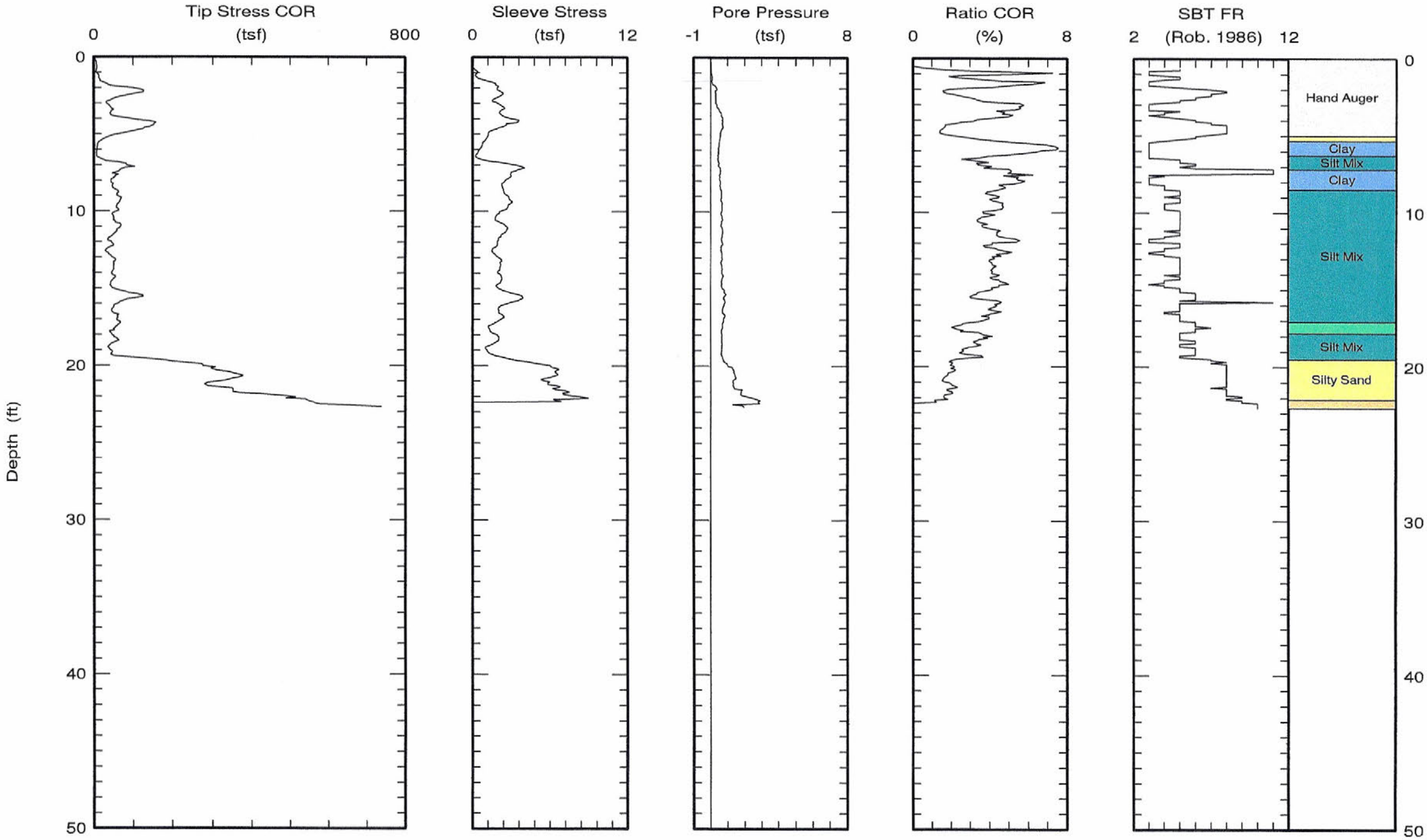
Maximum depth: 38.09 (ft)

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 21/Dec/2010 Test ID: CPT-10 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



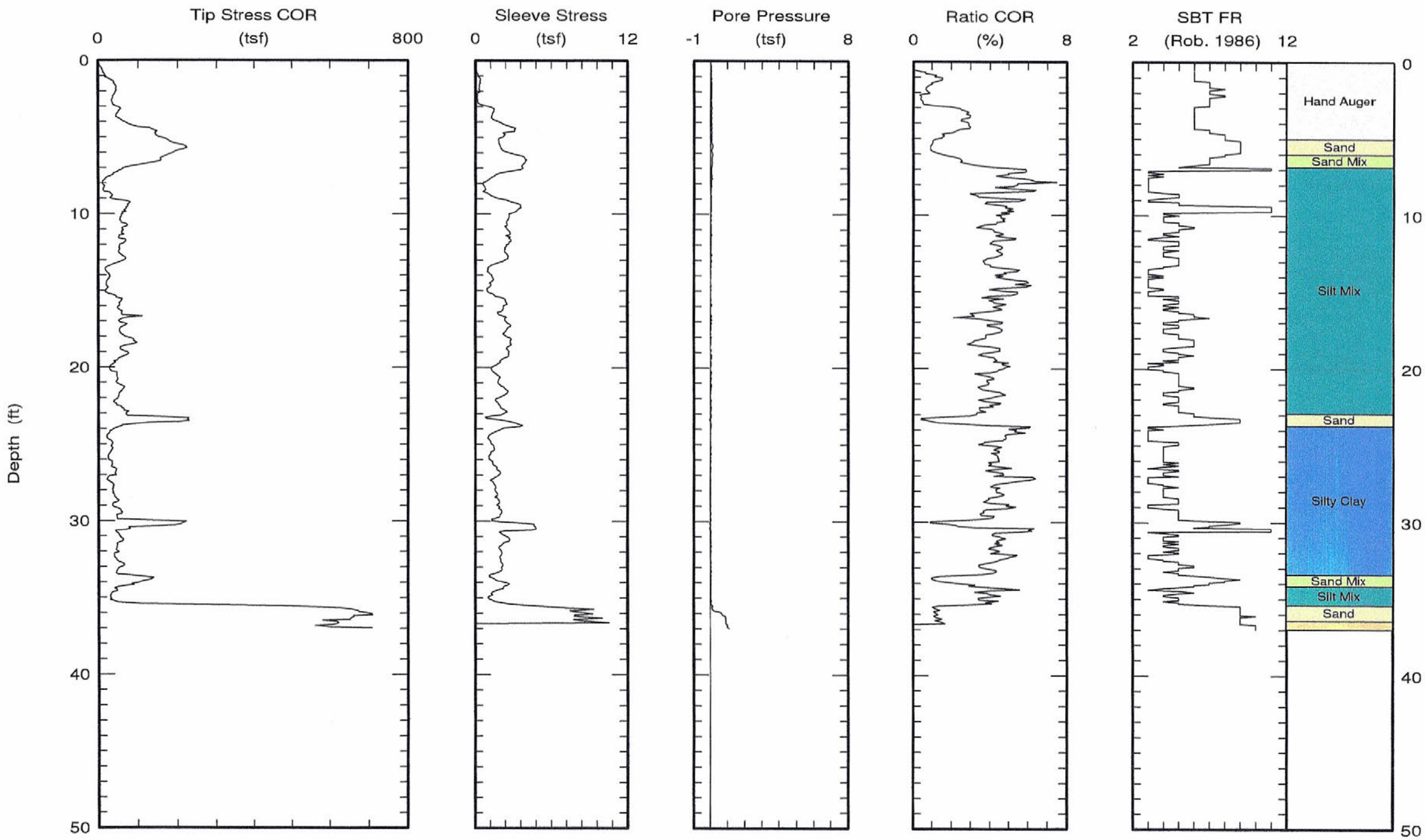
Maximum depth: 28.56 (ft)

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 22/Dec/2010 Test ID: CPT-11 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



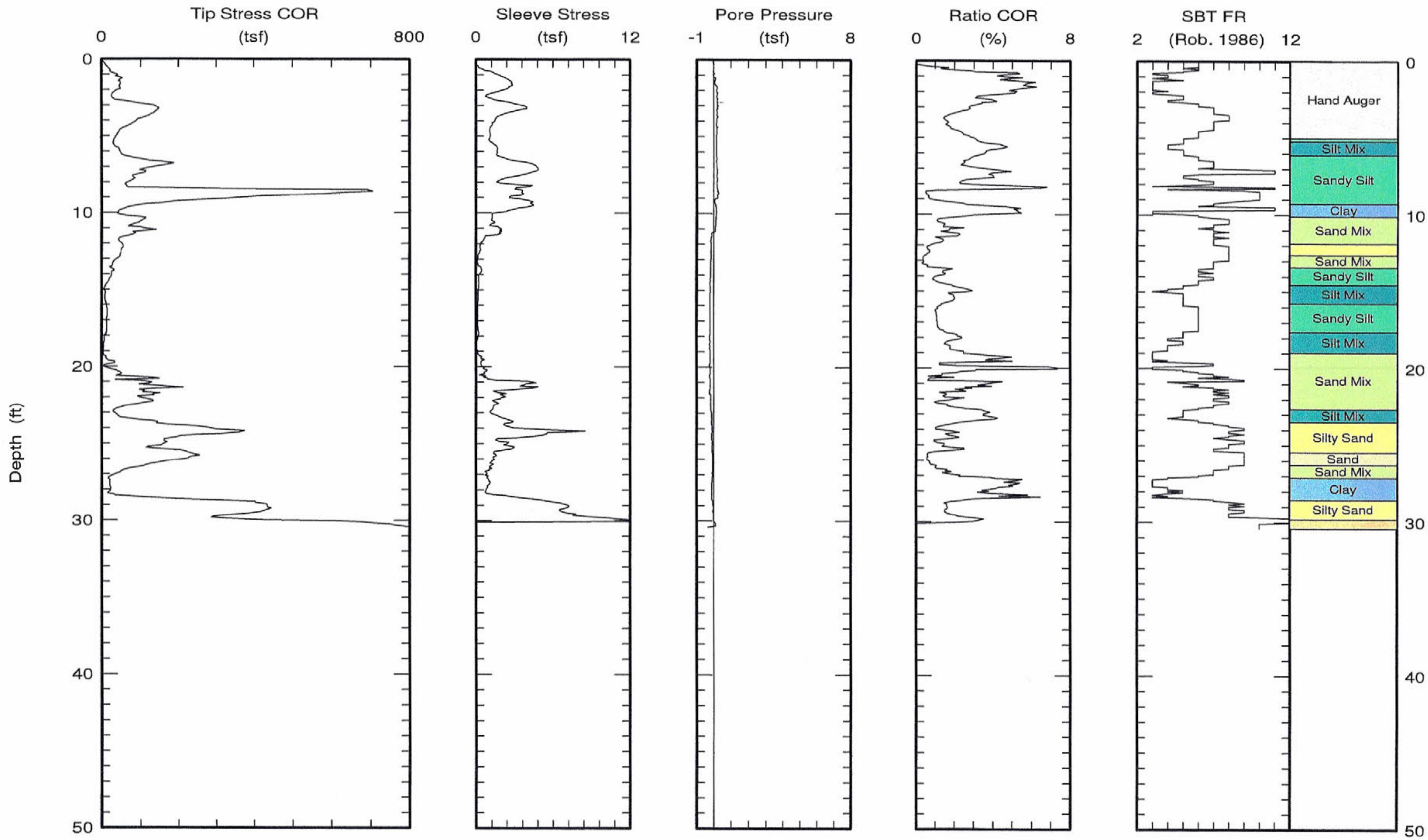
Maximum depth: 22.68 (ft)

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 22/Dec/2010 Test ID: CPT-12 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



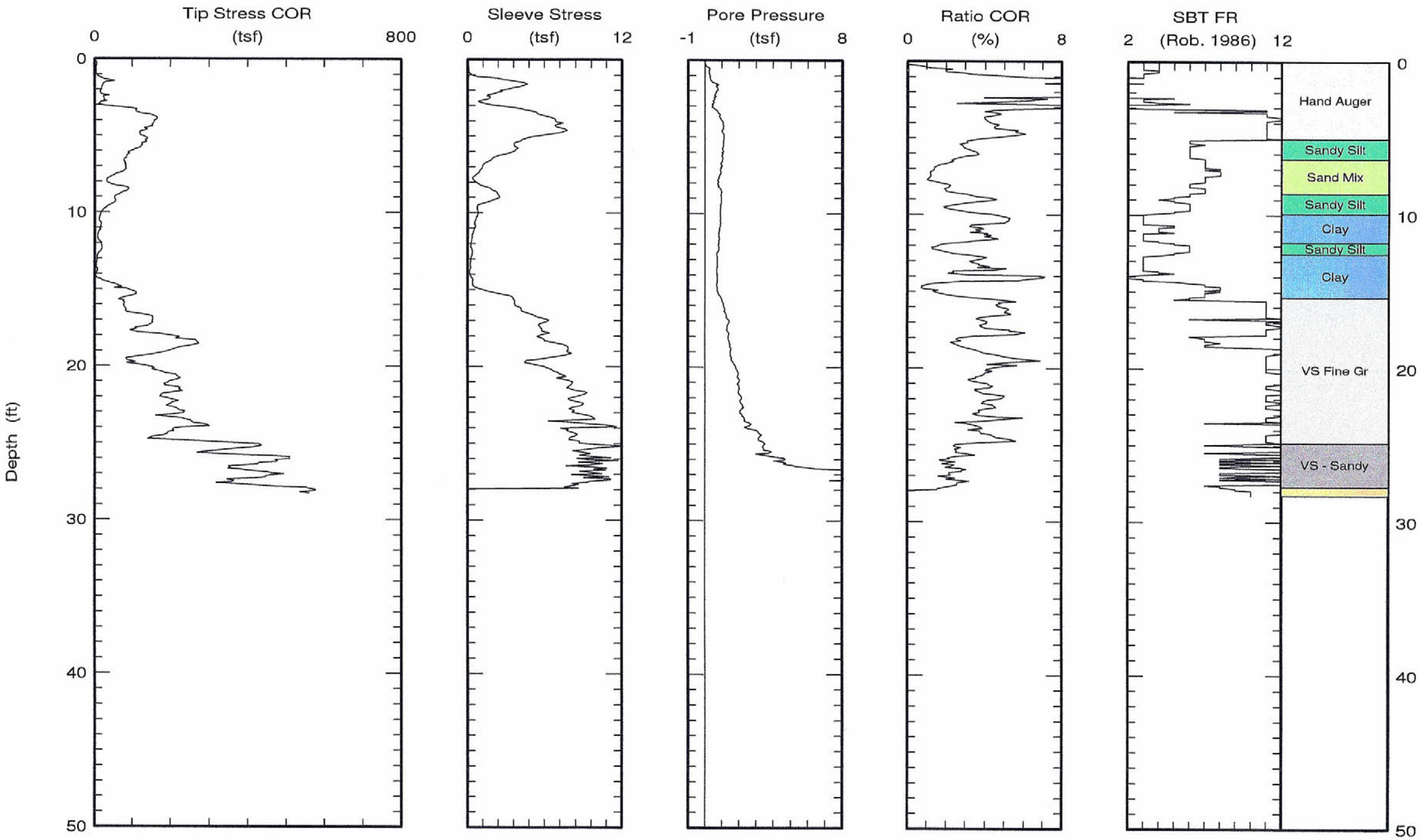
Maximum depth: 36.97 (ft)

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 21/Dec/2010 Test ID: CPT-13 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



Maximum depth: 30.41 (ft)

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 21/Dec/2010 Test ID: CPT-14 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



Maximum depth: 28.27 (ft)

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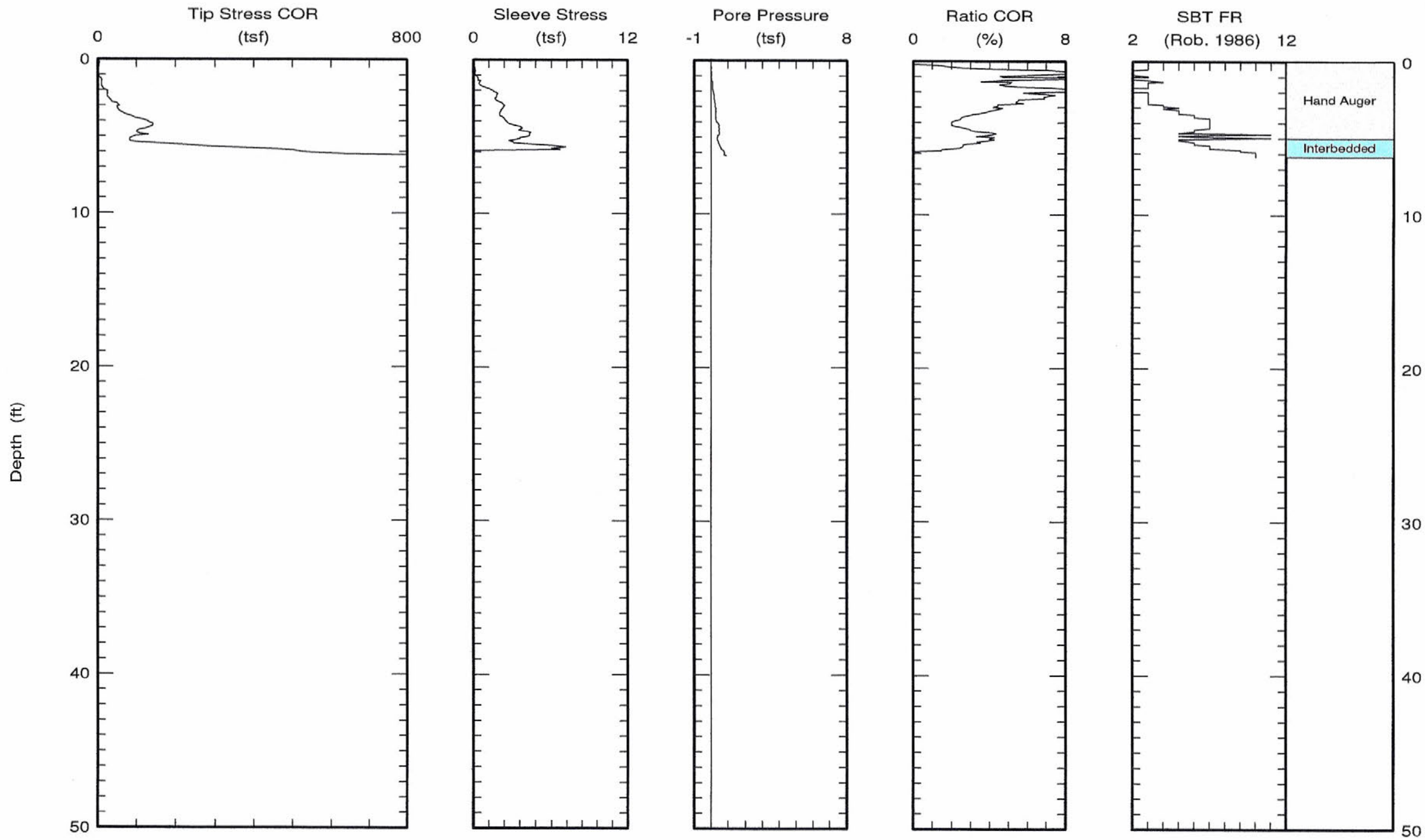
rich@kehoetesting.com
www.kehoetesting.com

CPT Data
30 ton rig

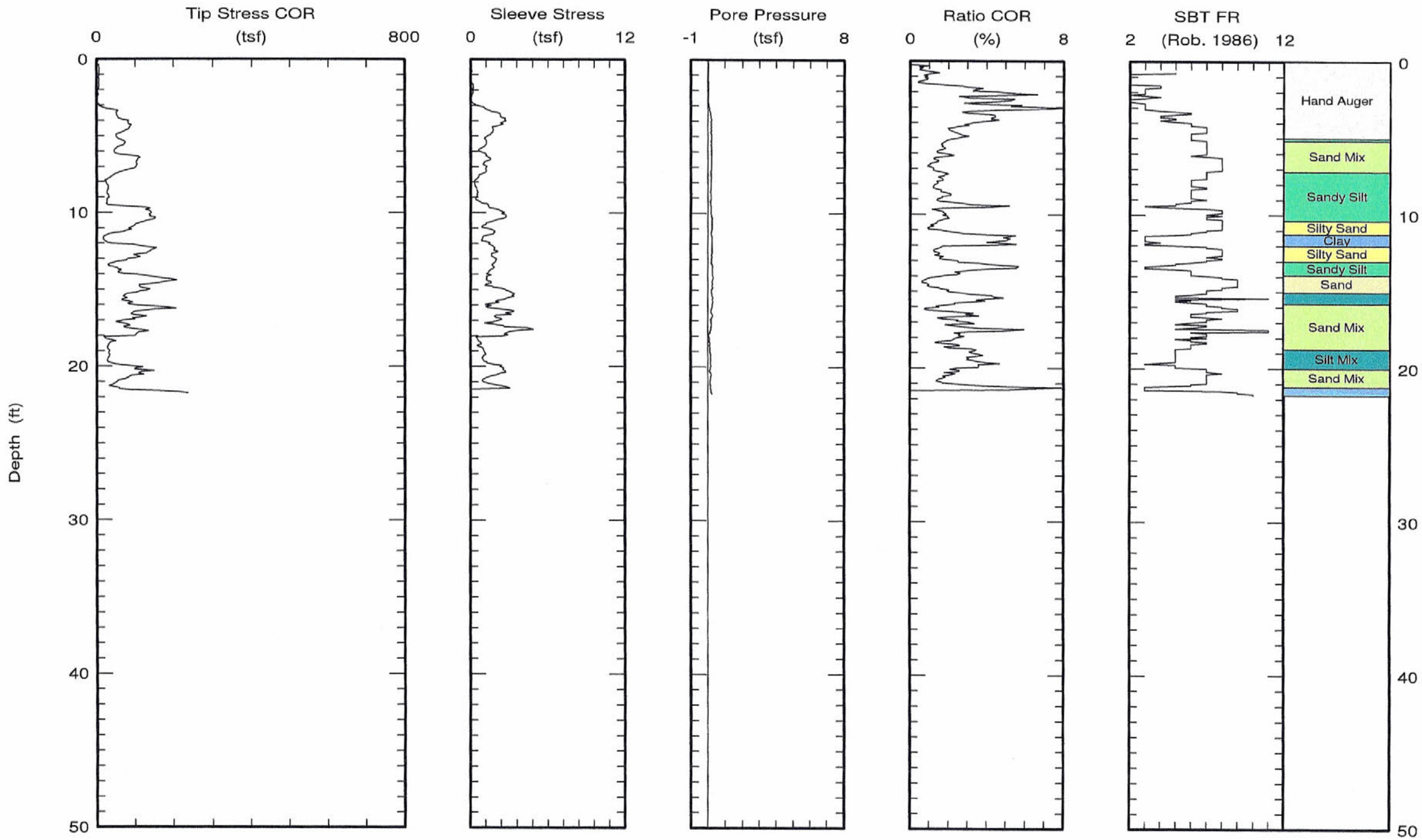
Date: 21/Dec/2010
Test ID: CPT-15
Project: Chatsworth

Customer: MACTEC
Job Site: Southern California Gas Company



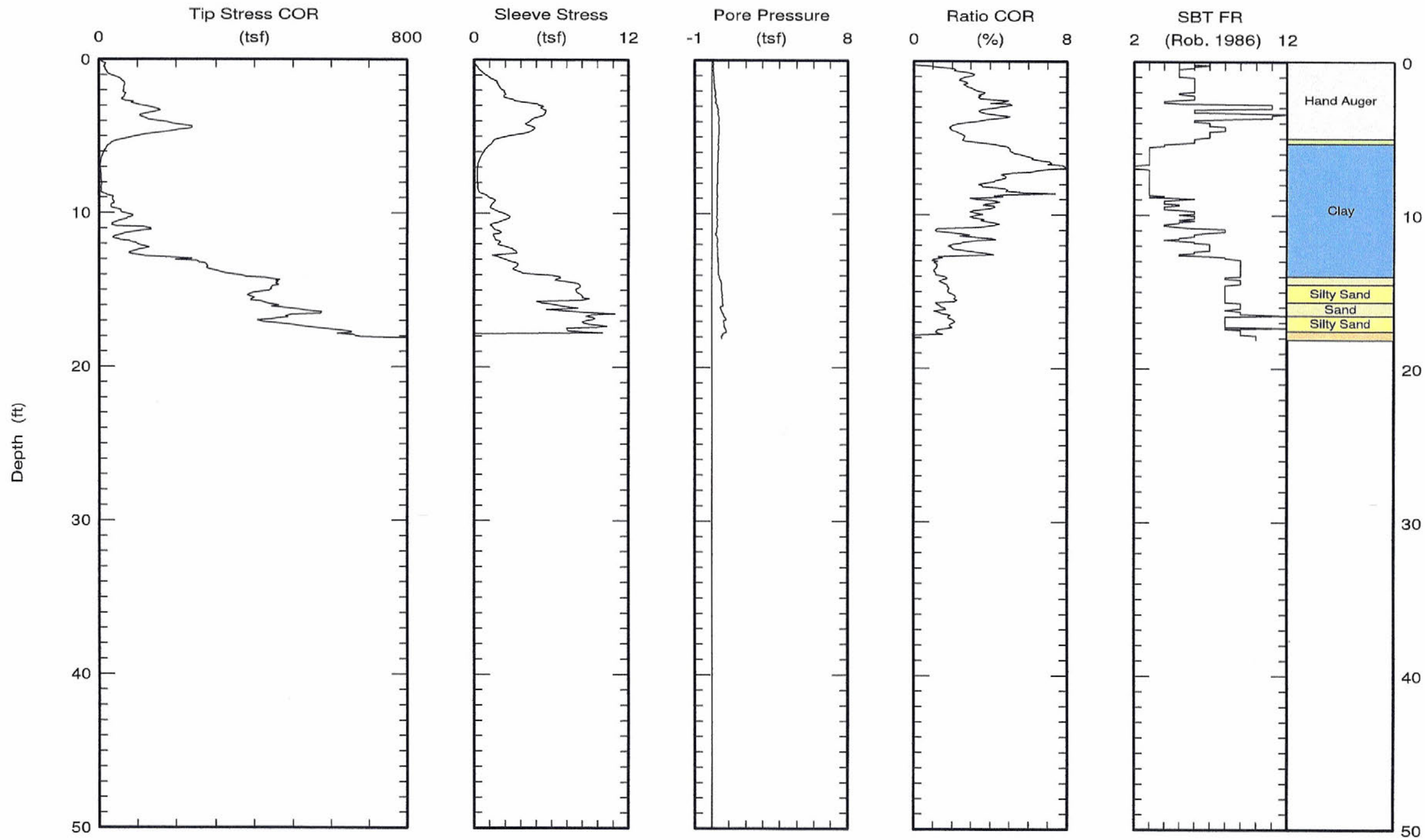
Maximum depth: 6.23 (ft)

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 21/Dec/2010 Test ID: CPT-16 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	



Maximum depth: 21.76 (ft)

Kehoe Testing & Engineering Office: (714) 901-7270 Fax: (714) 901-7289 rich@kehoetesting.com www.kehoetesting.com	CPT Data 30 ton rig	Date: 21/Dec/2010 Test ID: CPT-17 Project: Chatsworth
	Customer: MACTEC Job Site: Southern California Gas Company	

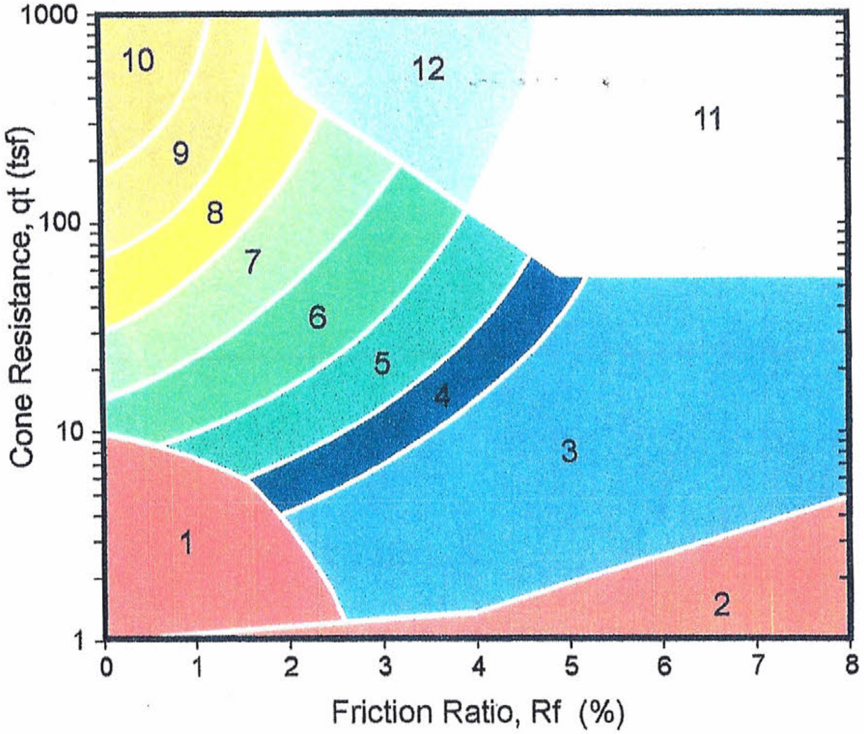


Maximum depth: 18.13 (ft)

KEHOE TESTING & ENGINEERING

CPT Classification Chart

(after Robertson and Campanella, 1988)



Zone	q_t / N	Soil Behavior Type	UCSCS
1	2	sensitive fine grained	OL-OH
2	1	organic material	Pt-OH
3	1	clay	CH
4	1.5	silty clay to clay	CL-CH
5	2	clayey silt to silty clay	ML-CL
6	2.5	sandy silt to clayey silt	MH-ML
7	3	silty sand to sandy silt	SM-ML
8	4	sand to silty sand	SP-SM
9	5	sand	SP
10	6	gravelly sand to sand	SW-SP
11	1	very stiff fine grained *	CL-MH
12	2	sand to clayey sand *	SP-SC

* overconsolidated or cemented

INPUT FILE: C:\temp\CPT-1.CSV |--

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	87.883	2.613	2.974	6	34	51	5.857
1.500	96.100	2.475	2.572	6	37	56	6.408
2.500	49.300	1.553	3.142	6	19	29	3.285
3.500	66.550	3.222	4.848	4	42	63	4.415
4.500	35.133	1.618	4.626	4	22	33	2.313
5.500	42.883	1.537	3.592	5	20	30	2.829
6.500	61.983	2.393	3.866	5	30	45	4.100
7.500	30.650	1.638	5.366	3	29	44	2.004
8.500	34.017	1.478	4.357	4	22	33	2.227
9.500	44.650	2.125	4.775	4	28	42	2.927
10.500	19.643	0.976	5.000	3	19	26	1.257
11.500	20.383	0.778	3.837	4	13	17	1.304
12.500	36.067	1.703	4.736	4	23	28	2.346
13.500	35.583	1.480	4.171	4	23	27	2.309
14.500	23.117	1.075	4.674	3	22	25	1.473
15.500	18.783	0.813	4.353	3	18	20	1.181
16.500	19.817	0.560	2.838	5	9	10	1.247
17.500	17.000	0.672	3.974	4	11	12	1.054
18.500	24.983	0.927	3.724	4	16	17	1.582
19.500	24.417	0.835	3.439	5	12	12	1.538
20.500	29.300	1.073	3.678	5	14	14	1.860
21.500	130.817	2.968	2.271	7	42	41	9E9
22.500	501.200	0.000	0.000	10	9E9	9E9	9E9

INPUT FILE: C:\temp\CPT-2.CSV |---

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	9.917	0.205	2.074	5	5	8	0.657
1.500	10.517	0.057	0.537	6	4	6	0.697
2.500	13.367	0.130	0.967	6	5	8	0.887
3.500	23.200	0.883	3.783	4	15	23	1.543
4.500	44.100	2.057	4.643	4	28	42	2.935
5.500	32.700	1.613	4.949	3	31	47	2.151
6.500	42.767	2.158	5.057	3	41	62	2.819
7.500	62.483	2.730	4.376	5	30	45	4.128
8.500	63.283	2.682	4.242	5	30	45	4.180
9.500	52.367	2.498	4.774	4	33	50	3.450
10.500	69.357	3.554	5.125	11	66	92	9E9
11.500	55.800	2.475	4.434	4	36	47	3.673
12.500	51.217	2.453	4.787	4	33	41	3.365
13.500	61.367	2.487	4.050	5	29	35	4.037
14.500	67.150	2.022	3.007	6	26	30	4.422
15.500	152.283	2.117	1.390	8	36	41	9E9
16.500	543.433	7.517	1.383	9	104	114	9E9
17.500	737.500	9.630	1.305	9	141	150	9E9

INPUT FILE: C:\temp\CPT-3.CSV

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	14.133	0.090	0.637	6	5	8	0.940
1.500	39.167	0.588	1.501	7	13	20	9E9
2.500	128.150	2.218	1.730	7	41	62	9E9
3.500	101.650	3.548	3.486	6	39	59	6.771
4.500	229.967	4.210	1.828	8	55	83	9E9
5.500	159.700	3.752	2.345	7	51	77	9E9
6.500	26.600	1.600	5.963	3	26	39	1.762
7.500	24.100	1.275	5.247	3	23	35	1.589
8.500	64.433	3.250	5.024	11	62	93	9E9
9.500	51.233	2.517	4.888	4	33	50	3.393
10.500	47.257	2.203	4.639	4	30	42	3.122
11.500	70.667	3.060	4.316	5	34	44	4.679
12.500	86.233	3.087	3.568	6	33	41	5.715
13.500	74.967	2.955	3.926	5	36	43	4.962
14.500	437.150	8.347	1.907	8	105	122	9E9
15.500	487.700	8.080	1.656	9	93	105	9E9

INPUT FILE: C:\temp\CPT-4.CSV |--

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	20.867	0.210	1.006	6	8	12	1.389
1.500	30.783	0.188	0.611	7	10	15	9E9
2.500	41.383	0.660	1.595	7	13	20	9E9
3.500	46.250	1.187	2.564	6	18	27	3.071
4.500	40.683	0.917	2.252	6	16	24	2.695
5.500	49.117	1.612	3.279	5	24	36	3.254
6.500	39.033	1.075	2.753	6	15	23	2.577
7.500	39.450	1.378	3.494	5	19	29	2.599
8.500	37.500	1.417	3.776	5	18	27	2.466
9.500	71.550	2.998	4.193	5	34	51	4.728
10.500	80.800	3.273	4.051	5	39	54	5.343
11.500	61.967	2.757	4.449	4	40	52	4.084
12.500	56.733	2.308	4.069	5	27	33	3.731
13.500	31.950	1.610	5.044	3	31	37	2.072
14.500	20.217	1.045	5.173	3	19	22	1.287
15.500	33.250	1.160	3.489	5	16	18	2.153
16.500	233.833	4.937	2.111	7	75	83	9E9
17.500	556.600	0.000	0.000	10	9E9	9E9	9E9

INPUT FILE: C:\temp\CPT-5.CSV |---

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	6.783	0.248	3.661	3	6	9	0.450
1.500	9.417	0.842	7.990	3	9	14	0.623
2.500	9.600	0.572	5.945	3	9	14	0.631
3.500	11.383	0.340	2.987	4	7	11	0.745
4.500	25.067	0.548	2.185	6	10	15	1.655
5.500	14.383	0.538	3.734	4	9	14	0.939
6.500	11.517	0.750	6.503	3	11	17	0.743
7.500	10.533	0.742	7.019	3	10	15	0.674
8.500	24.650	0.622	2.520	6	9	14	1.610
9.500	31.100	0.507	1.629	6	12	18	2.035
10.500	30.386	1.780	5.855	3	29	41	1.984
11.500	28.850	1.948	6.738	3	28	37	1.881
12.500	29.433	2.010	6.821	3	28	35	1.913
13.500	32.850	1.903	5.788	3	31	37	2.137
14.500	38.317	2.028	5.289	3	37	43	2.497
15.500	43.283	2.085	4.815	4	28	32	2.823
16.500	58.900	2.155	3.657	5	28	31	3.861
17.500	85.033	1.843	2.167	7	27	29	9E9
18.500	82.200	1.365	1.660	7	26	27	9E9
19.500	56.383	1.252	2.217	6	22	23	3.683
20.500	47.371	0.704	1.485	7	15	15	9E9
21.500	54.617	1.292	2.364	6	21	21	3.554
22.500	26.083	0.810	3.099	5	13	12	1.650
23.500	37.183	0.897	2.407	6	14	13	2.387
24.500	34.067	0.768	2.252	6	13	12	2.174
25.500	49.733	1.140	2.288	6	19	17	3.216
26.500	86.567	1.732	1.998	7	28	25	9E9
27.500	55.167	1.787	3.238	6	21	18	3.566
28.500	28.750	0.958	3.326	5	14	12	1.804
29.500	57.150	1.585	2.771	6	22	18	3.692
30.500	54.467	1.925	3.529	5	26	21	3.511
31.500	62.700	2.610	4.156	5	30	24	4.057

INPUT FILE: C:\temp\CPT-6.CSV

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	85.200	2.118	2.486	6	33	50	5.678
1.500	95.167	2.817	2.959	6	36	54	6.340
2.500	98.367	3.187	3.236	6	38	57	6.554
3.500	55.033	2.435	4.407	4	35	53	3.669
4.500	60.783	2.823	4.636	4	39	59	4.041
5.500	42.700	1.993	4.674	4	27	41	2.820
6.500	16.933	0.828	4.926	3	16	24	1.094
7.500	49.317	2.475	5.036	4	31	47	3.245
8.500	38.983	1.802	4.639	4	25	38	2.553
9.500	40.500	1.597	3.957	5	19	28	2.650
10.500	33.429	1.069	3.206	5	16	22	2.178
11.500	30.350	1.312	4.336	4	19	24	1.969
12.500	50.417	1.902	3.779	5	24	29	3.302
13.500	34.400	1.380	4.023	4	22	26	2.230
14.500	16.767	0.670	4.036	4	11	13	1.046
15.500	38.933	1.253	3.233	5	19	21	2.520
16.500	131.950	3.327	2.525	7	42	46	9E9
17.500	245.083	6.167	2.518	7	78	83	9E9
18.500	498.400	8.670	1.740	8	119	124	9E9

INPUT FILE: C:\temp\CPT-7.CSV

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	3.717	0.067	1.794	1	2	3	0.246
1.500	6.933	0.212	3.046	3	7	11	0.458
2.500	11.617	0.265	2.278	5	6	9	0.766
3.500	20.567	0.378	1.835	6	8	12	1.361
4.500	49.917	1.603	3.210	5	24	36	3.313
5.500	66.367	2.928	4.407	5	32	48	4.408
6.500	34.283	2.140	6.233	3	33	50	2.263
7.500	24.483	1.485	6.049	3	24	36	1.607
8.500	52.500	3.010	5.726	3	50	75	3.470
9.500	14.083	0.928	6.568	3	14	21	0.904
10.500	28.014	1.377	4.903	3	27	38	1.830
11.500	23.350	1.307	5.580	3	22	29	1.515
12.500	51.733	2.165	4.177	5	25	31	3.405
13.500	26.083	1.220	4.662	3	25	30	1.690
14.500	46.700	2.243	4.793	4	30	35	3.061
15.500	89.350	3.072	3.435	6	34	39	5.899
16.500	29.767	1.235	4.137	4	19	21	1.923
17.500	41.367	0.678	1.637	7	13	14	9E9
18.500	236.333	3.083	1.304	9	45	48	9E9
19.500	495.483	7.273	1.467	9	95	98	9E9
20.500	607.671	7.196	1.182	9	117	118	9E9
21.500	745.100	0.000	0.000	10	9E9	9E9	9E9

INPUT FILE: C:\temp\CPT-8.CSV

Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	61.183	1.145	1.872	7	20	30	9E9
1.500	90.800	1.593	1.757	7	29	44	9E9
2.500	79.333	1.535	1.937	7	25	38	9E9
3.500	178.000	4.793	2.694	7	57	86	9E9
4.500	273.050	6.605	2.420	7	87	131	9E9
5.500	100.200	4.413	4.409	11	96	144	9E9
6.500	27.733	1.678	6.077	3	26	39	1.815
7.500	26.650	1.443	5.453	3	25	38	1.734
8.500	59.817	3.118	5.225	11	57	86	9E9
9.500	51.450	2.525	4.924	4	33	49	3.379
10.500	58.543	2.556	4.377	5	28	39	3.849
11.500	71.933	3.157	4.396	5	34	44	4.739
12.500	57.617	2.707	4.709	4	37	46	3.780
13.500	45.883	2.048	4.472	4	29	35	2.997
14.500	35.250	1.525	4.330	4	22	25	2.288
15.500	59.617	2.580	4.335	5	29	33	3.903
16.500	40.633	1.725	4.261	4	26	28	2.630
17.500	34.850	1.220	3.512	5	17	18	2.243
18.500	25.333	1.033	4.082	4	16	17	1.611
19.500	23.617	0.882	3.736	4	15	15	1.492
20.500	23.586	0.900	3.818	4	15	15	1.486
21.500	32.550	0.882	2.709	6	12	12	2.081
22.500	28.533	0.447	1.567	6	11	10	1.806
23.500	28.083	0.353	1.258	6	11	10	1.774
24.500	27.167	0.330	1.215	6	10	9	1.708
25.500	26.100	0.305	1.170	6	10	9	1.632
26.500	27.717	0.332	1.198	6	11	10	1.735
27.500	26.733	0.398	1.491	6	10	9	1.667
28.500	29.450	0.640	2.176	6	11	9	1.842
29.500	84.383	1.963	2.328	7	27	22	9E9
30.500	333.433	5.570	1.670	8	80	64	9E9
31.500	487.529	3.967	0.814	10	78	62	9E9

INPUT FILE: C:\temp\CPT-9.CSV

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	21.117	0.002	0.008	7	7	11	9E9
1.500	39.167	0.003	0.009	8	9	14	9E9
2.500	88.433	1.183	1.338	8	21	32	9E9
3.500	130.433	2.160	1.656	8	31	47	9E9
4.500	148.583	2.847	1.916	7	47	71	9E9
5.500	306.750	5.490	1.790	8	73	110	9E9
6.500	222.517	5.077	2.281	7	71	107	9E9
7.500	66.033	2.480	3.755	5	32	48	4.373
8.500	19.500	0.853	4.372	3	19	29	1.266
9.500	63.650	2.973	4.671	4	41	62	4.204
10.500	67.600	3.133	4.634	4	43	60	4.463
11.500	73.267	3.340	4.558	5	35	45	4.838
12.500	61.617	2.690	4.366	5	30	37	4.056
13.500	68.567	2.507	3.656	5	33	40	4.515
14.500	74.350	2.382	3.203	6	28	33	4.897
15.500	77.083	1.980	2.569	6	30	34	5.075
16.500	49.200	2.098	4.265	4	31	34	3.212
17.500	48.933	2.148	4.390	4	31	33	3.190
18.500	46.067	1.587	3.444	5	22	23	2.994
19.500	46.750	1.945	4.160	5	22	22	3.036
20.500	55.757	1.471	2.639	6	21	21	3.632
21.500	18.067	0.712	3.943	4	12	12	1.114
22.500	41.533	1.537	3.700	5	20	19	2.676
23.500	26.717	1.113	4.170	4	17	16	1.683
24.500	19.150	0.723	3.777	4	12	11	1.175
25.500	18.267	0.373	2.044	5	9	8	1.112
26.500	23.283	0.345	1.483	6	9	8	1.442
27.500	24.583	0.320	1.302	6	9	8	1.525
28.500	21.767	0.392	1.799	6	8	7	1.333
29.500	23.750	0.282	1.186	6	9	7	1.461
30.500	23.083	0.300	1.300	6	9	7	1.413
31.500	21.357	0.510	2.388	5	10	8	1.294
32.500	20.767	0.583	2.811	5	10	8	1.249
33.500	19.933	0.563	2.824	5	10	8	1.192
34.500	14.917	0.510	3.419	4	10	8	0.852
35.500	19.183	0.693	3.614	4	12	9	1.132
36.500	127.967	2.110	1.649	8	31	23	9E9
37.500	450.100	4.735	1.052	9	86	62	9E9
38.500	790.000	0.000	0.000	10	9E9	9E9	9E9

INPUT FILE: C:\temp\CPT-10.CSV

" Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	7.967	0.257	3.222	3	8	12	0.529
1.500	16.617	0.505	3.036	5	8	12	1.103
2.500	14.900	0.847	5.682	3	14	21	0.983
3.500	15.833	1.537	7.990	3	15	23	1.042
4.500	223.200	4.268	1.912	8	53	80	9E9
5.500	33.333	0.553	1.660	6	13	20	2.200
6.500	29.033	0.342	1.177	7	9	14	9E9
7.500	43.200	0.945	2.187	6	17	26	2.849
8.500	38.283	0.777	2.028	6	15	23	2.518
9.500	34.017	0.405	1.189	7	11	17	9E9
10.500	41.857	0.457	1.092	7	13	18	9E9
11.500	43.517	0.542	1.244	7	14	18	9E9
12.500	58.867	2.170	3.685	5	28	35	3.874
13.500	61.417	3.930	6.395	11	59	71	9E9
14.500	57.083	4.008	7.016	3	55	64	3.749
15.500	55.583	2.807	5.046	4	36	41	3.644
16.500	48.933	2.883	5.890	3	47	52	3.195
17.500	40.667	2.567	6.306	3	39	42	2.641
18.500	83.833	3.573	4.260	5	40	42	5.516
19.500	218.333	4.645	2.127	7	70	71	9E9
20.500	98.871	3.199	3.235	6	38	38	6.508
21.500	37.733	1.978	5.238	3	36	35	2.429
22.500	37.517	1.558	4.150	4	24	23	2.410
23.500	31.983	1.467	4.583	4	20	19	2.036
24.500	54.883	2.135	3.888	5	26	24	3.560
25.500	79.767	2.767	3.468	6	31	28	5.213
26.500	69.567	2.020	2.903	6	27	24	4.529
27.500	172.150	4.325	2.512	7	55	47	9E9
28.500	309.000	8.740	2.828	12	148	124	9E9

INPUT FILE: C:\temp\CPT-11.CSV |---

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	6.783	0.123	1.818	4	4	6	0.450
1.500	30.250	1.163	3.844	4	19	29	2.012
2.500	79.200	1.997	2.518	6	30	45	5.276
3.500	50.533	2.348	4.636	4	32	48	3.362
4.500	126.333	2.387	1.888	7	40	60	9E9
5.500	22.217	0.917	4.104	4	14	21	1.466
6.500	24.283	0.905	3.714	4	16	24	1.598
7.500	65.367	3.293	5.032	11	63	95	9E9
8.500	52.583	2.407	4.567	4	34	51	3.478
9.500	63.650	2.855	4.477	4	41	61	4.212
10.500	57.414	2.129	3.699	5	28	39	3.792
11.500	49.450	2.292	4.623	4	32	41	3.257
12.500	40.983	1.783	4.335	4	26	32	2.690
13.500	51.667	2.143	4.139	5	25	30	3.396
14.500	48.100	2.133	4.423	4	31	36	3.155
15.500	88.150	3.222	3.649	5	42	47	5.822
16.500	54.767	2.230	4.062	5	26	28	3.591
17.500	57.350	1.602	2.786	6	22	23	3.760
18.500	50.183	1.683	3.347	5	24	25	3.276
19.500	113.867	2.578	2.261	7	36	36	9E9
20.500	328.814	6.186	1.880	8	79	78	9E9
21.500	362.700	6.873	1.893	8	87	84	9E9
22.500	516.400	7.610	1.472	9	99	94	9E9

INPUT FILE: C:\temp\CPT-12.CSV |---

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	9.983	0.065	0.651	6	4	6	0.664
1.500	39.067	0.372	0.951	7	12	18	9E9
2.500	38.167	0.277	0.725	7	12	18	9E9
3.500	52.033	1.427	2.742	6	20	30	3.455
4.500	121.767	2.622	2.153	7	39	59	9E9
5.500	196.000	2.005	1.023	9	38	57	9E9
6.500	146.833	3.702	2.521	7	47	71	9E9
7.500	35.617	1.992	5.592	3	34	51	2.344
8.500	20.350	0.862	4.234	4	13	20	1.322
9.500	66.533	3.087	4.639	4	42	63	4.397
10.500	62.129	2.581	4.155	5	30	42	4.099
11.500	60.967	2.737	4.489	4	39	51	4.018
12.500	58.400	2.500	4.280	5	28	35	3.843
13.500	30.683	1.318	4.297	4	20	24	1.990
14.500	24.050	1.243	5.170	3	23	27	1.544
15.500	44.800	1.960	4.375	4	29	33	2.923
16.500	60.433	2.177	3.602	5	29	32	3.961
17.500	59.817	2.542	4.249	5	29	31	3.916
18.500	75.517	2.738	3.626	5	36	38	4.958
19.500	54.383	2.247	4.130	5	26	27	3.546
20.500	41.400	1.653	3.992	5	20	20	2.676
21.500	56.683	2.272	4.008	5	27	26	3.690
22.500	54.183	2.037	3.759	5	26	25	3.519
23.500	127.150	2.375	1.868	7	41	38	9E9
24.500	29.017	1.293	4.457	4	19	17	1.833
25.500	30.267	1.338	4.419	4	19	17	1.914
26.500	38.167	1.655	4.336	4	24	21	2.435
27.500	32.267	1.558	4.830	3	31	27	2.038
28.500	41.500	1.783	4.297	4	27	23	2.649
29.500	49.383	1.905	3.856	5	24	20	3.172
30.500	120.617	3.305	2.740	6	46	37	7.916
31.500	52.286	2.319	4.434	4	33	26	3.356
32.500	49.983	2.100	4.200	5	24	19	3.199
33.500	83.317	1.710	2.052	7	27	21	9E9
34.500	48.717	1.852	3.801	5	23	17	3.105
35.500	351.850	4.925	1.400	9	67	50	9E9
36.500	709.000	8.420	1.187	9	136	100	9E9

INPUT FILE: C:\temp\CPT-13.CSV |---

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	18.667	0.627	3.357	5	9	14	1.242
1.500	46.983	2.522	5.363	3	45	68	3.128
2.500	52.067	1.803	3.459	5	25	38	3.465
3.500	126.567	2.568	2.029	7	40	60	9E9
4.500	58.717	1.180	2.008	7	19	29	9E9
5.500	35.767	1.367	3.818	5	17	26	2.364
6.500	103.917	2.812	2.704	6	40	60	6.906
7.500	97.567	3.592	3.679	6	37	56	6.477
8.500	340.167	3.295	0.969	9	65	98	9E9
9.500	163.867	3.557	2.170	7	52	78	9E9
10.500	84.414	1.321	1.565	7	27	38	9E9
11.500	70.567	1.033	1.465	7	23	30	9E9
12.500	49.767	0.272	0.546	8	12	15	9E9
13.500	28.917	0.297	1.027	7	9	11	9E9
14.500	15.883	0.217	1.367	6	6	7	0.997
15.500	9.600	0.168	1.757	5	5	6	0.576
16.500	13.383	0.143	1.076	6	5	6	0.821
17.500	12.733	0.180	1.417	5	6	7	0.775
18.500	6.183	0.118	1.929	4	4	4	0.334
19.500	13.583	0.360	2.657	5	6	6	0.824
20.500	63.914	1.256	1.966	7	20	20	9E9
21.500	121.400	2.918	2.406	7	39	39	9E9
22.500	75.400	1.373	1.821	7	24	23	9E9
23.500	125.667	2.253	1.794	7	40	38	9E9
24.500	243.283	4.202	1.727	8	58	54	9E9
25.500	196.150	1.898	0.968	9	38	35	9E9
26.500	109.017	1.120	1.027	8	26	23	9E9
27.500	22.133	0.918	4.152	4	14	12	1.363
28.500	151.950	3.225	2.123	7	49	42	9E9
29.500	387.983	7.610	1.961	8	93	78	9E9
30.500	566.700	12.740	2.248	12	271	223	9E9

INPUT FILE: C:\temp\CPT-14.CSV |---

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	5.250	0.115	2.184	4	3	5	0.349
1.500	26.183	3.322	7.990	3	25	38	1.747
2.500	20.467	1.743	7.990	3	20	30	1.362
3.500	122.950	5.382	4.373	11	118	177	9E9
4.500	139.317	7.053	5.055	11	134	201	9E9
5.500	126.983	4.018	3.159	6	49	74	8.455
6.500	85.733	2.127	2.475	6	33	50	5.700
7.500	61.267	0.773	1.259	7	20	30	9E9
8.500	67.550	1.722	2.542	6	26	39	4.480
9.500	44.383	1.382	3.100	6	17	25	2.931
10.500	15.871	0.681	4.244	3	15	21	1.026
11.500	12.467	0.397	3.148	4	8	10	0.792
12.500	14.517	0.338	2.307	5	7	9	0.926
13.500	6.417	0.223	3.418	3	6	7	0.379
14.500	33.233	0.478	1.435	7	11	13	9E9
15.500	90.500	3.082	3.398	6	35	39	5.981
16.500	108.400	4.813	4.429	11	104	114	9E9
17.500	134.833	5.962	4.412	11	129	137	9E9
18.500	239.467	6.845	2.855	7	77	80	9E9
19.500	128.250	6.320	4.915	11	123	124	9E9
20.500	187.171	7.169	3.822	12	90	88	9E9
21.500	200.017	8.482	4.232	11	192	183	9E9
22.500	212.717	8.360	3.923	12	102	95	9E9
23.500	240.717	9.427	3.908	12	116	105	9E9
24.500	206.717	8.250	3.978	12	99	88	9E9
25.500	392.017	10.052	2.559	12	188	163	9E9
26.500	429.233	9.795	2.275	12	206	174	9E9
27.500	424.650	9.297	2.178	8	102	84	9E9
28.500	578.500	0.000	0.000	10	9E9	9E9	9E9

INPUT FILE: C:\temp\CPT-15.CSV |--

" Depth (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	3.083	0.097	3.135	3	3	5	0.204
1.500	10.333	0.673	6.516	3	10	15	0.683
2.500	34.550	1.958	5.665	3	33	50	2.294
3.500	76.233	2.257	2.958	6	29	44	5.071
4.500	124.650	3.667	2.940	6	48	72	8.296
5.500	225.250	3.763	1.670	8	54	81	9E9
6.500	562.700	0.000	0.000	10	9E9	9E9	9E9

INPUT FILE: C:\temp\CPT-16.CSV |---

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	6.283	0.052	0.822	1	3	5	0.417
1.500	6.533	0.125	1.913	4	4	6	0.430
2.500	3.533	0.162	4.554	3	3	5	0.227
3.500	48.383	1.922	3.969	5	23	35	3.214
4.500	76.133	1.953	2.565	6	29	44	5.060
5.500	61.033	1.092	1.788	7	19	29	9E9
6.500	91.083	1.225	1.345	8	22	33	9E9
7.500	57.700	0.878	1.521	7	18	27	9E9
8.500	28.683	0.455	1.585	6	11	17	1.879
9.500	62.517	1.153	1.844	7	20	30	9E9
10.500	124.814	1.897	1.520	8	30	42	9E9
11.500	36.883	1.387	3.758	5	18	24	2.413
12.500	123.133	1.838	1.492	8	30	38	9E9
13.500	54.233	1.710	3.150	6	21	25	3.564
14.500	148.133	1.633	1.102	8	35	41	9E9
15.500	87.817	2.697	3.068	6	34	39	5.796
16.500	127.583	2.357	1.847	7	41	46	9E9
17.500	91.050	2.753	3.022	6	35	38	6.002
18.500	36.450	0.818	2.244	6	14	15	2.355
19.500	34.100	1.197	3.506	5	16	16	2.196
20.500	95.657	1.909	1.995	7	31	31	9E9
21.500	45.600	1.690	3.706	5	22	22	2.952

INPUT FILE: C:\temp\CPT-17.CSV |---

" Depth " (feet)	Qc(avg) (TSF)	Fs(avg) (TSF)	Rf (%)	Rf Zone (zone #)	Spt N (blow/ft)	Spt N1 (blow/ft)	Su (TSF)
0.500	18.750	0.408	2.176	5	9	14	1.249
1.500	60.983	1.780	2.919	6	23	35	4.059
2.500	75.833	3.207	4.226	5	36	54	5.049
3.500	132.900	5.170	3.888	12	64	96	9E9
4.500	186.350	4.125	2.213	7	60	90	9E9
5.500	39.100	1.387	3.539	5	19	29	2.589
6.500	7.417	0.473	6.353	3	7	11	0.470
7.500	5.333	0.268	4.954	3	5	8	0.330
8.500	9.767	0.445	4.533	3	9	14	0.619
9.500	39.933	1.457	3.643	5	19	29	2.626
10.500	70.286	2.043	2.904	6	27	38	4.646
11.500	72.767	1.823	2.503	6	28	36	4.809
12.500	125.117	2.612	2.086	7	40	50	9E9
13.500	286.850	3.362	1.172	9	55	66	9E9
14.500	437.350	7.403	1.692	8	105	122	9E9
15.500	408.933	7.442	1.819	8	98	111	9E9
16.500	498.083	8.537	1.713	8	119	131	9E9
17.500	553.983	7.270	1.312	9	106	114	9E9
18.500	677.500	0.000	0.000	10	9E9	9E9	9E9

Tampa Ave & Sesnon Blvd
Chatsworth, CA

CPT Shear Wave Measurements

Location	Depth (ft)	Travel Distance (ft)	S-Wave Arrival (msec)	S-Wave Velocity from Surface (ft/sec)	Interval S-Wave Velocity (ft/sec)
CPT-1	5.10	7.14	7.25	985	
	10.11	11.28	11.64	969	942
	15.11	15.92	17.87	891	744
	20.07	20.68	22.22	931	1096
	22.32	22.87	24.76	924	862
CPT-6	5.16	7.19	7.13	1008	
	10.14	11.31	11.59	975	924
	15.19	15.99	15.87	1008	1095
	18.60	19.26	18.51	1041	1238

Shear Wave Source Offset = 5 ft

S-Wave Velocity from Surface = Travel Distance/S-Wave Arrival
Interval S-Wave Velocity = (Travel Dist2-Travel Dist1)/(Time2-Time1)

CPTCP.TBL - CPTINT Correlation and Parameters Table File
-------------with NOTES & References at end-------------

Program: CPTINT - CPT Cone Interpretation Program
Version: 5.2
Table File by: Dr. R. G. (DICK) Campanella, P.Eng.
Rev. Dated: April 3, 2002

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
Depth average see NOTE #1	Depth averaged over specified range (see menu)		All	All
Parameter Averaging	Averaged over range specified for depth. If no values exist, your choice is zero's or no value		All	All
Qc, Tip Stress	measured tip force/area	#6,#8	All	All
Qt corrtd for U2 see NOTE #2	Qt = Qc + (1 - a) x U2 and a = tip area ratio Defaults to U2 if given or uses U1 or U3 times Const.	#6,#8	All	All
[Note: Input value from input file is used if defined, not calculated]				
Q (Qt Normalized)	$Q = \frac{Qt - sv}{sv'}$	#9 & 13	All	All
Fs	measured sleeve force/area	#6,#8	All	All
Rf Friction Ratio (if Rf>8, Rf=8)	$Rf = \frac{Fs}{Qt} \times 100\%$	#6,#8	All	All
F (Rf Normalized)	$F = \frac{Fs}{(Qt - sv)} \times 100\%$	#9 & 13	All	All
Gamma Total Unit Weight (Soil + Water) see NOTE #3	Based on Rf or Bq Classif. Zone Zone # — Gamma = kN/m^3 1 — Qt<4bar — 15.70 1 — Qt=4bar — 17.30 2 — Rf<5% — 13.36 2 — Rf=5% — 11.80 2 — Bq Zone — 12.58 3 — Qt<10bar — 18.86 3 — Qt=10bar — 19.65 4, 5 & 6 — Qt<20bar — 18.86 4, 5 & 6 — Qt=20bar — 19.65 7 — 18.86 8 & 9 — 19.65 10 — 20.44 11 & 12 — 21.22		All	All

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
U Penetration Pore Pressure see NOTE #4	U1,measured on Face of tip U2,measured Behind Tip at shoulder (std location) U3,measured Behind Friction Sleeve		All	All
Water Table	Depth below ground surface to where pore pressure = 0 Make negative if water level is above ground		All	All
Uo Hydrostatic Pore Pressure see NOTE #4	Uo = water depth,Hw x unit weight water, Gamma or Uo=Hw=depth-depth to water table if depth<water table,Uo = 0		All	All
dU Excess Pore Pressure	dU = U2 - Uo Defaults to U2 if given or uses U1 or U3 x const.		All	All
DPPR (Differential Pore Pressure Ratio)	$DPPR = \frac{dU}{Qt} = \frac{U - Uo}{Qt}$ Defaults to U2 if given or uses U1 or U3 x const.	#6,#8	All	All
Bq	$Bq = \frac{dU}{Qt - sv}$	# 4 # 8 # 13	All	All
OS (Overburden Stress)	OS = sv = S (Gamma x Depth)		All	All
EOS (Effective Overburden Stress)	EOS = sv' = OS - Uo = sv - Uo		All	All
Rf Zone Soil Behavior Type see NOTE #5	Classification chart for Qc and Rf Zone # = Soil Behavior Type 1=sensitive fine grained 2=organic material 3=clay 4=silty clay 5=clayey silt 6=sandy silt 7=silty sand 8=fine sand 9=sand 10=gravelly sand 11=very stiff fine grained ¥ 12=sand to clayey sand ¥ ¥ overconsolidated or cemented	#6 #8, Fig4.3	All	1<Qt<1000bar 0<Rf<8%

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
Bq Zone Soil Behavior Type	Classification chart for Qc and Bq (same zone #'s as Rf above)	#8 Fig 4.3	All	$0 < Qt < 1000$bar $-0.1 < Bq < 1.4$
Spt N(60) Standard Penetration Test (Blows/foot) at 60% Energy After R&C(1983) see NOTE #6	Qt/N ratio per zone Zone # / Qt/N / Zone # / Qt/N 1 / 2 / 7 / 3 2 / 1 / 8 / 4 3 / 1 / 9 / 5 4 / 1.5 / 10 / 6 5 / 2 / 11 / 1 6 / 2.5 / 12 / 2	# 7 # 8 Fig 4.2	All	All
Spt N1(60) Normalized for Overburden str	Spt N1(60) = Cn x Spt N(60) where Cn = (sv')^(-0.77)	# 8	All	$0.5 < Cn < 1.5$
Dr Relative Density see NOTE #7	Specific Sands: $Dr = \frac{100}{C2} * \ln \left[\frac{Qc}{C0\ sv'^{C1}} \right]$ where: All are NC & UNAGED	# 8		
Compressibility	Sand / C0 / C1 / C2			
moderate	Ticino / 17.37 / .558 / 2.58	# 1	Sand	7 to 10 $0 < Qt < 500$bar $0 < sv' < 5$bar
high	Schmertmann / 15.32 / .520 / 2.75	# 1		
all	ALL SANDS: NC, OC, ALL TESTS $Dr = C3 + C4\log_{10} \left[\frac{\left[\frac{Qc}{--} \right]^{C1}}{\left[\frac{sv'+C2}{---} \right]^{C0}} \right]$ where: C0 / C1 / C2 / C3 / C4 0.100 / 0.0981 / 0.5 / -98 / 66	# 5	Sand	7 to 10 (6 possible)
Phi Friction Angle	Methods: 1) Robertson & Campanella 2) Durgunoglu & Mitchell 3) Janbu beta = +15 degree 4) Janbu beta = 0 degree 5) Janbu beta = -15 degree	 #6, #8 # 2 #6, #8 #6, #8 #6, #8	Sand	7 to 10 & 6 $0 < Qt < 500$bar $0 < sv' < 4$bar $29 < phi < 49$

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
Gmax Maximum Shear Modulus at very small strains	Clay: Gmax = alpha x Qt	# 8 Fig4.18	Clay	1 to 6
	Sand: Digitized figure of Qc vs Gmax with interpolation between sv'curves, R&C method	# 6 # 8 Fig4.13	Sand	(6 possible) 7 to 10 .25<sv'<8bar
CSR(Qc), t/s LEVEL ground Liquefaction SAND Resistance see NOTE #8	Seed's CSR vs N1(60) graph for specified equake Magnitude. Can include silty sand corr. for Zone 7. N1(60) from CPT correlations.	# 11 # 12	Sand	7 to 10 (6 possible)
CSR(Eq), t/s Cyclic Stress Ratio applied by design quake	$CSR(Eq) = 0.65 \frac{Amax}{g} \frac{sv}{svo'} rd$ Amax=max surface acceleratn including Amplification	# 12 # 3	Sand	7 to 10 (6 possible)
[Note: Input value from input file is used if defined, & not calculated]				
rd Reduction Factor to find CSR(Eq)	Digitized graph to use for depth vs rd: 1) Seed's mean 2) Fraser Delta	# 12 # 3	Sand	(6 possible) 7 to 10 0<depth<30m
FL, Safety Factor against Liquefaction	FL = CSR(Qc)/CSR(Eq)	# 3	Sand	7 to 10 (6 possible)
Qcr Critical Bearng required to resist Liquefctn	Qcr backcalculated from CSR(Eq) for a specified FL. Qcr is only for the given GWT, EOS, OS, Amax/g & Eq.Mag	# 12	Sand	7 to 10 (6 possible)
Su, Undrained Shear Strength of CLAY METHODS:	Nk: $Su = \frac{Qc - st}{Nk}$	# 8	Clay	1 to 6
	Nke: $Su = \frac{Qt - U2}{Nke}$		Clay	1 to 6
	Nkt: $Su = \frac{Qt - sv}{Nkt}$		Clay	1 to 6
	Nc: $Su = \frac{Qt}{Nc}$		Clay	1 to 6
see NOTE #9	NdU: $Su = \frac{dU2}{NdU}$ (dU1 or dU3)		Clay	1 to 6

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
Su/EOS	$Su/EOS = \frac{Su}{sv'}$	# 8	Clay	1 to 6
Ko (NC) Normally Consolidated	$(Ko)NC = 1 - Sin(f)$ see NOTE #10	# 8	Sand	7 to 10 (6 possible)
Ko (OC) Over Consolidated	$(Ko)OC = (Ko)NC \times OCR^{0.42}$	# 8	Sand	7 to 10 (6 possible)
E25 Youngs Modulus	E25 = alpha x Qt where user input alpha	# 8 4.11&12	Sand	(6) 7 to 10 0<Qt<500bar
M Constrained Modulus	CLAY: M = alpha x Qt where user input alpha	# 8 Tabl4.3	Clay	1 to 6
	SAND: Methods: Qt: M = alpha x Qt		Sand	7 to 10 (6 possible)
	Baldi: $\frac{M}{Qt} = C0 \times pa \left(\frac{sv'}{pa}\right)^{C1} \times OCR^{C2} \times \exp(C3\ Dr)$	# 8 Fig4.10	Sand	7 to 10
OCR (Clay) Over- Consolidation Ratio see NOTE #11	$OCR = \left[\frac{\frac{Su}{svo'}}{\left(\frac{Su}{svo'}\right)_{NC}}\right]^{1.25}$	# 6 # 8 Fig4.19	Clay	1 to 6
Ic Material Index After J&D(1993) see NOTE #18	$Ic = \left[\left(3-\log_{10}(Q(1-Bq))\right)^{2} + \left(1.5+1.3\log_{10} F\right)^{2}\right]^{0.5}$	# 13 # 17	All	All
Spt N(60) Standard Penetration Test (Blows/foot) at 60% Energy After J&D(1993) see NOTE #16	$Qc/N = 8.5(1-(Ic/4.75))$ where Qc in bars	# 13	All	All

Parameter	Methods	Refer. Number	Valid Soil Type	Valid Zone
State Parameter State, (e-units) Current Void Void Ratio minus Critical Void Ratio	$$\text{State} = \frac{\ln\left\| \dfrac{3M + 8.5M/F}{Q(1-Bq)} \right\|}{11.9 - 1.33F}$$ $$M = \frac{6 \operatorname{Sin} fcv}{3 - \operatorname{Sin} fcv}$$ fcv = const. vol. Phi angle	# 14	All	All
Fines Content FC(%) Percent less than #200 Sieve After Davies,99	FC(%) = 42.4179(Ic) - 54.8574 FC(%) = 0% if Ic < 1.2933 FC(%) = 100% if Ic > 3.6508	# 15	All	All
OCR (Clay) Overcons. Ratio by Pore Press. U1 & U2 or U1 & U3 see NOTE #17	OCR = 0.5 + 1.50(PPD) PPD = (U1 - U2)/Uo or PPD = (U1 - U3)/Uo and default 0.5 & 1.5 are settable	# 16	Clay	1 to 6

1. Depth averaging may be in 0.5, 1, 2.5 or 5 ft. intervals or 0.1, 0.25, 0.5 or 1.0 m intervals, or no depth averaging if zero is selected. The average is the mean value of the readings in the interval. The depth value is the mid-depth of the averaged interval. It is convenient to start at half the depth averaging interval. For example, if you want "even" depths and the depth averaging is set at 0.50 m then start at 0.25 to get values of depth of 0.5, 1.0, 1.5, etc.

2. Basic input CPTU data columns are for Depth, Qc, Fs, U1, U2, U3, INC and TEMP may be selected. In addition the following parameters may also be specified as an INPUT data column: Qt, Gamma, Uo, Spt N, Rf Zone, Bq Zone and CSR(EQ). These values will be used where required to obtain other interpreted parameters. If they are not specified the program will estimate them when they are required. For example, you can create an OUTPUT data file of any of the above parameters and then edit some or all of the values to suite your measurements or your desires to specify their values. You can do that with "Gamma" values to input your measurements of unit weight, or with "Uo" if you want to input values of pore water pressure other than hydrostatic, or with any of the other input parameters. You would use your edited file of adjusted data as your new INPUT data file. Thus, you can specify these parameters if you want to override the Program's values.

You can also use the designated value of "9E9" to denote an unknown value.

You can use the "OTHER" designation to input other data that exists on your input file and identify its units. This allows you to output it, without operating on it, if you choose.

It is best NOT to use depth averaging when using input data that is not continuous at regular depth intervals. Always use DEPTH AVERAGING with extreme caution since the program averages ALL INPUT parameters over the interval chosen irregardless of soil type. Careful use of start and end depth choises can make depth averaging very effective.

3. Since there is no data in the file within the initial depth interval, a default Gamma (unit weight) must be specified from the surface to the starting depth. This is done in the "Param" Menu in units of kN/m^3 (1kN/m^3=6.36pcf). Also, you can specify the values of Gamma to be used by the program as in NOTE #2 above.

4. If pore pressures are not measured by the cone then the program will take Qc as being equal to Qt for all interpretations requiring Qt. Also, Uo may be specified in the input file as a column of Uo vs depth values, if the water pressures are not hydrostatic. See NOTE #2 for more info on customizing input data.

5. You can choose to use either the Rf classif. Zone or the Bq classif. Zone to divide soil into Undrained Parameters (Zones 1 to 6) and Drained Parameters (Zones 7 to 10) in the "Param" Menu. (However, in order to use the Bq Zone you must have Pore Pressure, U2, data.) Also, you may choose to switch Zone 6 to a Drained Zone from its Undrained Zone status. This is done if you feel that the soil identified as Zone 6 (sandy silt) is really coaser (using other sources of information) and/or you want it analyzed as a Drained rather than Undrained soil. Finally, the soil behavior names in each zone were shortened in version 5.0 for simplicity. For example, Zone 6 was named "sandy silt to clayey silt" but was shortened to "sandy silt".

6. Spt N is the same as Spt N(60) for 60% transferred energy. This value is calculated from the Qt/N ratios given for each Soil Zone (you can specify either Rf or Bq Zone) and these values are used in the Level Ground Liquefaction analysis. Values of Spt N may be specified in the Input File, if indepedently measured values are to be used. We suggest that you not use depth averaging if you only have selected Spt N values at a few depths. You may use "9E9" for missing data.

7. If Dr values are negative then soil is very loose or likely more of an undrained soil like a silty sand rather than a drained soil for which the Dr correlations were developed. Use Dr interpretations very cautiously since they also assume the soil is free draining, uncemented, unaged and has the same compressibility of grains as the soil used for the correlations in chamber calibration tests.

8. The simplified sand liquefaction analysis for level ground according to Seed et al requires Spt N1(60) and earthquake magnitude to obtain the cyclic stress ratio to cause liquefaction, CSR(Qc). The design maximum ground acceleration, the depth-reduction factor, Rd, and overburden total and effective stresses are required to calculate the cyclic stress ratio applied by the design earthquake, CSR(EQ). The program estimates the N1(60) values from the cone stresses, the operator identifies the earthquake magnitude and Seed et al chart is used to get CSR(Qc). The program also calculates CSR(EQ) from the user specified maximum ground acceleration including any amplification factors, the calculated overburden stresses and either Seed's mean or the Fraser Delta Rd factor. The Fraser Delta is used only when amplification factors of the order of 2 or more are used. See Reference Nos. 3, 6, 11 and 12 for more information. The user can INPUT specific values for Spt N, CSR(EQ), Soil Zones, Gamma's, etc. in order to customize the analysis for the existing data base of information. It is recommended that you do not use depth averaging when using specific input data but make calculations at specific depths where external input data exists. The calculated value of Qcr is the minimum value of cone bearing stress required at a given depth such that the factor of safety against liquefaction, or the ratio FL = CSR(Qc)/CSR(EQ) have the specified value for a given earthquake magnitude, max. ground acceleration, depth reduction factor, and calculated overburden stresses. This value of Qcr is useful to identify the required minimum level of soil improvement for a given design condition.

9. The NdU method to calculate undrained shear strength has been extended to allow the user to choose either dU1, or dU2 or dU3 provided such pore pressure measurements exist.

10. The Overconsolidation Ratio, OCR, for the sand must be estimated by the user in the "Param" menu if you want to estimate Ko in the sand layers. For the typical normally consolidated sand, OCR = 1.0.

11. It is currently only possible to estimate the OCR for a clay, which makes use of the correlations obtained from extensive laboratory tests.

12. An improved calculation and print routine was added to version 5.0 which uses swap routines to reduce memory requirements, but slows down the calculations.

13. The classification charts for Rf has been extended at all boundaries such that values of Rf>8 and values of Qc<1.00 are possible. The Bq classification chart which requires dU2 and can now accept values of Bq>1.2 and Qt<1. Unfortunately, this feature does not work.

14. Version 5.1ppd added several enhancements to the program. You may input an average vertical flow gradient, which is applied over the entire profile depth to be analysed so adjust the depth of interest accordingly. Zero gives hydrostatic and no flow, a negative gradient is upward flow which increases pore pressure and reduces vertical effective stress. A positive gradient gives downward flow.

15. A State Parameter or current void ratio minus critical void ratio is calculated according to the paper by Ref. 14, Plewes, Davies and Jefferies, 1994.

16. An alternate method to estimate SPT from CPT is provided according to Ref. 13, Jefferies and Davies, 1993 in ASTM.

17. An alternate method to estimate OCR in clays is provided which uses the measured pore pressure difference, ppd, so both U1 and U2 or U1 and U3 must be measured at the same time. (see Ref. 16)

18. Version 5.2 added the value Ic (Material Index) according to Jefferies & Davies, 1993, 1991 (Ref. 13 & 17) which combines all Normalized parameters Q, F and Bq.
(Note: QtN was changed to Q and RfN to F.)

18A. In Version 5.2, if at any depth the value of Bq>1 (in very sensitive saturated soil)then Bq is made equal to 0.99. Also, if Rf>8 it is made 7.99. These changes have a negligable effect on the results.

19. FC(%) or percent of dry weight less than #200 sieve (.074mm) was also added according to Davies, 1999 Ref.#15)

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APPENDIX C

GLOBUS
ENGINEERING INC.

REPORT
PRELIMINARY GEOTECHNICAL INVESTIGATION
ALISO CANYON TURBINE REPLACEMENT PROJECT
NORTHRIDGE, CALIFORNIA
FOR SOUTHERN CALIFORNIA GAS COMPANY

Globus Engineering Job No. 0519
November 17, 2006

Reviewed and Approved by:

Uday K. Patil

Uday K. Patil, P.E., G.E.
Principal

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November 17, 2006

Washington Group International Inc.
7800 E Union Ave, Suite 100
Denver, CO 80237

Attn: Mr. John Zappanti
Mr. Vas Vasileff

Report
Preliminary Subsurface Investigation
Aliso Canyon Turbine Replacement Project
Northridge, California
For Southern California Gas Company

Gentlemen:

INTRODUCTION

This report presents the findings and recommendations from a preliminary subsurface investigation performed for the above referenced project for the Southern California Gas Company (Gas Company), in the county of Los Angeles, California. Globus Engineering Inc. (Globus) has been retained by the Washington Group International Inc. (WGI), the project Architect-Engineer for this initial phase of the project, to provide geotechnical consulting services for the project. We understand that the Gas Company is planning to install several new large compressors and turbines at their existing Aliso Canyon facilities near Northridge, California. The new construction will be located to the south of the existing compressor facilities, replacing the existing office and parking facilities at that location. The latitude and longitude of the site location are approximately 34.307^{o}N and 118.552^{o}W, respectively. The location of the project site relative to existing topographic features and adjacent streets is shown on the Site Location Map, Plate 1. The overall layout of the site is presented on Plot Plan, Plate 2.

The findings and recommendations presented in this report are based on the data obtained and analyses performed specifically for the subject project and for the objectives described herein. These findings and recommendations should not be extrapolated or used for facilities or purposes other than those described herein without prior review and approval by Globus.

PROPOSED PROJECT

The proposed project involves installation of several new large compressors and turbines at the existing Aliso Canyon plant. The new construction will be located to the south of the existing compressor facilities, replacing the existing office and parking facilities at that location. The new compressors and turbines will replace some of the existing equipment located to the north in the existing compressor plant. The currently available details of the new equipment and layout planned for the project are provided below:

- Turbine-Compressors: The compressors will be turbine driven and will have a footprint of roughly 52 feet by 11 feet, with a gross weight of 120 kips. We understand that there will be 4 such units and the compressors will be roughly 20,000 HP capacity each. The Turbine-Compressor units are expected to be sensitive to vibrations with specific performance requirements related to maximum allowable vibration amplitudes prescribed by the manufacturers. These units also require an accurately leveled foundation base.
- SCR: Each Turbine-Compressor unit will have an SCR (Selective Catalytic Reduction equipment) with a footprint of roughly 51 feet by 14 feet, with a gross weight of 100 kips each.
- Coolers: The Turbine-Compressor units will be supported by discharge coolers, each bay consisting of two coolers with a total footprint of 32 feet by 14 feet, with a gross weight of 70 kips each. The plant will require a total of 18 such bays.
- Auxiliary Equipment: The plant will include piping and other minor auxiliary equipment including small tanks and pumps, blowers, heaters, etc. There will also be a 20-foot wide perimeter road surrounding all the equipment for access and servicing.

PURPOSE AND SCOPE OF SERVICES

The subject project is currently in the early planning stages and WGI is working on developing a conceptual design for the new facilities. We understand that the preliminary design data developed during this phase will be used by an EPCM contractor for the next phase of final design and construction of the project. The purpose of the preliminary geotechnical investigation addressed herein was to:

- Identify the geotechnical factors involved in site development and foundation construction;
- Assess the feasibility of supporting the new facilities at the proposed site based on geotechnical considerations; and,
- Develop preliminary geotechnical recommendations for design and construction of the proposed facility for planning purposes.

Our scope of services did not include any environmental sampling or assessment of the site. The scope of services for the initial phase of preliminary investigation was outlined in our proposal dated September 13, 2006; the original scope was amended by a supplementary proposal dated October 30, 2006, to include additional tasks related to fault hazard assessment. Generally, our scope of services as covered in this report consisted of the following tasks:

1. Review, Reconnaissance and Planning

Site reconnaissance, review of relevant existing subsurface information, marking of proposed exploration locations, and planning for the field explorations at the site.

2. Review of Historical Topography & Aerial Photographs

Review of predevelopment/historic topographic maps pertinent to the site area to note previous grading activities and changes in grades to evaluate possible presence of artificial fills. Aerial photos of site area from the Fairchild and other collections dating back to the late 1920's were also reviewed as available.

3. Field Explorations

The field explorations consisted of limited surface geologic mapping, test pits/trenches, and drilling and sampling. This included:

- Excavation and logging of 7 test pits to depths varying from 5 feet to 17 feet below existing grade to expose the near surface materials to assess existing fill conditions and to facilitate the geologic mapping process.
- Mapping of the site area by a certified engineering geologist noting exposures of the native formations on topographic maps provided by WGI.
- Drilling and sampling of a total of 9 exploratory borings to depths ranging from 11 to 47 feet below the existing ground surface; all the borings were drilled to equipment refusal conditions.

4. Laboratory Testing

Laboratory testing on selected samples from the borings for physical properties of the soils, including index, compaction, CBR, shear strength, and compressibility properties. In addition, pH, electrical resistivity and chemical content (sulfate and chloride) of selected samples of the soils were also measured in the laboratory for soil corrosivity properties.

5. Preliminary Fault Hazard Assessment

A preliminary fault hazard assessment was performed to develop a better understanding of the hazard for planning purposes and to assess the extent and timing of any detailed investigation needed related to this issue. The findings and recommendations related to the faulting hazard were relayed to the project team in a conference call and a summary of the findings and recommendations is provided in Appendix B to this report.

6. Engineering Analyses

Evaluation of alternative foundation systems suitable for the site conditions and different support requirements and engineering analyses based on the field and laboratory data obtained to develop geotechnical design parameters for the proposed facilities. The analyses address the items listed below in the report section.

7. Report Preparation

Preparation of this report summarizing our findings and recommendations for preliminary design of the proposed project. A preliminary letter report dated October 23, 2006 was submitted to WGI to provide a summary of the initial findings and tentative recommendations. The final report includes the following:

- Description of site surface conditions and observations
- Details of field explorations performed including methods and equipment used.
- Description of subsurface conditions, and data obtained including logs of borings and test pits and ground-water levels, if encountered.
- Findings from a review of the historic photos and topographical maps.
- Findings from surface geologic mapping and geology review.
- Laboratory testing performed and a summary of the results.
- Assessment of existing fills based on the field and laboratory data obtained.
- Preliminary assessment of slope stability and related issues.
- A discussion of primary geotechnical factors involved in site development.
- A discussion of alternative schemes considered and a recommended scheme for site preparation and foundation construction for the project.
- Foundation support recommendations for the selected foundation scheme(s) for the planned facilities.
- Estimated settlements (total and differential) for the recommended foundation types and sizes for different loading conditions.
- Passive earth pressure and coefficients of active and at-rest lateral earth pressures and coefficient of friction for design of cantilevered and restrained walls for resisting lateral loads.
- Liquefaction assessment and any remedial measures for any liquefaction hazards identified for the new construction.
- Recommended seismicity parameters (Nv, Na, etc.) as defined in the current UBC for use in the seismic design of the facility.
- Coefficient of subgrade reaction and related parameters and recommendations for concrete slab and pavement design. (Pavement design based on traffic index is not included in this phase.)
- Recommendations for construction monitoring.

- Recommendations for the tasks involved in the detailed design phase.

Our findings and recommendations are presented in the following sections.

FIELD INVESTIGATION

Our field investigation consisted of exploratory drilling and sampling, trenching (test pits), and engineering geologic mapping, and was performed during the period of October 12 through October 17, 2006. Drilling, sampling and trenching were performed following a review of existing data on subsurface utilities and checking for possible subsurface interferences. No obstructions were encountered at the exploration locations, except for some over-sized materials at depth. Also, chemically impacted soils were not observed in the borings or test pits based on visual observations and odor. (However, it should be noted that environmental testing and/or assessment of the subsurface materials were specifically excluded from our scope of services.) Details of each task are summarized below.

EXPLORATORY TEST PITS

A total of 7 exploratory trenches (test pits) were performed to depths ranging from 5 feet to 17 feet below existing ground surface. The test pits were excavated using a rubber-tired backhoe at the locations indicated on the Plot Plan, Plate 2. The purpose of the test pits was to facilitate surface mapping, to help assess the approximate extent of the artificial fill and to gain an understanding of the bedrock conditions at shallow depths. All the test pits except TP-6 encountered competent bedrock materials. TP-6 was extended to a depth of 17 feet where it encountered strong inflow of water. Bedrock was not encountered. TP-7 encountered bedrock material that is fractured with bedding features truncated against the fractures. The rock immediately adjacent to the fractures is soft and excavated easily. Test pits were backfilled with the excavated material with reasonable compaction effort to place all excavated material back in the test pits, but without testing and certification. These excavations should be properly backfilled or removed as appropriate during future construction. Logs of the test pits are presented Appendix A.

ENGINEERING GEOLOGIC MAPPING

Surface mapping was performed based on exposures available in the vicinity of the subject site and the exploratory test pits. The Topanga Formation bedrock was exposed in all the test pits except in TP-6. These exposures allowed an overview of rock types and conditions, stratigraphic and structural relationships, seeps and springs, and an estimate of the approximate limits of existing artificial fill. Results of the engineering geologic mapping are presented on the Plot Plan and Site Geologic Map, Plate 2.

DRILLING & SAMPLING

A truck-mounted hollow stem auger drill rig was utilized at all the boring locations. A total of 9 borings were performed to depths ranging from 11 feet to 47 feet below the existing ground surface. Three borings (in addition to the six originally planned in the proposed construction areas) were performed near the toe of the slopes below the site area. All the borings encountered refusal conditions and were terminated in competent bedrock materials. Borings were backfilled with the excavated cuttings mixed with bentonite chips. Approximate locations of the borings are shown on the Plot Plan, Plate 2.

Soil samples were typically obtained at five-foot intervals. Relatively undisturbed samples were obtained from the borings using a modified California sampler driven by a hammer weighing 140 pounds and dropping 30 inches for all the borings. Standard Penetration Tests (SPT's) were conducted per ASTM D-1589 at selected intervals in the borings. Bulk samples were also obtained at selected depths. Samples of the subsurface materials were observed and the soil materials were classified in the field in accordance with the Unified Soil Classification system. Any pertinent field observations such as drilling resistance, presence of ground water, etc. were also noted. Logs of the borings are presented on Plates 3 through 11. A description of the Unified Soil Classification system used and a key to the log of borings are presented on Plate 12.

HISTORICAL TOPOGRAPHY AND AREAL PHOTO REVIEW

Historical aerial photographs and old topographic maps pre-dating existing site development were reviewed to assess past grading operations performed in the site area. Old aerial photographs of the site area dating back to 1928 were reviewed. The photographs indicate that the site was essentially undeveloped until the late 60's. The natural topography was altered significantly by grading in the early-1970's for the existing Compressor Plant located to the north of the site. Portions of the then-existing canyons traversing through the current project site were filled along the southern end of the fill slopes for the existing compressor plant project. (A site grading plan for that project was obtained from the Gas Company archives and has been provided to WGI for their use.) Significant additional grading was performed some time after the early 70's to fill the canyons further in the current site area. It appears that this area was filled using imported materials to create the existing level ground site. The predevelopment topography in the site area, as available from the above referenced grading plan for the existing compressor plant, is shown on the attached Plot Plan, Plate 2. These topographic contours should be considered approximate. Based on the old topography and filling of the canyons, subsurface conditions at the site are expected to be quite variable.

LABORATORY TESTING

Samples obtained from the borings were carefully sealed and packaged to reduce moisture loss and disturbance, and were taken to a certified geotechnical testing laboratory for additional examination and testing.

Moisture content and dry density testing were performed in accordance with ASTM D2937 to aid in classification of the samples. These tests were also useful for correlation with test data on other similar materials, especially the data available from previous investigations performed at the site. Results of these tests are presented on the logs of borings.

Sieve analyses were performed in accordance with ASTM D422 to further aid in classification and correlation. Results of these tests are presented on Plate 13, and selected results (materials passing the #200 sieve, indicated as - #200) are presented on the logs of borings.

Atterberg Limits tests were performed in accordance with ASTM D4318 to further aid in classification and correlation of the cohesive materials encountered. Results of these tests are presented on the logs of borings and on Plate 14.

Direct shear testing was performed on selected samples in accordance with ASTM D3080 to evaluate strength properties of the materials. These tests were performed under saturated and unsaturated conditions, and were designed to facilitate evaluation of the strength properties under slow loading conditions as well as under residual shear conditions. Results of these tests are presented on Plates 15 and 16.

Compressibility characteristics of the materials were evaluated by performing consolidation testing in accordance with ASTM D2435. In the test, the sample was initially loaded at field moisture and then saturated at a higher load level to evaluate the effect of saturation on the materials. Further loading increments were added and the sample finally unloaded to evaluate the load-deformation behavior. Results of these tests are presented on Plates 17 through 19.

Compaction testing was performed in accordance with ASTM D1557 on selected samples of the upper fill materials. The compaction testing is intended to provide an estimate the level of compaction of the existing fill materials. Compaction test results are presented on Plates 20 thorough 23.

CBR (California Bearing Ratio) testing was performed in accordance with ASTM D1883 on selected samples of the upper fill materials. Results of the CBR testing are useful for the design of paving. CBR test results are presented on Plate 24 and 25.

Corrosivity testing was performed on selected samples from the borings. Results of the corrosivity testing indicate that the tested materials are severely corrosive to ferrous metals under saturated conditions, and moderately corrosive to corrosive under existing field moisture conditions. Data from the corrosivity testing performed on the site soils are presented in Table 1, and are discussed later in this report.

SITE CONDITIONS

REGIONAL GEOLOGIC & SEISMOLOGIC SETTING

The site is located in the western Transverse Ranges geomorphic province of California, on the southern side of the Santa Susana Mountains. The Santa Susana Mountains consist of sedimentary bedrock ranging in age from Cretaceous to Late Pleistocene. This bedrock has been thrust southward over the San Fernando Valley as part of a mountain-building process believed to have begun less than one million years ago. Compressional forces associated with the uplift have deformed the sedimentary package into a complex system of west- to northwest-trending folds and reverse faults. The Santa Susana Mountains are bounded on the south by the San Fernando Valley across the Santa Susana fault, and on the north by the Santa Clara River and Newhall across the Oak Ridge and related faults.

The main trace of the Santa Susana fault is mapped about ¾ mile to the south of the site. The Santa Susana fault is included in a State of California Earthquake Fault Zone (previously "Alquist-Priolo Special Studies Zones") about one mile south-southeast of the site. Faults within this zone were noted to have ruptured during the San Fernando Earthquake of 1971. Yeats reports that oil well casings in the Aliso Canyon Oil Field were not sheared off during the 1971 earthquake (Yeats, 1986).

Additional details related to the fault hazard are presented in Appendix B.

SURFACE CONDITIONS

Currently, the primary site considered for the project is a triangular-shaped area which is fairly level and paved. Much of the site is occupied by the existing administrative facilities consisting of pre-fabricated trailers used as offices and parking. The site grade in this paved area is estimated to be at Elevation[*] roughly 1844 to 1846 feet above Mean Sea Level (MSL). This area is surrounded by three primary slopes as follows:

[*] This elevation is estimated assuming the elevation of the top of the slope on the north side (the existing compressor plant site grade) at 1,900 feet MSL. All elevations referenced in this report are based on this assumption.

- An engineered fill slope rising above the site on the northeast side at a gradient of roughly 1½(H):1(V). This is referred to herein as the North slope.
- A fill slope descending below the site on the west side at a gradient ranging from roughly 2(H):1(V) or flatter to as steep as 1 (H):1(V). This slope is believed to be mostly unengineered and is referred to herein as the West slope.
- A cut slope (with minor fill at some locations) rising above the site on the east side at a gradient of roughly 1½(H):1(V), or steeper at some locations. This is referred to herein as the East slope.

A small portion of a pre-existing knoll is located along the North slope. Access to the site is available via the Limekiln Canyon Road, located to the east of the site. The overall site drainage is towards the west and south, over the West slope and into the natural drainage/creek traversing north-south, and then into the Limekiln Canyon drainage.

SUBSURFACE CONDITIONS

Earth Materials observed during our investigation included undocumented artificial fill, colluvium, and bedrock of the Topanga Formation. Geologic descriptions of these materials are presented below and on the logs of borings, and on the logs of test pits (in Appendix A). An idealized subsurface cross section was prepared along the alignment A-A as shown on Plate 2; the cross section is presented on Plate 26.

Artificial Fill (af): The materials encountered in the borings and test pits indicate that the site area is generally underlain by fill materials varying in thickness from about 2 feet to 36 feet. In general, the fill thickness compares well with the difference between the existing and old surface contours, with some exceptions. This is also confirmed by many borings and exploratory test pits showing competent sandstone materials at shallow depths in unaltered native ground areas.

The fill materials are generally heterogeneous and consist of silty sands, silty clays, and clayey and sandy silts, varying in consistency from loose to medium dense, or soft to very stiff. Gravel-sized pieces of bedrock materials were encountered within the fill; oversized (cobble- or boulder-sized) materials were also encountered at some locations in the borings. Laboratory testing was performed on samples of these materials from the borings to assess their quality. Dry density values of these fills are plotted on Plate 27 along with required densities for a 90 percent relative compaction. Based on this data and our field observations, the majority of the fill materials are considered to be unengineered and below the 90 percent relative compaction required by code. In general, the granular fills are present at shallow depths and appear to be at a higher compaction level, while the clayey fills extend deeper and are at a lesser compaction level. Results of the laboratory testing also indicate that some of the clayey fills may be moisture sensitive, resulting in settlement upon saturation. Based on the data presented on Plate 26, it appears that some excavation and/or cleaning of the preexisting canyon and surrounding areas may have been performed prior to placement of fills.

Bedrock - Topanga Formation (Tt): The fill materials grade into native materials which are predominantly granular, including clean and silty sands, which are derived from the weathered bedrock materials. Highly weathered sandstone materials were generally small in thickness. These materials vary from medium dense to very dense in consistency, and typically within a few feet (or less), grade into competent sandstone bedrock. Bedrock in the area consists of sandstone and conglomerate assigned to the upper sandstone member of the Miocene-age Topanga Formation. Where observed in our test pits, this material is typically yellowish-gray to dark yellowish-orange, fine- to medium-grained and generally moderately hard to hard.

Geologic Structure: The bedrock occurs in the upper plate of the Santa Susana thrust fault not far north of the surface trace of the fault. The bedrock is tightly folded. Folds trend generally easterly to northeasterly with limbs inclined at angles of 20 to 45 degrees. Saul (1979) maps two short faults within the site area. Bedrock depth varies from surface outcrops at several locations (such as Test Pit T-2) to a depth of 37 feet in Boring B-7.

Ground Water: Ground water was encountered or observed in several borings and test pits at depths ranging from 10 feet to about 37 feet in the site area. Ground water appears to be related to inadequate drainage or deficiencies related to filling of the natural pre-existing canyons and drainages.

Note: Geologic conditions at the site have been interpreted and characterized based upon a review of published and unpublished references, our observations of isolated exposures available during surface mapping, and subsurface explorations. These conditions were observed and interpreted at the exploration or exposure locations only. Our interpretations involve projections of data and assume that geologic conditions are reasonably constant between points of exposure. Ground water levels presented on the log of borings or test pits are approximate because ground water level was not monitored or measured through observation wells installed specifically for that purpose. Subsurface conditions related to the geologic materials and ground water may vary between the exploration and/or exploration locations and will depend on changes of strata and fluctuations of ground water levels. If conditions encountered during construction differ from those described in this report, the recommendations provided herein may need to be modified. Any field work and construction related to earthwork and foundations at this site should be monitored by a geotechnical engineer and/or geologist to observe the exposed geologic conditions and evaluate if they are different from those described herein prior to proceeding with related construction.

DISCUSSION AND RECOMMENDATIONS

PRIMARY DESIGN CONSIDERATIONS

The following primary geotechnical issues are identified for design and construction of the project based on an evaluation of the data obtained.

Site Topography and Access

The site is located in a hillside environment surrounded by relatively steep slopes. While access may be adequate after the existing facilities are cleared, the limited area of the site restricts the space available for an efficient grading operation.

Existing Fill Materials

The site is underlain by unengineered fills of generally poor quality that will not meet current code requirements. The majority of the fill materials encountered in our borings are fine-grained (and not derived from the sandstone bedrock in the site area), and appear to be imported from offsite locations. Generally, fine-grained materials have undesirable properties for grading and foundation support. Site development will require significant mass grading to over-excavate and improve the quality of the fills.

Variability of Fill Thickness and Material Properties

The variability in fill thickness over the site as well as the considerable differences in the properties of the fill (improved or as-is) and the underlying bedrock represent highly non-uniform subsurface conditions for support of the large compressor/turbine foundations. These non-uniform conditions will not change appreciably even after the fills are improved to meet the code requirements.

Ground Water

While a contiguous ground water table is expected to be deep, perched water bodies and springs and seeps are present at shallow depths in the site area. Ground water appears to be related to inadequate drainage or deficiencies related to filling of the natural pre-existing canyons and drainages. Saturation of subsurface materials can result in undesirable effects such as settlement and slope instability.

Fault Hazard

The site is located in the vicinity of the Alquist-Priolo (A-P) seismic hazard zone related to the Santa Susana Fault. This A-P zone is terminated roughly ¾ mile eastward from the site area with a note on the maps indicating that the “Santa Susana Fault zone extends to west, but not yet evaluated for zoning purposes.” Published reports on this region provide preliminary data related to mapped main fault traces of the Santa Susana fault extending just south of the site area.

Therefore, the potential for distributed ground deformation in the site area in the event of renewed movement on this fault cannot be precluded. Additional details related to the fault hazard are presented in Appendix B.

Slope Stability

The project site is surrounded by various slopes; the stability of at least some of these slopes may affect the stability of the project site. The project will need to be permitted through the Building and Safety department of the County of Los Angeles; the County has fairly stringent requirements related to hillside stability and construction. A brief appraisal of the existing slopes is provided below:

- The West slope primarily consists of unengineered fill slopes with gradients up to 1(H):1(V) or steeper. These fills were placed over native slopes with relatively flatter gradients. It appears that the fill slopes are constructed without proper compaction, benching, material quality control, or drainage measures. These fill slopes are expected to be marginally stable, especially under saturated conditions, and will need to be over-excavated and re-engineered for the project.
- The existing North slope is a fill slope with approximately 1½(H):1(V) gradient. Even if these fills are found to be properly compacted, the slopes exceed the minimum 2(H):1(V) gradient currently allowed by the Los Angeles County Building Code. It is expected that the stability of these slopes will need to be proved for permitting of the current project. If modifications to the slopes are required for the proposed project, regulatory agencies may require that the existing slopes be reconstructed to meet current standards, and/or provide adequate setbacks from them.
- The East slope generally consists primarily of competent bedrock materials, possibly covered with a blanket of fill generally anticipated to be only a few feet thick. It may be possible to re-grade this area to gain some space for the project.

Difficult Excavation

The Topanga Formation Sandstone can be very hard under less weathered conditions. Overexcavation of the bedrock may be required in some areas. Difficult excavation will be encountered during excavation or drilling for the project. Excavation in hard bedrock materials will likely require special tools and techniques.

Soil Corrosivity

Results of the corrosivity testing indicate that the site materials are corrosive to moderately corrosive under current field moisture conditions, and severely corrosive when saturated, to ferrous metals. The soils also include high sulfate content. Corrosion resistant design measures need to be implemented for concrete and steel structures and devices.

Moisture Sensitive Materials

The clayey materials at the site can be moisture sensitive: both collapsible and expansive. Such materials should be avoided below foundations or behind retaining walls unless special measures are provided in foundation design and construction.

Seismic Loading

The site is located in UBC Seismic Zone 4 and has been subjected to strong ground shaking in the past. The epicenter of the 1994 Northridge Earthquake, which produced strong ground shaking at the site, is estimated to be about 6 miles from the site. Seismic loading and near-fault effects need to be considered in design of the project. Liquefaction of saturated granular soils should not be a concern provided the above mentioned deficiencies in fill materials and subsurface drainage are addressed.

RECOMMENDED CONCEPTUAL FOUNDATION SCHEME

The overall strategy for site development and foundation design needs to address all the items above as efficiently as possible. Based on our evaluation of the above factors, site grading should be designed to maximize the use of any shallow-bedrock areas for foundation support. It is our opinion that supporting the primary turbine-compressor foundations on bedrock will reduce the sizes of those foundations, minimize eccentricities related to the variable site conditions, and significantly improve the settlement and vibration performance of these foundations. Lowering the finished site grade to the extent possible and creating a recessed pad into the uphill slopes of the site may be the desired approach to develop the site for this project. With this approach, shallow foundations should be possible for most of the primary equipment. Pile foundations extending into the bedrock are not recommended for support of the large machines because that would only improve foundation performance in the vertical direction and not in the lateral directions. However, pile foundations are recommended for support of all ductwork and large diameter piping. The recommended conceptual foundation scheme is illustrated on Plate 28.

For site layout and foundation support of the proposed facilities, we recommend the following guidelines:

- Excavate all existing fills in the site area; the excavations may extend into the drainage(s) on the south-southwest side. Selective excavation as recommended above will be required to segregate different types of fills for reuse.
- Overexcavate to El. 1830 feet (or deeper as required to meet the space requirements) in the main site area to expose competent bedrock materials over an appreciable portion of the site. For preliminary design purposes, use the old topographical data (the red-lined contours on the Plot Plan, Plate 2) and exploratory data presented in this report to assess the extent of the "bedrock areas" available.

- Some overexcavation will be required to remove weak or highly weathered bedrock prior to backfilling or concrete placement. The resulting uneven bedrock surface may be leveled by using a lean concrete mudmat. The lean concrete layer can also be thickened to raise the elevation of the competent bedrock surface to the required level for further construction.
- Use low- to medium-height retaining walls (with a maximum height of about 15 feet) along the North and East slopes to provide additional space in the bedrock areas. We recommend conventional retaining walls and 2(H):1(V) fill slopes. It may be assumed that the slope on the east side can be recessed further back towards the roadway with a 1(H):1(V) gradient.
- Provide setbacks from all slopes as required by code. A 25-foot minimum setback should be provided between any structures and slopes or retaining walls, which may be exceeded by code requirements at some locations.
- Install subdrains in the pre-existing canyon areas. Additional backdrains may be needed along contacts with the North slope.
- Backfill the excavated low-ground areas (previously canyon areas) within the primary site area with granular materials (Type A fill, as recommended later); clayey soils (Type B fill) may be used in the remaining areas and slopes away from the areas supporting foundations.
- Use shallow foundations for most primary facilities; large and thick block foundations may be used for the machines. Place and support the primary compressor/turbine units only in cut areas exposing competent bedrock (referred to as bedrock areas), with bottom of the foundation blocks at the approximate elevation required to gain the desired space for the foundations. An approximate Elevation of 1830 feet is suggested for preliminary planning purposes; the final elevation will depend on various factors including the actual site conditions, the space requirements for the machine foundations and related facilities, etc. The remaining equipment (such as cooler bays and other auxiliary equipment, that is not vibration-sensitive) may be supported at higher elevations and on the newly compacted fills or bedrock. Foundations shall not straddle between bedrock and fill.
- Use drilled piers for support of all ductwork and larger diameter piping. Drilled piers should be socketed into the bedrock.
- Prior to backfilling, any additional subdrains and other drainage measures should be provided to maintain pre-existing natural drainage in the canyons and within the subsurface materials. Lack of such drainage provisions and their continuing maintenance will result in ground water conditions as currently observed at the site, leading to possible slope instability or other problems.
- Place backfill around and above the foundations as needed to the required finished plant grade, such as El. 1840 feet. The finished grade elevation should be optimized to reduce grading requirements, to create adequate space as required in the bedrock areas, and to minimize the

required retaining wall heights. The finished grade can be raised to a higher level by using pedestals for equipment and a lean concrete layer as recommended above.

Additional recommendations for earthwork and foundation design and construction are provided in the following sections for this phase of the project.

CONCEPTUAL DESIGN ALTERNATIVES

The subject site can be developed as planned provided the above geotechnical considerations are addressed in design and construction. As discussed in Appendix B, additional engineering geologic explorations may be needed to further evaluate the fault rupture hazard at the site and the related risks. If that risk is acceptable, the site should be feasible for the proposed development from geotechnical and geological considerations. The following conceptual alternates are suggested for further consideration at this preliminary design phase.

- **Alternative Site:** Consider alternative locations for the site where the geological and geotechnical issues may be more favorable for site development (compared to the current site).
- **Two-tiered Site:** Create two stair-stepped pads (at two levels) at the current site to provide more bedrock area for the facilities. This may result in reducing the amount of grading and retaining walls needed while creating more space. The two levels can be created within the existing site area with different levels on the north and south sides. Alternately, the levels can also be created in the east-west direction by recessing a pad into the West slope.
- **Retaining Walls:** Construct concrete retaining walls on both sides of the level pad(s) for the plant (for a cut into the North slope as currently suggested in this report, and an additional wall on the downslope side to retain fills behind). This may result in reducing the grading required into the unengineered fill slopes extending westward toward the existing drainages.

SITE PREPARATION

As a part of site preparation, any debris, or facilities to be demolished, should be removed and disposed of outside the construction limits. All existing unengineered fill shall be overexcavated and separated for reuse. Selective excavation, involving separation of clayey and granular soils, as well as removal of any deleterious items such as oversized rocks, should be planned for. Project plans should also make provisions for storage and double-handling of materials. The excavation should extend to depths exposing competent bedrock in all areas supporting any equipment or facilities, and any foundations. In areas to be occupied by slopes, lesser criteria (with excavations extending into alluvium or competent fills) may be possible. Any less competent materials should be excavated and replaced with newly compacted fill as recommended below.

All active or inactive utilities within the proposed construction areas should be identified for relocation, abandonment, or protection prior to construction. Any pipelines larger than 4-inch diameter to be abandoned in-place should be filled with a sand-cement slurry. The adequacy of existing backfill and supporting materials around pipelines and other subsurface utilities to remain in place should be evaluated; loose or dumped trench backfill should be removed and replaced with properly compacted backfill. Lean concrete slurry backfill, in lieu of compacted fill/backfill, may only be used if specifically approved by the project geotechnical engineer.

All areas exposing bedrock materials in any excavation(s) should be reviewed and mapped by an engineering geologist prior to further construction. As indicated above, overexcavation of bedrock materials should be planned for in site preparation. All other areas to receive fill shall be proofrolled using a heavy loaded equipment and/or probe and evaluated by a qualified geotechnical engineer/technician to locate any soft or loose zones. Any unsuitable zones including loose, soft, and/or compressible zones within the exposed bottom should be treated as recommended by the geotechnical engineer/technician, which may include overexcavation beyond the planned removal depth and replacement with properly compacted fill. If the disturbed or loose/soft zone is greater than about 12 inches in depth, in-place compaction without overexcavation may not be possible. Upon completion of the above recommended bottom evaluation and any required overexcavation, fill and backfill shall be placed in accordance with the recommendations presented in the following sections.

FILL AND BACKFILL

Fills and backfills will be placed during construction of this project. Fill materials are expected to be required for filling the overexcavated canyon areas and to reconstruct the unengineered slopes and for backfill behind retaining walls. Fills and backfills should be placed in loose lifts not exceeding 8 inches in thickness, brought to near-optimum moisture content in-place, and compacted to at least 90 percent of the maximum dry density per ASTM D-1557 using mechanical compaction equipment.

Two types of fill may be used for the project: Fill Type A, consisting of a granular fill such as that derived from the Topanga formation materials; and Fill Type B, consisting of a clayey fill such as that derived from the Modelo formation materials at the Aliso Canyon facilities and the majority of the existing fill materials. All Type A fill soils should be predominantly granular, less than 1 inch in any dimension, and free of any organic and inorganic debris, with less than about 25 percent essentially non-plastic fines passing the No. 200 sieve. All Type B fill soils should be less than 1 inch in any dimension, and free of any organic and inorganic debris. Gravel content of all fills and backfills shall not exceed 20% by dry weight, unless specifically approved by the project geotechnical engineer. Fill soils should also be acceptable from environmental considerations as advised by the Gas Company environmental staff. Excavated onsite soils meeting the above requirements may be used in engineered fills and backfills; special attention should be paid to where Type A fills are specified, because the Type A fills cannot be substituted by Type B fills, which are expected to be expansive and relatively impervious. Also, it should be noted that the majority of the existing onsite materials are expected to be of Type B, while Type A fills may need to be imported from other off-site sources. All fill and backfill materials should be observed and tested by the Project Geotechnical Engineer prior to their use in order to evaluate their suitability. Fill and backfill should be tested in the field for field density and relative compaction requirements.

TEMPORARY EXCAVATIONS

All excavations must comply with the current requirements of OSHA; the project includes materials that vary from Type C to stable rock per OSHA classification system. (The OSHA classification system is unrelated and separate from the Fills Type A and B referred to above.) All cuts greater than 5 feet in depth should be sloped and/or shored, except cuts in competent Topanga Sandstone as specifically approved by the project geotechnical engineer. Temporary excavations in all other materials may be sloped at least 1(H):1(V) or flatter. Flatter slopes (1½(H):1(V) or flatter) will be required in saturated soils or fill materials within the West slope, or if sandy and/or loose soils are encountered along the slope face. Steeper cuts may be utilized for excavations less than 5 feet deep in clayey soils, and depending on the strength and homogeneity of the soils as observed in the field.

PERMANENT CUT & FILL SLOPES

All cut slopes excavated in the competent Topanga Formation materials, considered competent and less weathered by the project geotechnical engineer, shall be at 1(H):1(V) or flatter. Flatter slopes or additional overexcavation will be required, if sandy, fractured, and/or weak and loose materials are encountered along the slope face. All fill slopes shall be at 2(H):1(V) or flatter. All slopes shall be landscaped and maintained with appropriate vegetation. Some of the West slope may be reconstructed using the Type B fill materials with granular materials as required in some areas for drainage purposes. All fill shall be benched into competent native materials exposed into the hillside slopes per code requirements.

SHALLOW FOUNDATIONS

The new turbine-compressor units, equipment and structures may be supported on shallow foundations. The turbine-compressor units shall be supported on thick block foundations established in competent Topanga formation bedrock materials as recommended above. All remaining equipment and structures may be supported on spread footings and mat foundations established in undisturbed native materials (which may include bedrock materials) or in compacted fill materials meeting the requirements specified above. For preliminary design, a bearing pressure of 6,000 psf and 2,500 psf is recommended for design of the foundations for the turbine-compressor units and remaining facilities, respectively.

Footings should be a minimum of 3 feet wide and established at a depth of at least 3 feet below the lowest adjacent final grade; a minimum embedment of 8 feet is recommended for the turbine-compressor foundations. Additional evaluation of the subsurface materials immediately underlying the foundations shall be performed as recommended above. The new foundations should be supported at levels below all utilities and other subsurface elements within their footprint, unless the interaction between the footings and such elements/utilities is accounted for specifically in the design.

The allowable bearing pressure is a net value. Therefore, the weight of the footing and the backfill over the footing may be neglected when computing dead loads. The bearing pressure applies to dead and live load and includes a factor of safety of at least 3 against bearing failure. The allowable pressure may be increased by one-third for short-term loading due to wind or seismic forces.

Total static settlements of individual spread footings and mat foundations will vary depending on the dimensions of the foundations and the actual load supported. Static settlement of footings and mats supported on fill materials and designed and constructed in accordance with the preceding recommendations are estimated to be on the order of ½ inch to 1 inch. Settlement of footings supported on bedrock should be minimal, and considered essentially zero for design purposes. Differential settlement between similarly loaded and supported (on the same type of materials) footings may be assumed to be about half the total settlement. Differential settlement between foundations supported on bedrock and fill should be equal to the total settlement of the foundations supported on fill. To minimize the effect of settlement on structures, utility/piping connections to structures should be deferred to the extent possible, preferably until all the loads are applied. In addition, flexible joints may be provided on piping and connecting elements at appropriate locations to accommodate the anticipated differential settlement.

DRILLED PIERS

Drilled, cast-in-place piers are recommended for support of piping and any other facilities with high overturning forces and/or heavy loading conditions. We recommend 18-inch diameter piers socketed at least one diameter length into competent Topanga formation bedrock. For pipe and duct supports, the settlement tolerance requirements and relative stiffness of the pipes and their support foundations shall be considered in design of pipe supports; generally, drilled piers are more suitable for any pipes over 12-inch diameter. The allowable axial downward capacity of the 18-inch diameter drilled, straight shafted piers extending at least 10 feet below the finished grade is estimated to be roughly 25 kips. The allowable downward capacity is a net capacity, so in computing foundation loads, the weight of the pier may be neglected. Uplift capacity will depend on the depth of embedment of the pier below the finished grade, and may be estimated based on an allowable unit friction of 250 psf, plus the weight of the pier, for preliminary design purposes.

The allowable axial downward capacities may be increased by 33 percent for wind or seismic forces. The allowable axial upward capacities may not be increased. No reduction in the capacity of an individual pier is required provided a center-to-center spacing of at least 2½ diameters is used. However, from constructability considerations, a greater spacing between piers, preferably 3 diameters, is desirable. Settlement of cast-in-place piers socketed in the bedrock is expected to be very small and near-zero.

Resistance to lateral loads can be provided by the resistance of the soil against the pier and the bending strength of the pier. The allowable lateral capacity and maximum induced bending moment of an 18-inch diameter pier extending to a depth of 10 feet or greater for a pier-head deflection of roughly ¼ inch are estimated to be 8 kips and 65 kip-feet respectively. For the piers, lateral capacities and bending moment may be assumed to be directly proportional to the deflection up to a maximum deflection of ½ inch.

Additional lateral resistance may be obtained through passive resistance against the sides of the pilecaps using an equivalent fluid weight of 350 pounds per cubic foot; friction along the bottom of the pilecap shall not be used. To ensure this lateral resistance at a small deflection, backfill around the pilecap shall extend laterally at least twice the thickness of the pilecap. This improvement may be done in wedge shape, or as advised by the project geotechnical engineer. All drilled pier construction should be performed in general accordance with ACI 336.1-01, "Standard Specifications for Construction of Drilled Piers."

SURFACE & SUBSURFACE DRAINAGE

Proper drainage of surface runoff water as well as any subsurface water is very important for stability of the slopes and the overall site. As recommended above, subdrains need to be installed at the bottom of the pre-existing canyon areas. Where the subdrains terminate on the uphill side, they should be hydraulically connected with backdrains installed along contacts with the North slope. While it may not be feasible to detect and divert/drain all subsurface sources of water (such as seeps and springs) from the site area, at a minimum, any seeps observed or detected during explorations and construction should be allowed to drain freely to avoid a build-up of pore water pressure within the subsurface. All surface runoff water entering the site area (as well as that generated within the site area) should be diverted through drainage devices such as terrace drains and piping, and any flow of water over the slopes in the site area should be avoided or minimized to the extent possible.

As mentioned before, perched water conditions are currently present at the site. Water from other sources such as rain and seeps can also accumulate behind any new retaining walls. Such conditions can adversely affect the performance of slopes and retaining structures under both seismic and static conditions. Accumulation of water behind the retaining structures can increase the lateral pressures on the retaining walls significantly. Also, loss of shear strength of the subsurface materials due to saturation can affect the performance of the retaining walls and/or slopes. It is therefore recommended to provide complete drainage of any subsurface water from areas immediately behind or below the retaining structures/walls.

For the retaining structures and subsurface walls, drainage may be provided through a combination of granular backfill and installation of prefabricated vertical drains immediately behind the walls. The subsurface water from such a drain should be collected in a linear subdrain installed at the bottom of the wall and drained by gravity to storm drains, or other appropriate locations. Type A backfill shall be used within at least 6 feet of the inside of the wall. The remaining backfill may consist of Type B fill materials. For all new slopes created for the project, terrace drains, backdrains and toe-drains shall be provided at appropriate locations in accordance with code requirements.

LATERAL EARTH PRESSURES

Retaining walls should be designed to resist the earth pressure exerted by the retained compacted backfill plus any additional lateral forces that will be applied to the walls due to surface loads placed at or near the top of the wall such as traffic/equipment or other surcharge loads. For a permanent tie-back anchor system, the retaining structures shall be designed for a uniform lateral soil pressure distribution of 22H pounds per square foot (psf), where H is the height of the wall in feet. This pressure corresponds to a relatively constrained wall without any additional pressure due to any water, floor loads, footing loads, etc. The retaining structure should also be designed to withstand additional lateral pressure due to any surcharge loading. Forty percent of any uniform areal surcharge placed at the top of a restrained wall may be assumed to act as a uniform horizontal pressure over the entire height of the wall. Retaining walls that are not restrained at the top (such as a cantilevered wall without tie-backs) may be designed for an active earth pressure developed by an equivalent fluid weighing 35 pcf. Thirty percent of any uniform surcharge may be assumed to act as a uniform horizontal pressure over the entire height of the wall. The above values should be increased by fifty percent for a sloping backfill at 2(H):1(V), the minimum recommended fill slope.

Under seismic loading conditions, additional seismic earth pressure will act on the walls. For an Upper Level Seismic Event (ULE) conditions, the additional seismic force (total force per unit width of wall) may be estimated as $25H^2$ pounds where the height of the wall H is in feet. This force may be assumed to act as a concentrated force at a height of approximately 0.6H above the base of the wall, or distributed in an inverted triangular shape. This pressure value represents the incremental maximum seismic earth pressure utilizing a horizontal seismic coefficient equal to 75 percent of the peak ground acceleration (assumed 0.5g) and ignoring the vertical component of the earthquake.

The above recommended values correspond to granular backfill and do not include lateral pressure due to hydrostatic forces or due to expansive soils. Therefore, wall backfill should be granular and free-draining (Type A fill, with minimum dimensions as recommended above), and provisions should be made to collect and dispose of excess water that may accumulate behind earth-retaining structures. Light equipment should be used during backfill compaction within the zone of the granular backfill to avoid possible overstressing of walls.

SEISMIC DESIGN PARAMETERS

The site is located within UBC seismic zone 4 and within the Santa Susana Fault Zone as depicted by UBC. However, a review of the Alquist Priolo Earthquake Fault Zone maps published by the State indicates that the site may not be within the special studies zone, which is still under evaluation in this area. The corresponding seismic design parameters in accordance with the 1997 UBC are provided below.

Seismic Zone Factor Z:	0.4
Soil Profile Type:	S_C
Nearest Source:	Santa Susana Fault
Distance from Nearest Source:	Within the Fault Zone
Seismic Source Type:	B
Near-source Factor N_a:	1.3
Near-source Factor N_v:	1.6

POTENTIAL SOIL/GROUND WATER CONTAMINATION

The recommendations provided above assume that the site soils/materials and ground water are free of any appreciable chemical contamination. However, the validity of this assumption needs to be evaluated and confirmed before and during construction and appropriate modifications in any design and construction plans need to be made. Needs for monitoring of H_2S gas levels or other environmental hazards, any related compliance with regulatory requirements, and special safety gear and related precautions should be part of a project safety plan, to be prepared by the contractor and his environmental/safety consultant. Other measures related to handling of any contaminated soil or ground water may also be required and the Gas Company environmental staff should be consulted on such issues.

SOIL CORROSIVITY TESTING

Soil corrosivity testing was performed on selected samples from the borings. Results from those tests are presented in Table 1. In general, based on resistivity measurements, the soils tested were found to be severely corrosive to ferrous metals under saturated conditions, and moderately corrosive to corrosive under existing field moisture conditions. The tested samples showed a pH in the range of 7.6 to 8.1, which is considered to be moderately alkaline and should not require any special remediation. Low levels of chloride content were measured in these samples. However, high levels of sulfate content (up to 4,000 ppm) were measured in some samples, which will need need to be addressed in design. This may involve use of special concrete for foundation elements and protective coatings or other measures to increase the corrosion resistance of subsurface utilities placed in such soils. It may also be possible to use selective grading to segregate the different types of soils and utilize only the more competent soils in the plant areas. Further detailed testing and analyses will be required to develop site specific recommendations for corrosion resistant design of subsurface elements and utilities.

PAVEMENTS AND SLABS ON GRADE

We recommend the subbase under any paving for the new roadway be of Type A fill soils compacted to at least 95 percent of the maximum dry density per ASTM D-1557 for a minimum of 12 inches below the base materials. The subgrade soils below these soils may be the Type B fill soils compacted to at least 90 percent relative compaction as recommended above. For the paving itself, a minimum thickness of 3 inches and 6 inches is recommended for the asphaltic concrete and base course, respectively. The base course shall be compacted to at least 95 percent of the maximum dry density per ASTM 1557D. Pavements may be designed using a CBR value of 12 for the subgrade materials prepared as recommended herein. This CBR value shall be confirmed through appropriate testing during detailed design and construction.

For design of concrete paving at the site with at least 12 inches of new compacted Type A fill below the base course, a subgrade modulus of 200 pounds per cubic inch, or a CBR value of 15, may be used for the subbase. For paving over bedrock (with or without the base course), a subgrade modulus of 400 pounds per cubic inch, may be used for the subbase. These values should be confirmed by additional testing performed during construction. It should be noted that any clayey subbase materials will have a relatively low CBR value. Granular materials with better properties should be used for subbase, to the extent possible. Detailed design of the paving sections for any specific requirements may be decided based on anticipated traffic volume and design parameters based on related testing.

PHASE TWO GEOTECHNICAL INVESTIGATION

It is anticipated that a detailed geotechnical investigation including further subsurface explorations and testing would be performed as a part of the next phase of the project to:

- Address the issues identified in this first phase of the project in detail;
- Perform explorations and testing for a specific site layout and equipment plan and related site development scheme; and,
- Specifically meet the project designers' requirements for detailed design and construction of the project.

The tentative scope of services for the second phase may include the following tasks:

- Field explorations including drilling and sampling at proposed construction locations. This should include downhole logging/mapping of large diameter borings.
- Geophysical surveys to measure dynamic properties of materials as well as to estimate bedrock depths.
- Detailed engineering geologic mapping and fault hazard assessments.
- Site-specific seismic ground motion evaluation.
- Testing/analyses for dynamic soil and rock properties including geophysical survey/ measurements to develop dynamic properties of soils for the turbine-compressor foundation analyses.
- Laboratory testing for index, strength, compressibility, as well as corrosivity properties of the soils. Development of guidelines and recommendations for corrosion resistant design of subsurface elements.
- Analytical testing of any soil samples suspected to be chemically contaminated. (May be handled separately by others).
- Slope stability analyses of affected slopes.
- Engineering analyses to develop detailed geotechnical recommendations for design and construction.
- Preparation of a final investigation report for use by designers and submittal to the City.
- Design reviews, post-report consultation for special cases, permitting assistance, etc.

Additional details of the suggested tasks will be provided separately at a later date.

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The following are attached and complete this report.

References

Table 1	Corrosivity Test Data
Plate 1	Vicinity Map
Plate 2	Plot Plan & Site Geologic Map
Plate 3	Log of Boring B-1
Plate 4	Log of Boring B-2
Plate 5	Log of Boring B-3
Plate 6	Log of Boring B-4
Plate 7	Log of Boring B-5
Plate 8	Log of Boring B-6
Plate 9	Log of Boring B-7
Plate 10	Log of Boring B-8
Plate 11	Log of Boring B-9
Plate 12	Unified Soil Classification System and Key to the Log of Borings
Plate 13	Sieve Analyses Data
Plate 14	Atterberg Limits Test Data
Plate 15	Direct Shear Test Data
Plate 16	Direct Shear Test Data
Plate 17	Consolidation Test Data
Plate 18	Consolidation Test Data
Plate 19	Consolidation Test Data
Plate 20	Compaction Test Data
Plate 21	Compaction Test Data
Plate 22	Compaction Test Data
Plate 23	Compaction Test Data
Plate 24	CBR Test Data
Plate 25	CBR Test Data
Plate 26	Idealized Subsurface Profile A-A
Plate 27	Dry Density Data – Existing Fills
Plate 28	Conceptual Foundation Support Scheme
Appendix A	Test Pit Logs – TP-1 through TP-7
Appendix B	Preliminary Fault Hazard Assessment

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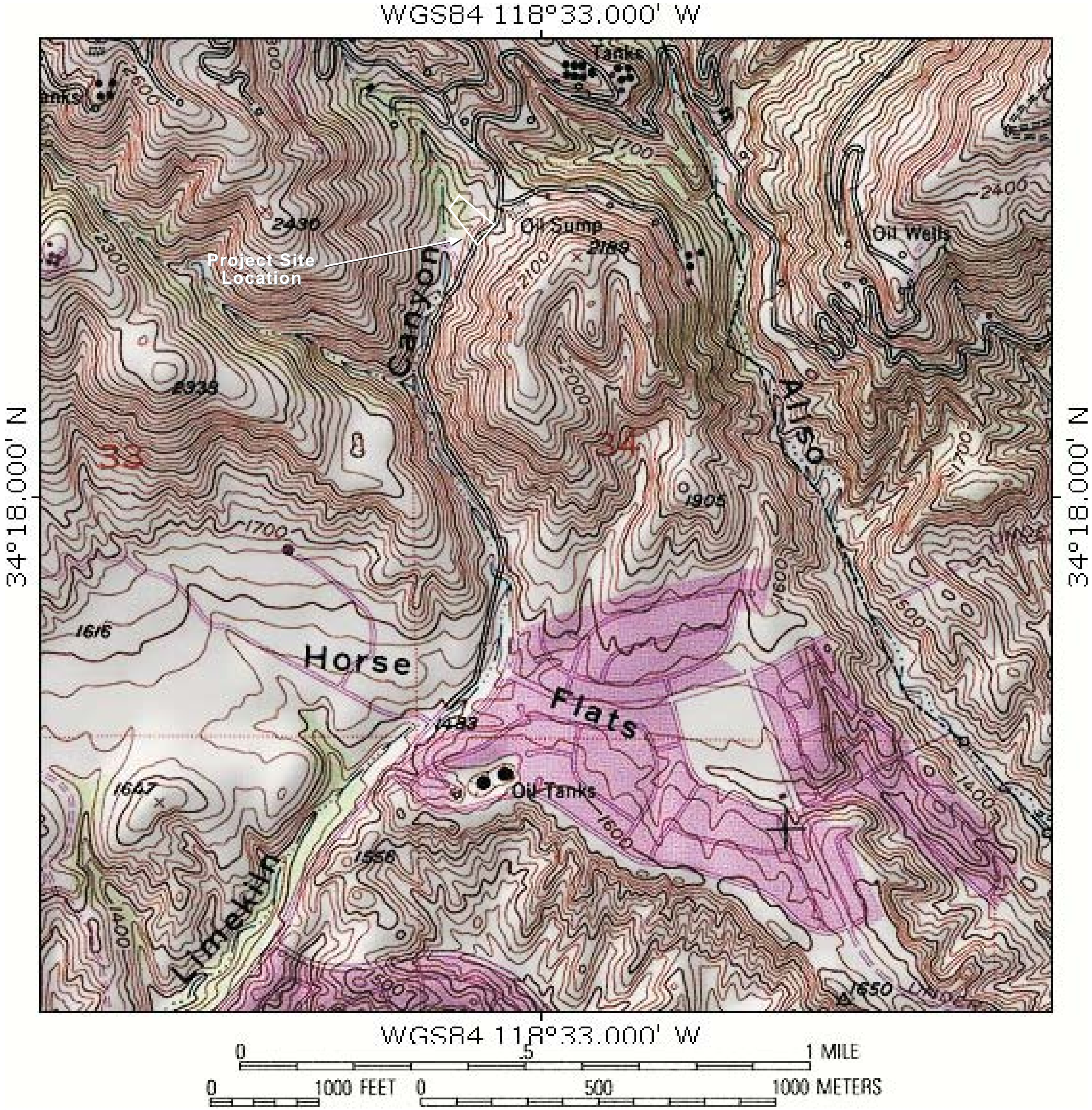
TABLE 1
CORROSIVITY TEST DATA

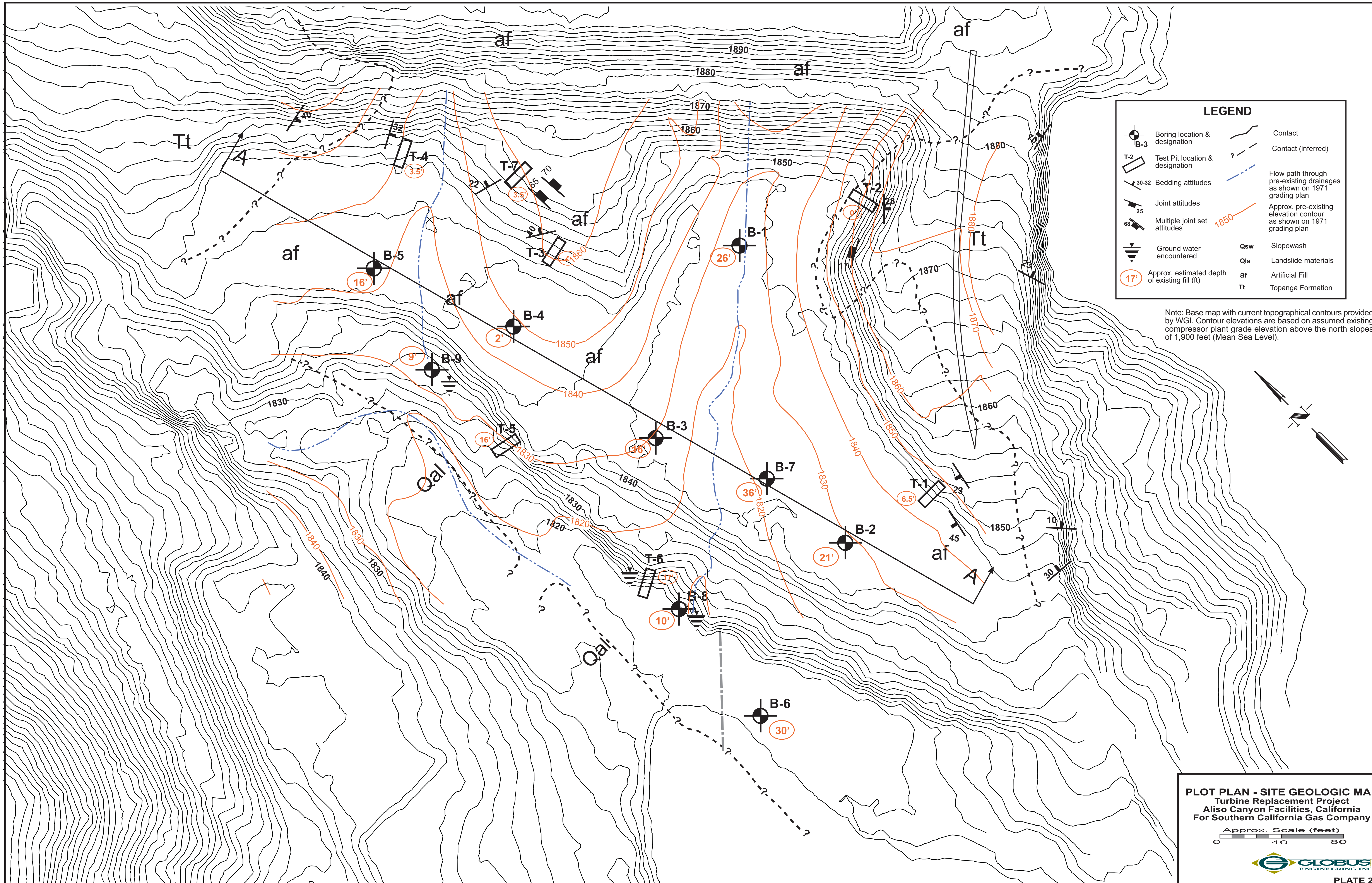
Boring No.	Sample No.	Depth (feet)	Soil Type	Minimum Resistivity (Ohm-cm)		pH	Sulfate (ppm)	Chloride (ppm)
				In-situ	Saturated			
B-1	BB-1	2’-6’	SC	1,000	880	7.90	4074	134
B-3	1	2’	SM	2,700	700	7.64	1553	138
B-5	2	5’	SM	10,000	700	7.85	379	203
B-7	3	10’	ML	3,200	800	8.12	81	150



Vicinity Map
Proposed Turbine Replacement Project
Aliso Canyon, California
For Southern California Gas Company

GLOBUS

PLATE 1



LEGEND
Boring location & designation
B-3
Test Pit location & designation
T-2
Bedding attitudes
30-32
Joint attitudes
25
Multiple joint set attitudes
68
Ground water encountered
Approx. estimated depth of existing fill (ft)
17'
Contact
Contact (inferred)
Flow path through pre-existing drainages as shown on 1971 grading plan
Approx. pre-existing elevation contour as shown on 1971 grading plan
1850
Qsw Slopewash
Qls Landslide materials
af Artificial Fill
Tt Topanga Formation
Note: Base map with current topographical contours provided by WGI. Contour elevations are based on assumed existing compressor plant grade elevation above the north slopes of 1,900 feet (Mean Sea Level).
PLOT PLAN - SITE GEOLOGIC MAP
Turbine Replacement Project
Aliso Canyon Facilities, California
For Southern California Gas Company
Approx. Scale (feet)
0
40
80
GLOBUS ENGINEERING INC.
PLATE 2
af
Tt
Qal
A
B-1
B-2
B-3
B-4
B-5
B-6
B-7
B-8
B-9
T-1
T-2
T-3
T-4
T-5
T-6
T-7
26'
21'
36'
2'
16'
30'
10'
9'
3.5'
6.5'
0'
1890
1880
1870
1860
1850
1840
1830
1820

LOG OF BORING B-1

LABORATORY TEST DATA	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	BLOWS/FT	DEPTH (FT)	SYMBOL	DESCRIPTION
Compaction Test Data ASTM D1557: 117.5 pcf, 11%, See Plate					SC	Dark brown clayey sand with gravel (fill) (stiff to very stiff)
Pocket Penetrometer Test (Su: >4.5 tsf)			24			
CBR=15, See Plate 22				5		
Atterberg Limits Test See Plate 15, LL: 31 PI:12	18.3	104.6	15			
Gradation Test -200: 44.1%						Hard drilling, possible oversized material @ 7’ to 9’
				10	CL	Dark brown silty clay with gravel (fill) (stiff to very stiff)
Direct Shear Test See Plate 22	20.7	99.7	23			
				15		
			14			grades sandy
				20		
	17.4	109.9	19			grades greenish brown
				25		
			4			grades soft to medium stiff
					Tt	Dark gray weathered sandstone
				30		
	7.7	108.2	50/5’’			Dark gray competent sandstone
						Boring terminated at 33 feet depth
				35		
				40		

Type of drill rig: (B-61) 8-inch dia. hollow stem auger
Date drilled: 10/12/06 Depth: 33 Feet
Caving at depths: N/A
Ground water observed at depth: None
Boring backfilled with: Drill cuttings with bentonite
Surface conditions: Grass

TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, CA
For The Gas Company

GLOBUS ENGINEERING INC.

PLATE 3

LABORATORY TEST DATA	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	BLOWS/FT	SAMPLE	DEPTH (FT)	GRAPHIC LOG	SYMBOL	LOG OF BORING B-2 DESCRIPTION
								Asphaltic concrete paving
							SM	Yellowish brown silty sand with gravel (fill) (medium dense to dense)
			22					
					5			
Compaction Test Data ASTM D1557: 125.0 pcf, 9%, See Plate	9.5	127.6	54					
Sieve Analysis Test Data #200:26.8%								
								grades more silty
CBR=20, See Plate 22								
					10		CL	Dark brown sandy clay with gravel (fill) (very stiff)
			18					
								grades with less sand and more silt
					15			
Atterberg Limits Test See Plate 15, LL: 40 PI:17	22.9	100.0	20					
Corrosivity Test Data See Plate 17								
								Hard drilling @ 18', possible oversized material
					20			
			13					
							Tt	Light gray weathered sandstone
					25			
	10.1	114.4	50/3"					
								Light gray competent sandstone
					30			
			50/3"					
								Boring terminated at 32 feet depth
					35			
					40			

Type of drill rig: (B-61) 8-inch dia. hollow stem auger
Date drilled: 10/12/06 Depth: 32 Feet
Caving at depths: N/A
Ground water observed at depth: None
Boring backfilled with: Drill cuttings with bentonite
Surface conditions: Asphaltic Concrete Paving

TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, CA
For The Gas Company

GLOBUS ENGINEERING INC.

PLATE 4

LOG OF BORING B-3

LABORATORY TEST DATA	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	BLOWS/FT	SAMPLE	DEPTH (FT)	GRAPHIC LOG	SYMBOL	DESCRIPTION
								Asphaltic concrete paving
							SM	Yellowish brown silty sand with gravel (fill) (Loose)
Corrosivity Test Data See Plate 17			7	◩				
					5			
	13.1	113.9	5	■				grades clayey
							ML	Dark brown sandy silt with clay and gravel (fill) (Medium dense / very stiff)
					10			
			20	◩				
					15			
	19.8	104.9	34	■				
							Tt	Light gray weathered sandstone
					20			
			80	◩				Light gray competent sandstone
					25			
	10.5	111.6	50/5''	■				
								Boring terminated at 26 feet depth
					30			
					35			
					40			

Type of drill rig: (B-61) 8-inch dia. hollow stem auger
Date drilled: 10/12/06 Depth: 26 Feet
Caving at depths: N/A
Ground water observed at depth: None
Boring backfilled with: Drill cuttings with bentonite
Surface conditions: Asphaltic Concrete Paving

TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, CA
For The Gas Company

GLOBUS ENGINEERING INC.

PLATE 5

LOG OF BORING B-4

LABORATORY TEST DATA	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	BLOWS/FT	SAMPLE	DEPTH (FT)	GRAPHIC LOG	SYMBOL	DESCRIPTION
								Asphaltic concrete paving
							SM	Yellowish brown silty sand with gravel (fill) (Loose)
Corrosivity Test Data See Plate 17	7.8	124.0	68	■			Tt	Light gray weathered sandstone
					5			
			94/8”	◪				Light gray competent sandstone
					10			
			50/5”	■				
								Boring terminated at 11 feet depth
					15			
					20			
					25			
					30			
					35			
					40			

Type of drill rig: (B-61) 8-inch dia. hollow stem auger
Date drilled: 10/12/06 Depth: 11 Feet
Caving at depths: N/A
Ground water observed at depth: None
Boring backfilled with: Drill cuttings with bentonite
Surface conditions: Asphaltic Concrete Paving

TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, CA
For The Gas Company

GLOBUS ENGINEERING INC.

PLATE 6

LOG OF BORING B-5

LABORATORY TEST DATA	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	BLOWS/FT	SAMPLE	DEPTH (FT)	SYMBOL	DESCRIPTION
						SM	Yellowish brown silty sand with gravel (fill) (Dense)
	8.4	113.3	51	■			
					5		grades clayey
Corrosivity Test Data See Plate 22			31	◩			Hard drilling, possible oversized material @ 5' to 8'
					10	ML	Dark brown clayey silt (fill) (Stiff / very stiff)
	13.5	112.4	13	■			
					15		
			16	◩			
						Tt	Olive weathered sandstone
							Yellowish brown competent sandstone
					20		
	10.4	122.9	50/4"	■			
					25		grades gray
			50/2"	◩			Boring terminated at 25.5 feet depth
					30		
					35		
					40		

Type of drill rig: (B-61) 8-inch dia. hollow stem auger
Date drilled: 10/12/06 Depth: 25.5 Feet
Caving at depths: N/A
Ground water observed at depth: None
Boring backfilled with: Drill cuttings with bentonite
Surface conditions: Exposed soil

TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, CA
For The Gas Company

GLOBUS ENGINEERING INC.

PLATE 7

LOG OF BORING B-6

LABORATORY TEST DATA	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	BLOWS/FT	SAMPLE	DEPTH (FT)	SYMBOL	DESCRIPTION
						SM	Yellowish brown silty sand with gravel (fill) (Medium dense)
	10.1	125.1	31	■			
					5		
			6	◩			
						ML	Brown sandy silt with gravel (fill) (Loose to medium dense)
					10		
Consolidation Test Data See Plate 22	14.4	100.4	19	■			
					15		
			7	◩			grades medium stiff
						SC	Brown clayey sand with gravel (fill) (Loose)
					20		
Direct Shear Test See Plate 22	19.3	110.2	13	■			
						▼	Water encountered at 22' depth
						SM	Brown silty sand with gravel (fill) (Loose)
					25		
			8	◩			
					30		
	13.6	110.3	13	■		Tt	Gray weathered sandstone
							Gray competent sandstone
					35		
			50/4"	◩			Boring terminated at 35.5 feet depth
					40		

Type of drill rig: (B-61) 8-inch dia. hollow stem auger
Date drilled: 10/12/06 Depth: 35.5 Feet
Caving at depths: N/A
Ground water observed at depth: 22 feet
Boring backfilled with: Drill cuttings with bentonite
Surface conditions: Exposed soil

TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, CA
For The Gas Company

GLOBUS ENGINEERING INC.

PLATE 8

LABORATORY TEST DATA	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	BLOWS/FT	SAMPLE	DEPTH (FT)	SYMBOL	**LOG OF BORING B-7** DESCRIPTION
							Asphaltic concrete paving
						SC	Yellowish brown silty and clayey sand with gravel (fill) (soft)
Sieve Analysis Test Data #200:31.1%	15.4	104.5	2				
Compaction Test Data ASTM D1557: 126.0 pcf, 9.5%, See Plate 12					5		
			25				grades less clayey and medium dense
Consolidation Test Data See Plate 22 (remolded sample)						ML	Dark grayish brown clayey silt with sand and gravel (fill) (stiff)
					10		
Corrosivity Test Data See Plate 22	18.9	105.8	25				
						CL	Dark brown sandy clay with gravel (fill) (stiff)
					15		
			11				
							Hard drilling @ 17', possible oversized material
					20		
	20.6	100.6	26				grades with more silt (fill)
							Hard drilling @ 23', possible oversized material
					25		
			12				grades sandy clay (fill)
						ML	Dark yellowish brown sandy silt with gravel (fill) (Loose)
					30		
	13.6	108.3	9				
						CL	Gray sandy clay (fill) (Stiff)
					35		
			11				
						Tt	Gray weathered sandstone Water encountered at 37' depth
					40		

Type of drill rig: (B-61) 8-inch dia. hollow stem auger
Date drilled: 10/12/06 Depth: 46.5 Feet
Caving at depths: N/A
Ground water observed at depth: 37 feet
Boring backfilled with: Drill cuttings with bentonite
Surface conditions: Asphaltic Concrete Paving

TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, CA
For The Gas Company

GLOBUS ENGINEERING INC.

PLATE 9a

LOG OF BORING B-7

LABORATORY TEST DATA	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	BLOWS/FT	SAMPLE	DEPTH (FT)	GRAPHIC LOG	SYMBOL	DESCRIPTION
	15.1	111.1	10	■			Tt	Grayish brown weathered sandstone
								Gray competent sandstone
					45			
			50/4"	◪				
								Boring Terminated at 46.5 feet
					50			
					55			
					60			
					65			
					70			
					75			
					80			

Type of drill rig: (B-61) 8-inch dia. hollow stem auger
Date drilled: 10/12/06 Depth: 46.5 Feet
Caving at depths: N/A
Ground water observed at depth: 37 feet
Boring backfilled with: Drill cuttings with bentonite
Surface conditions: Asphaltic Concrete Paving

TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, CA
For The Gas Company

GLOBUS ENGINEERING INC.

PLATE 9b

LOG OF BORING B-8

LABORATORY TEST DATA	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	BLOWS/FT	SAMPLE	DEPTH (FT)	SYMBOL	DESCRIPTION
							Asphaltic concrete paving
						SC	Gray clayey sand with gravel (fill) (Loose to medium dense)
Compaction Test Data ASTM D1557: 124.0 pcf, 11%, See Plate 12			10				
Sieve Analysis Test Data #200:35.3%					5		
Atterberg Limits Test See Plate 15, LL: 25 PI:7	12.0	120.6	31				grades yellowish brown
							grades dark brown
					10		Water encountered at 10 feet depth
			8				grades gray and loose
					15		
	28.0	91.8	6				grades dark gray
					20		
			9				Grades brown
					25	Tt	Gray weathered sandstone
	14.2	117.5	26				
							Gray competent sandstone
					30		
			50/5"				
							Boring terminated at 31 feet depth
					35		
					40		

Type of drill rig: (B-61) 8-inch dia. hollow stem auger

Date drilled: 10/12/06 Depth: 31 Feet

Caving at depths: N/A

Ground water observed at depth: 10 feet

Boring backfilled with: Drill cuttings with bentonite

Surface conditions: Asphaltic Concrete Paving

TURBINE REPLACEMENT PROJECT

Aliso Canyon Facilities, CA
For The Gas Company

GLOBUS ENGINEERING INC.

PLATE 10

LOG OF BORING B-9

LABORATORY TEST DATA	MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	BLOWS/FT	SAMPLE	DEPTH (FT)	SYMBOL	DESCRIPTION
							Asphaltic concrete paving
						SM	Brown silty sand (Fill) (Loose to medium dense)
	11.2	108.6	14	■			
					5		
			8	◩			grades dark yellowish brown and loose
							Water encountered at 9 feet
					10		Grades clayey
	15.0	115.9	50/5”	■		Tt	Olive to pale yellow weathered sandstone
							Gray competent sandstone
					15		
			50/3”	◩			
							Boring Terminated at 16 feet
					20		
					25		
					30		
					35		
					40		

Type of drill rig: (B-61) 8-inch dia. hollow stem auger
Date drilled: 10/12/06 Depth: 16 Feet
Caving at depths: N/A
Ground water observed at depth: 9 feet
Boring backfilled with: Drill cuttings with bentonite
Surface conditions: Asphaltic Concrete Paving

TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, CA
For The Gas Company

GLOBUS ENGINEERING INC.

PLATE 11

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO.200 SIEVE	**GRAVEL AND GRAVELLY SOILS** MORE THAN 50% OF COARSE FRACTION RETAINED ON NO.4 SIEVE	**CLEAN GRAVELS** (LITTLE OR NO FINES)		GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL -SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING NO.4 SIEVE	**CLEAN SAND** LITTLE OR NO FINES		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS AND FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO.200 SIEVE	**SILTS AND CLAYS** LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLACITICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLACITICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATION

Tt Topanga Formation Sandstone

KEY TO LOG OF BORINGS

SAMPLES & BLOW COUNTS

HAMMER BLOWS PER FOOT OF PENETRATION

14 INDICATES UNDISTURBED SAMPLE (MODIFIED CA)

INDICATES DISTURBED OR BULK SAMPLE

STANDARD PENETRATION TEST SAMPLE (SPT)

INDICATES NO RECOVERY

SAMPLERS DRIVEN WITH A 140-POUND HAMMER DROPPING 30 INCHES

2-inch DIA. X 8-inch LONG TUBE HAND AUGER SAMPLE (30-POUND HAMMER DROPPING 12 INCHES)

LABRATORY TESTS

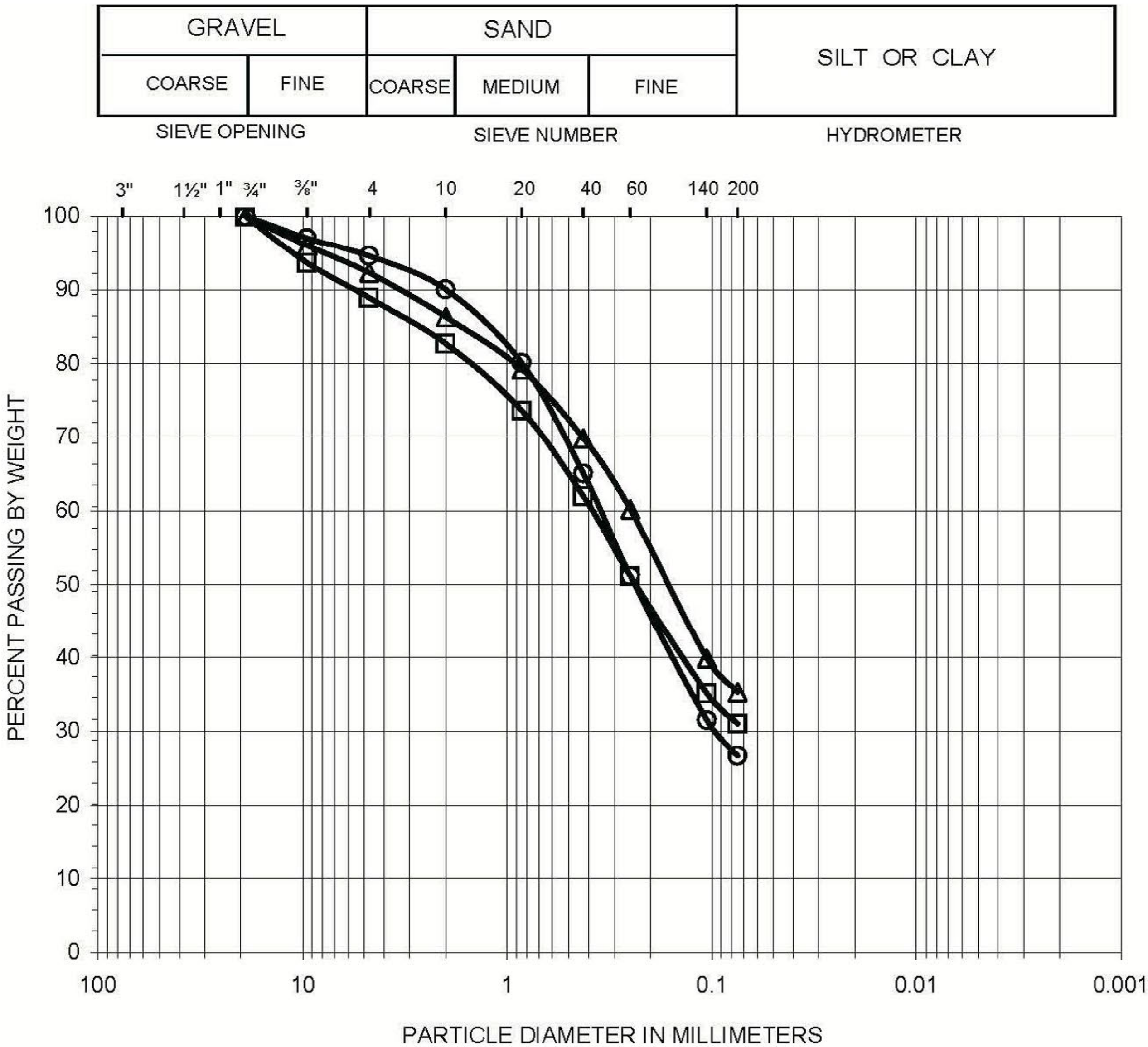
AL	ATTERBERG LIMITS TESTS
DS	DIRECT SHEAR TEST
-200	PERCENT PASSING NO.200 SIEVE (TEST RESULTS IN PARENTHESESES)
CBR	CALIFORNIA BEARING RATIO
COMP	COMPACTION
Su	FIELD-UNDRAINED SHEAR STRENGTH
CON	CONSOLIDATION TEST

TURBINE REPLACEMENT PROJECT

Aliso Canyon Facilities, CA
For The Gas Company

GLOBUS ENGINEERING INC.

Plate 12

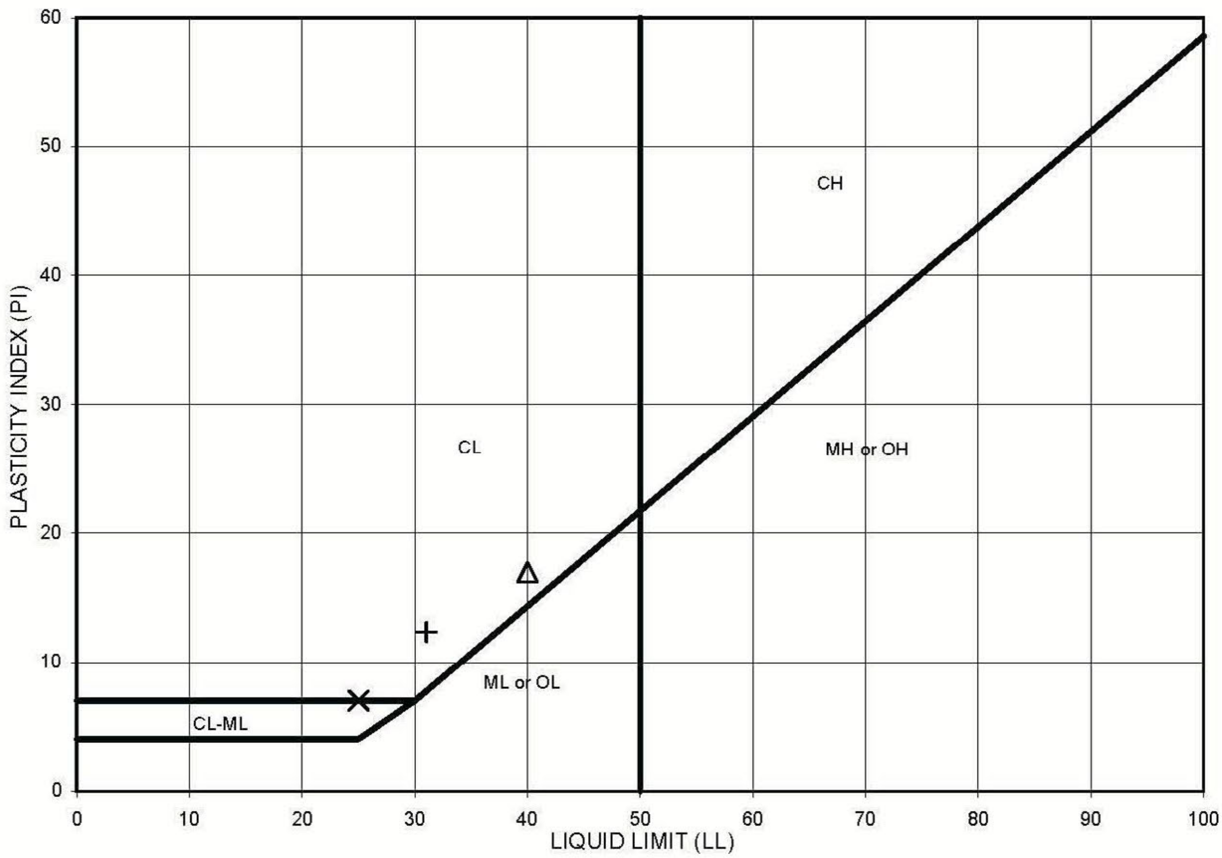


Symbol	Sample Identification	Sample Depth (feet)	Percent Passing No. 200 Sieve	Soil Type
○	B-2, BB-1	1-10	26.8	SM
□	B-7, BB-1	2-10	31.1	SM
△	B-8, BB-1	1-10	35.3	SM-SC

SIEVE ANALYSES TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE 13

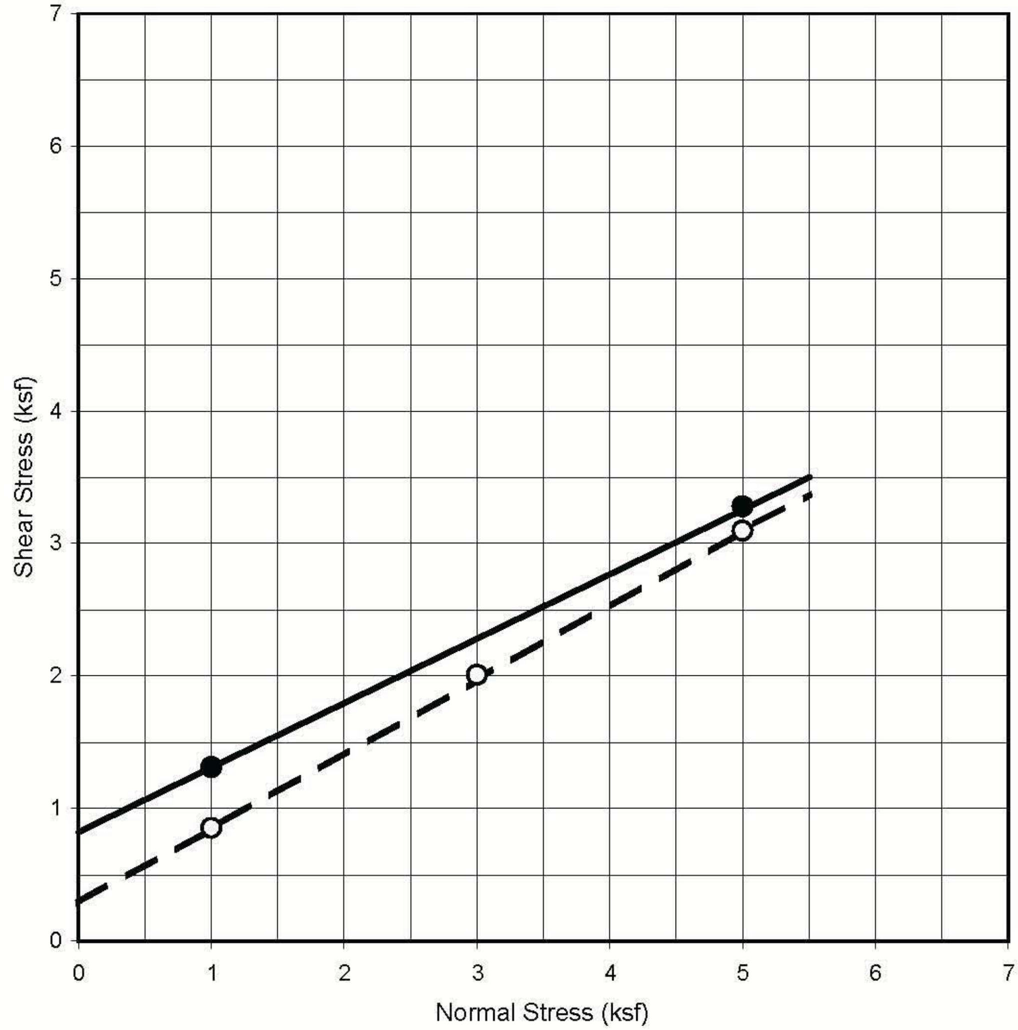


Symbol	Boring Number	Sample Number	Depth (feet)	LL	PL	PI	U.S.C.S Symbol
+	B-1	BB-1	2-6	31	19	12	CL
Δ	B-2	D-4	15	40	23	17	CL
×	B-8	BB-1	1-10	25	18	7	CL-ML

ATTERBERG LIMITS TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE 14



Project Name:	:	Gas Co./Aliso Cyn.
Project No.	:	0519
Boring No.	:	B-1
Sample No.	:	D-3
Depth (ft)	:	10
Sample Type	:	Mod. Cal.
Soil Type	:	Silty Clay w/siltston fragment
Test Condition	:	Saturated
Initial Dry Density	:	99.7 pcf
Moisture Content (before)	:	20.7 %
Moisture Content (after)	:	26.0 %

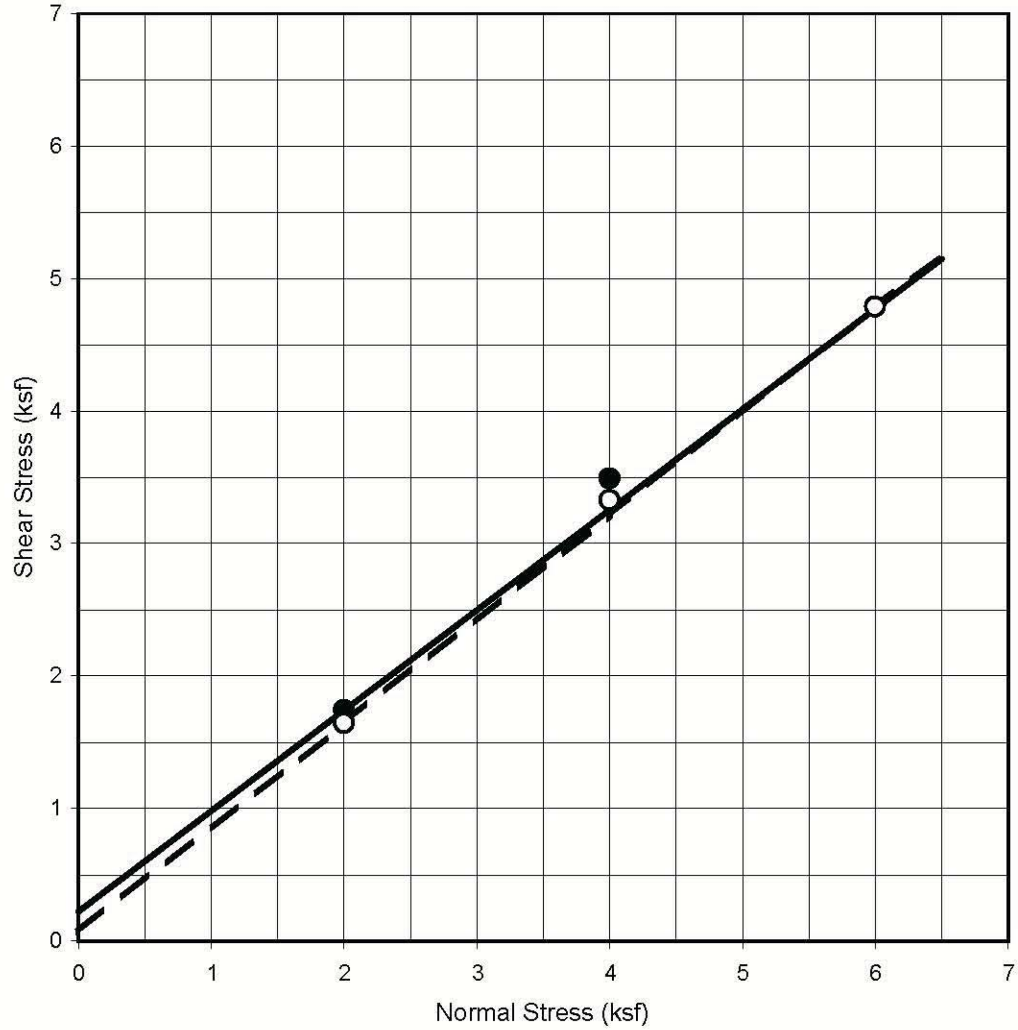
INTERPRETED STRENGTH DATA

	Peak	Ultimate
COHESION (PSF) :	800	300
FRICTION ANGLE :	26 °	29 °

DIRECT SHEAR TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE 15



Project Name:	:	Gas Co./Aliso Cyn.	
Project No.	:	0519	
Boring No.	:	B-6	
Sample No.	:	D-5	
Depth (ft)	:	20	
Sample Type	:	Mod. Cal.	
Soil Type	:	Clayey Sand w/siltstone fragments	
Test Condition	:	Saturated	
Initial Dry Density	:	110.2	pcf
Moisture Content (before)	:	19.3	%
Moisture Content (after)	:	19.4	%

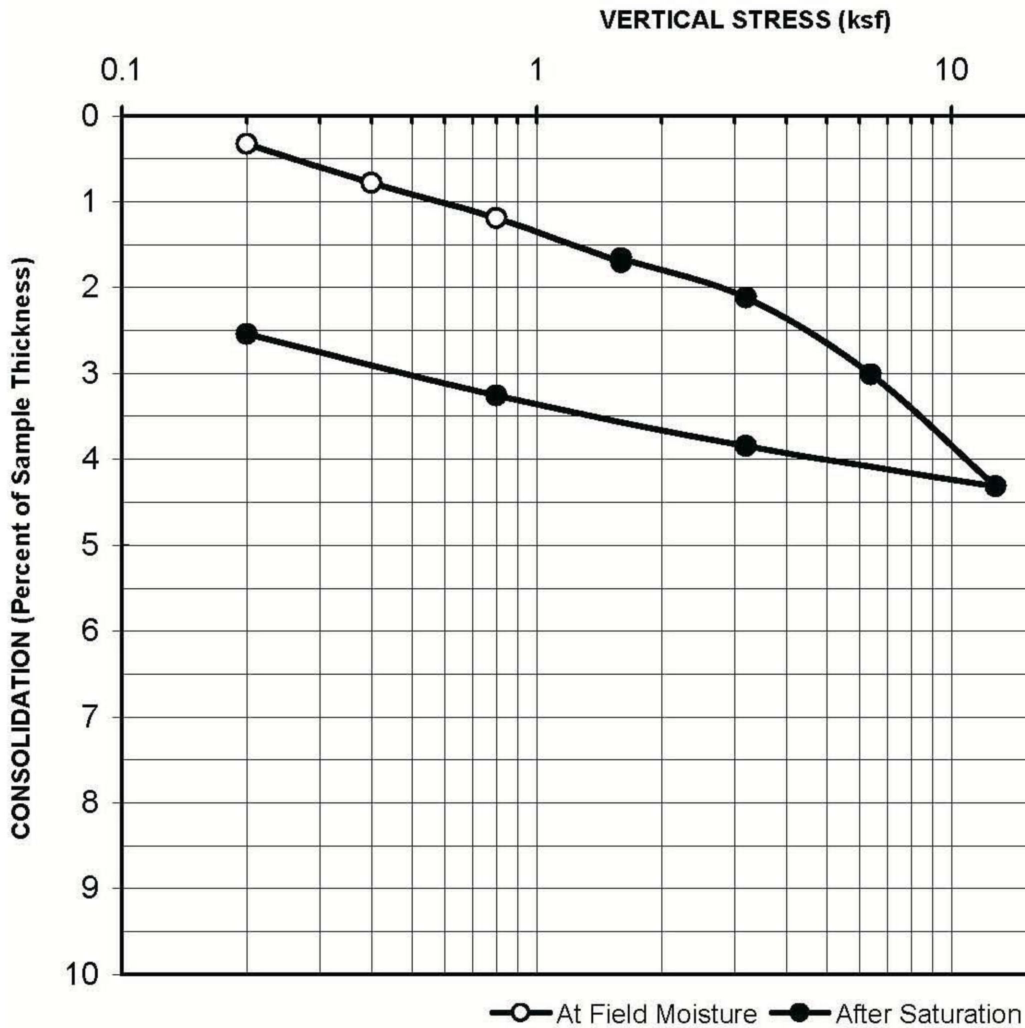
INTERPRETED STRENGTH DATA

	Peak	Ultimate
COHESION (PSF) :	200	50
FRICTION ANGLE :	37 °	38 °

DIRECT SHEAR TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

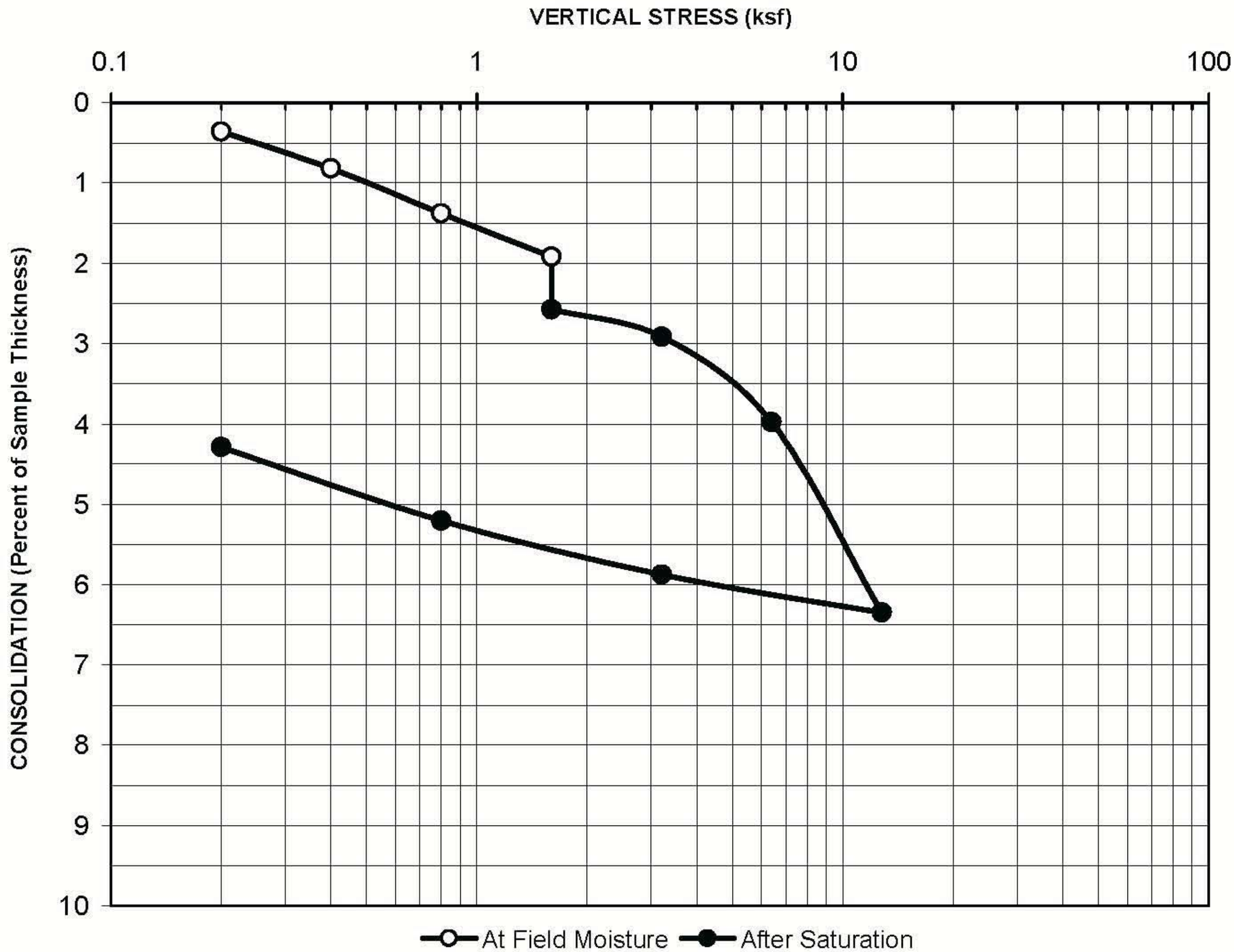
PLATE 16



Boring No. :	B-2	Initial Dry Unit Weight (pcf):	100.0
Sample No.:	D-4	Initial Moisture Content (%):	22.9
Depth (feet):	15	Final Moisture Content (%):	22.9
Sample Type:	Mod. Cal.	Assumed Specific Gravity:	2.7
Soil Description:	Silty Clay w/siltstone fragments	Initial Void Ratio:	0.69

CONSOLIDATION TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

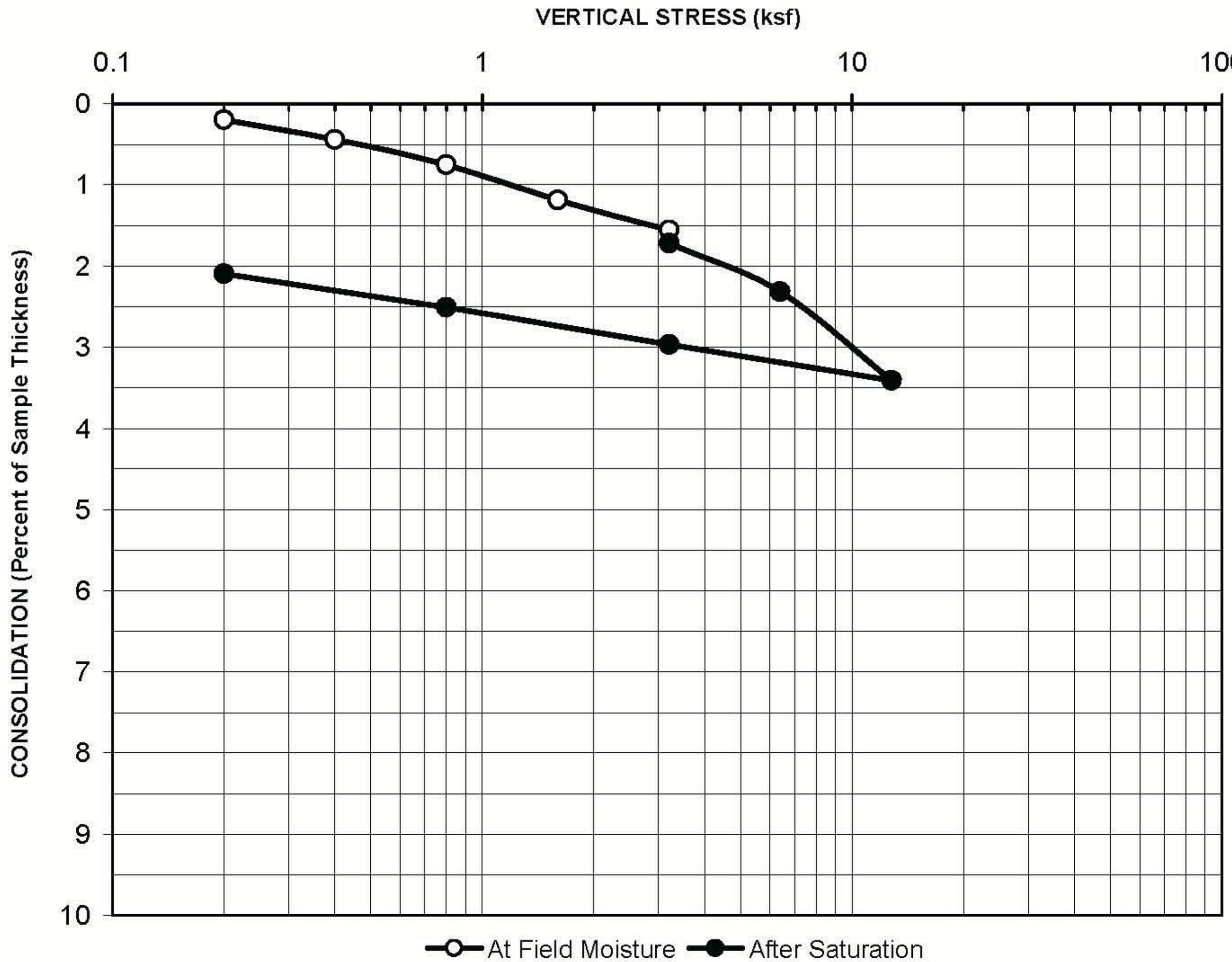


Boring No. :	B-6	Initial Dry Unit Weight (pcf):	100.4
Sample No.:	D-3	Initial Moisture Content (%):	14.4
Depth (feet):	10	Final Moisture Content (%):	20.6
Sample Type:	Mod. Cal.	Assumed Specific Gravity:	2.7
Soil Description:	Sandy Silt w/ siltstone fragments	Initial Void Ratio:	0.68

CONSOLIDATION TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE 18



Boring No. :	B-7	Initial Dry Unit Weight (pcf):	113.6
Sample No.:	BB-1	Initial Moisture Content (%):	9.8
Depth (feet):	2-10	Final Moisture Content (%):	16.0
Sample Type:	Remolded to 90% @ optimum	Assumed Specific Gravity:	2.7
Soil Description:	Grayish Brown Silty Sand	Initial Void Ratio:	0.48

CONSOLIDATION TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE 19

Project Name:	Gas Co./Aliso Cyn.	Tested By:	JK	Date:	10/19/06
Project No. :	0519	Calculated By:	KM	Date:	10/20/06
Location:	B-1	Checked By:	AP	Date:	10/20/06
Sample No. :	BB-1	Depth (ft):	2-6		

Visual Sample Description: Strong Brown Clayey Sand

Compaction Method: [X] ASTM D1557 [ ] ASTM D698

Preparation Method: [X] Moist [ ] Dry

MOLD VOLUME (CU.FT) 0.03333333

Trail No.	1	2	3	4	5	6
Wt. Comp. Soil + Mold (gm.)	3794	3782	3731	3647		
Wt. of Mold (gm.)	1810	1810	1810	1810		
Net Wt. of Soil (gm.)	1984	1972	1921	1837		
Container No.						
Wt. of Container (gm.)	197.94	195.78	191.56	188.71		
Wet Wt. of Soil + Cont. (gm.)	742.46	548.99	673.29	585.74		
Dry Wt. of Soil + Cont. (gm.)	681.74	501.41	629.18	556.33		
Moisture Content (%)	12.55	15.57	10.08	8.00		
Wet Density (pcf)	131.22	130.42	127.05	121.50		
Dry Density (pcf)	116.58	112.85	115.42	112.50		

Maximum Dry Density (pcf) **117.5** Optimum Moisture Content (%) **11.5**

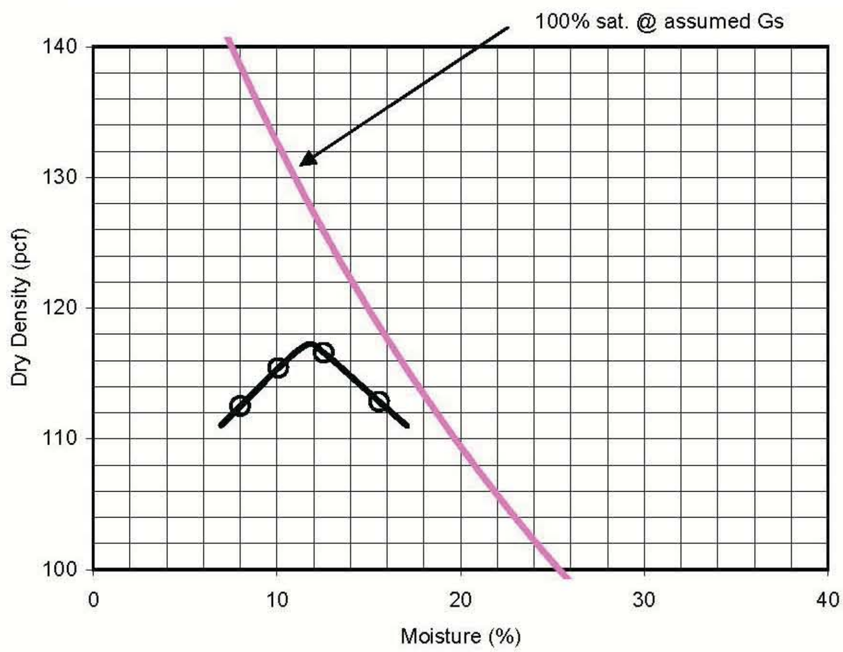
Assumed Specific Gravity = 2.7

PROCEDURE USED

[X] Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if No.4 retained < 20%

[ ] Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if + No.4 > 20% and - 3/8 " < 20%

[ ] Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if + 3/8 in >20% and + in <30%



COMPACTION TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE 20

Project Name:	Gas Co./Aliso Cyn.	Tested By:	JK	Date:	10/18/06
Project No. :	0519	Calculated By:	KM	Date:	10/19/06
Location:	B-2	Checked By:	AP	Date:	10/19/06
Sample No. :	BB-1	Depth (ft):	1-10		

Visual Sample Description: Yellowish Brown Silty Sand

Compaction Method: [X] ASTM D1557 [ ] ASTM D698

Preparation Method: [X] Moist [ ] Dry

MOLD VOLUME (CU.FT) 0.03333333

Trail No.	1	2	3	4	5	6
Wt. Comp. Soil + Mold (gm.)	3882	3869	3783	3700		
Wt. of Mold (gm.)	1810	1810	1810	1810		
Net Wt. of Soil (gm.)	2072	2059	1973	1890		
Container No.						
Wt. of Container (gm.)	191.09	197.71	105.90	79.71		
Wet Wt. of Soil + Cont. (gm.)	588.41	894.10	824.28	1004.80		
Dry Wt. of Soil + Cont. (gm.)	552.41	818.20	776.70	957.32		
Moisture Content (%)	9.96	12.23	7.09	5.41		
Wet Density (pcf)	137.04	136.18	130.49	125.02		
Dry Density (pcf)	124.62	121.34	121.85	118.60		

Maximum Dry Density (pcf) **125.0** Optimum Moisture Content (%) **9.0**

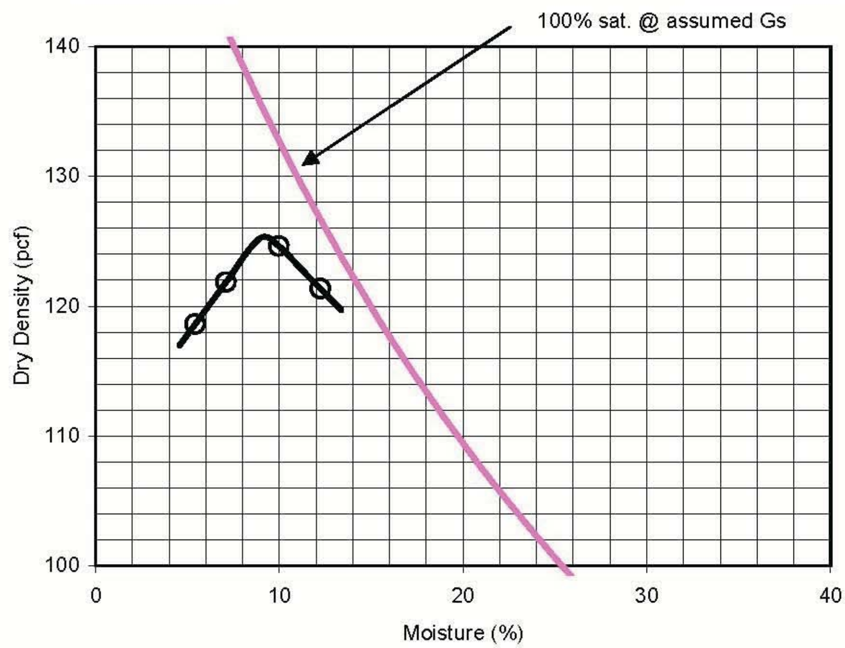
Assumed Specific Gravity = 2.7

PROCEDURE USED

[X]
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if No.4 retained < 20%

[ ]
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if + No.4 > 20% and - 3/8 " < 20%

[ ]
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if + 3/8 in >20% and + in <30%



COMPACTION TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE 21

Project Name:	Gas Co./Aliso Cyn.	Tested By:	JK	Date:	10/24/06
Project No. :	0519	Calculated By:	KM	Date:	10/24/06
Location:	B-7	Checked By:	AP	Date:	10/24/06
Sample No. :	BB-1	Depth (ft):	2-10		

Visual Sample Description: Yell Brown Silty to Clayey Sand

Compaction Method: [X] ASTM D1557 [ ] ASTM D698

Preparation Method: [X] Moist [ ] Dry

MOLD VOLUME (CU.FT) 0.03333333

Trail No.	1	2	3	4	5	6
Wt. Comp. Soil + Mold (gm.)	3901	3870	3835	3767		
Wt. of Mold (gm.)	1810	1810	1810	1810		
Net Wt. of Soil (gm.)	2091	2060	2025	1957		
Container No.						
Wt. of Container (gm.)	638.19	638.19	638.19	638.19		
Wet Wt. of Soil + Cont. (gm.)	746.50	737.85	812.21	831.23		
Dry Wt. of Soil + Cont. (gm.)	736.10	726.46	799.65	819.74		
Moisture Content (%)	10.62	12.90	7.78	6.33		
Wet Density (pcf)	138.29	136.24	133.93	129.40		
Dry Density (pcf)	125.01	120.67	124.26	121.70		

Maximum Dry Density (pcf) **126.5** Optimum Moisture Content (%) **9.5**

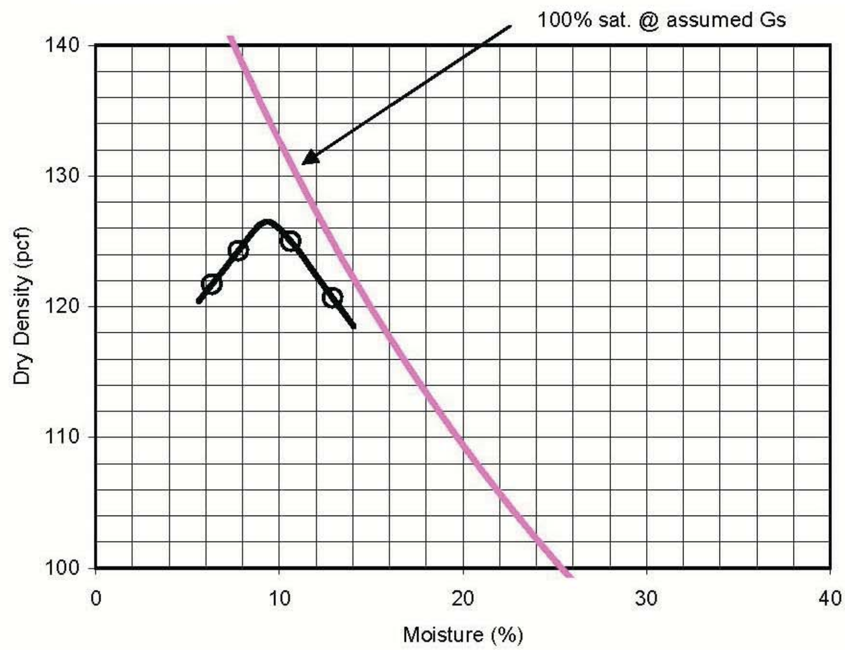
Assumed Specific Gravity = 2.7

PROCEDURE USED

[X]
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if No.4 retained < 20%

[ ]
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if + No.4 > 20% and - 3/8 " < 20%

[ ]
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if + 3/8 in >20% and + in <30%



COMPACTION TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE 22

Project Name:	Gas Co./Aliso Cyn.	Tested By:	JK	Date:	10/18/06
Project No. :	0519	Calculated By:	KM	Date:	10/31/06
Location:	B-8	Checked By:	AP	Date:	10/31/06
Sample No. :	BB-1	Depth (ft):	1-10		

Visual Sample Description: Yel Brown Clayey Sand

Compaction Method: [X] ASTM D1557 [ ] ASTM D698

Preparation Method: [X] Moist [ ] Dry

MOLD VOLUME (CU.FT) 0.03333333

Trail No.	1	2	3	4	5	6
Wt. Comp. Soil + Mold (gm.)	3879	3810	3830	3740		
Wt. of Mold (gm.)	1810	1810	1810	1810		
Net Wt. of Soil (gm.)	2069	2000	2020	1930		
Container No.						
Wt. of Container (gm.)	165.51	167.93	160.55	159.70		
Wet Wt. of Soil + Cont. (gm.)	704.11	660.70	736.70	733.09		
Dry Wt. of Soil + Cont. (gm.)	648.12	599.16	687.89	694.78		
Moisture Content (%)	11.60	14.27	9.26	7.16		
Wet Density (pcf)	136.84	132.28	133.60	127.63		
Dry Density (pcf)	122.61	115.76	122.28	119.10		

Maximum Dry Density (pcf) **124.0** Optimum Moisture Content (%) **11.0**

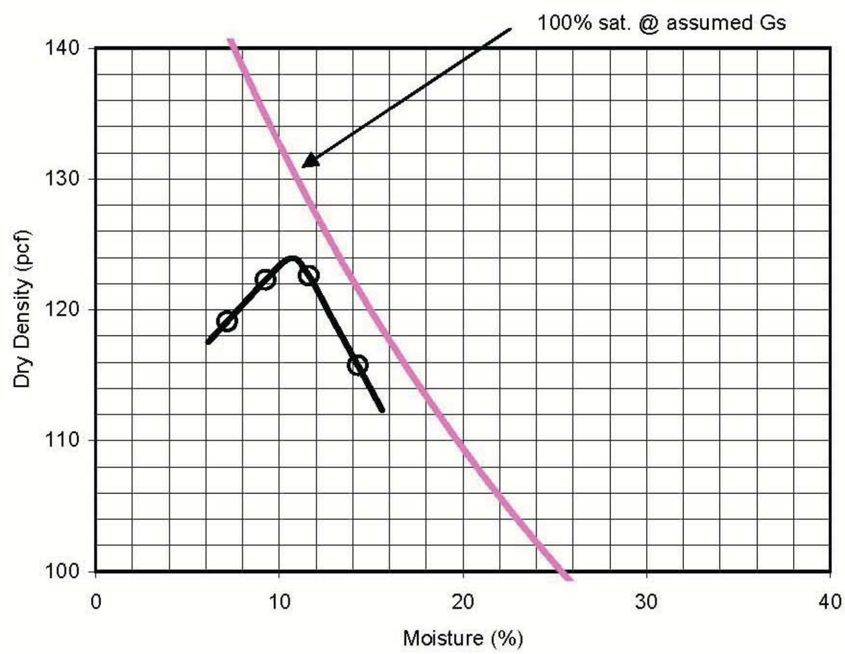
Assumed Specific Gravity = 2.7

PROCEDURE USED

[X]
Soil Passing No. 4 (4.75 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
May be used if No.4 retained < 20%

[ ]
Soil Passing 3/8 in. (9.5 mm) Sieve
Mold : 4 in. (101.6 mm) diameter
Layers : 5 (Five)
Blows per layer : 25 (twenty-five)
Use if + No.4 > 20% and - 3/8 " < 20%

[ ]
Soil Passing 3/4 in. (19.0 mm) Sieve
Mold : 6 in. (152.4 mm) diameter
Layers : 5 (Five)
Blows per layer : 56 (fifty-six)
Use if + 3/8 in >20% and + in <30%

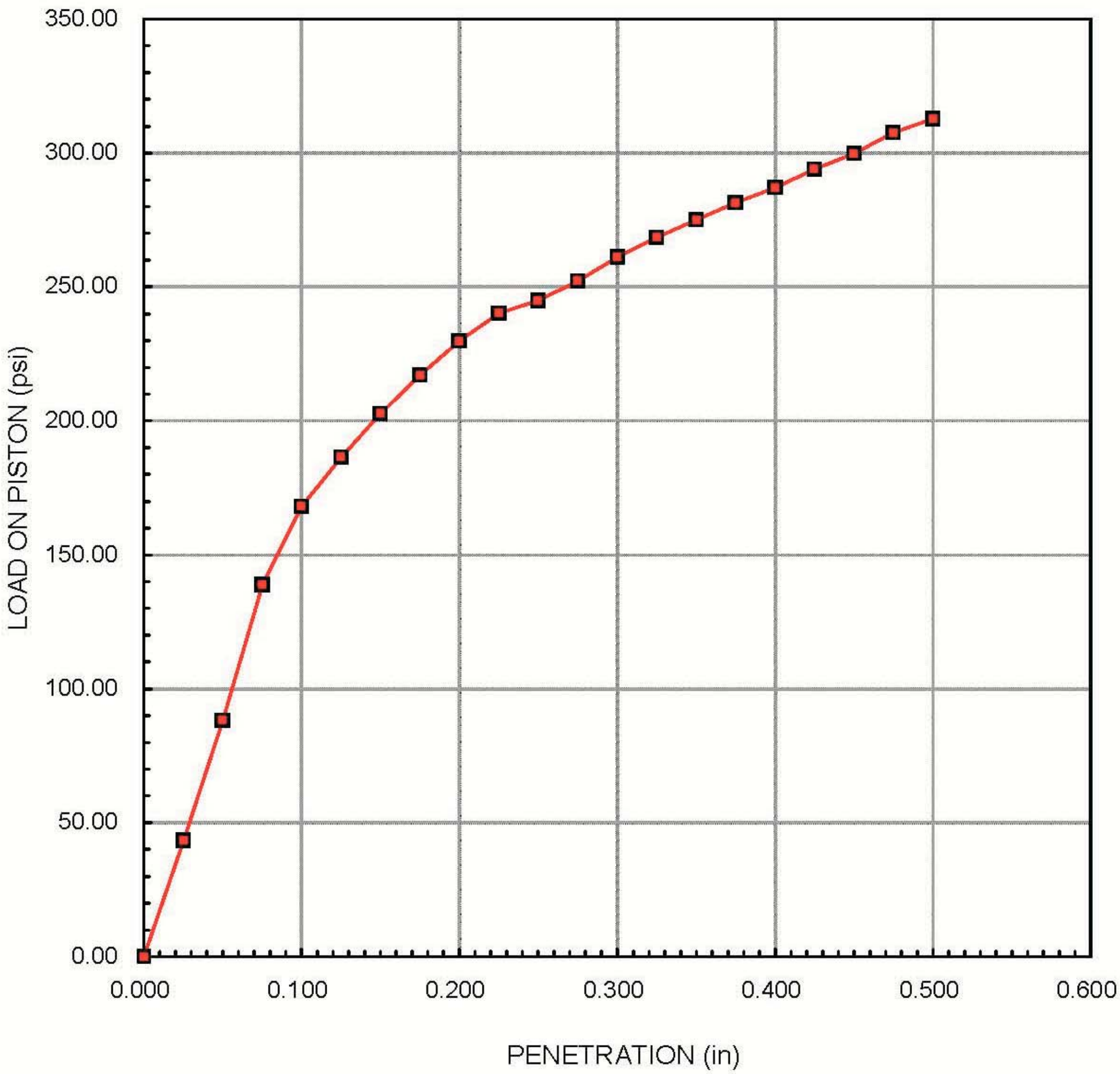


COMPACTION TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE 23

Project Name:	Gas Co./Aliso Cyn.	Tested By :	JK	Date:	10/24/06
Project No. :	0519	Data Input By:	KM	Date:	10/31/06
Boring No.:	B-1	Checked By:	AP	Date:	10/31/06
Sample No.:	BB-1				
Depth (ft.) :	2-6				
Soil Description :	Brown Clayey Sand				

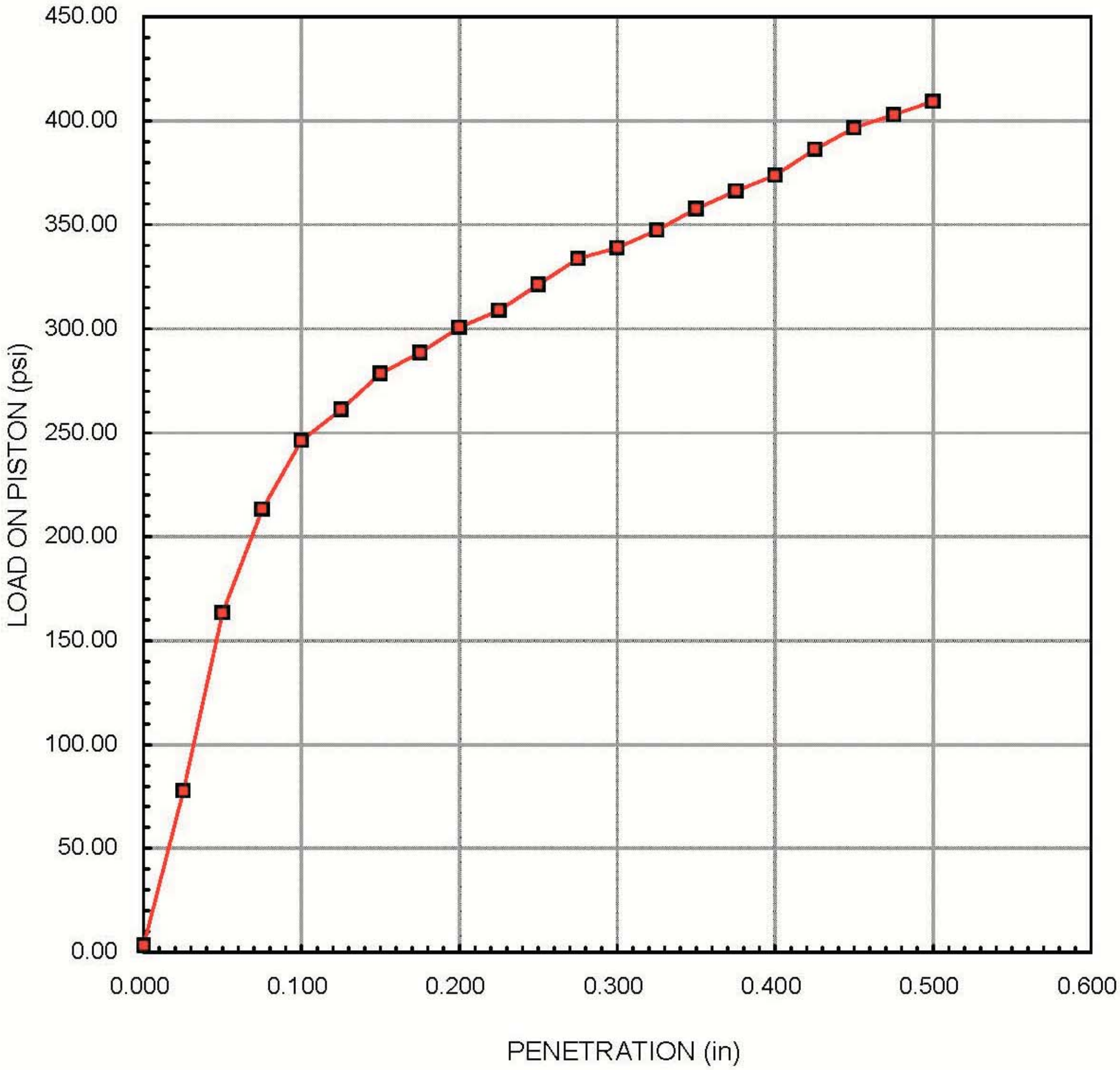


CBR TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE 24

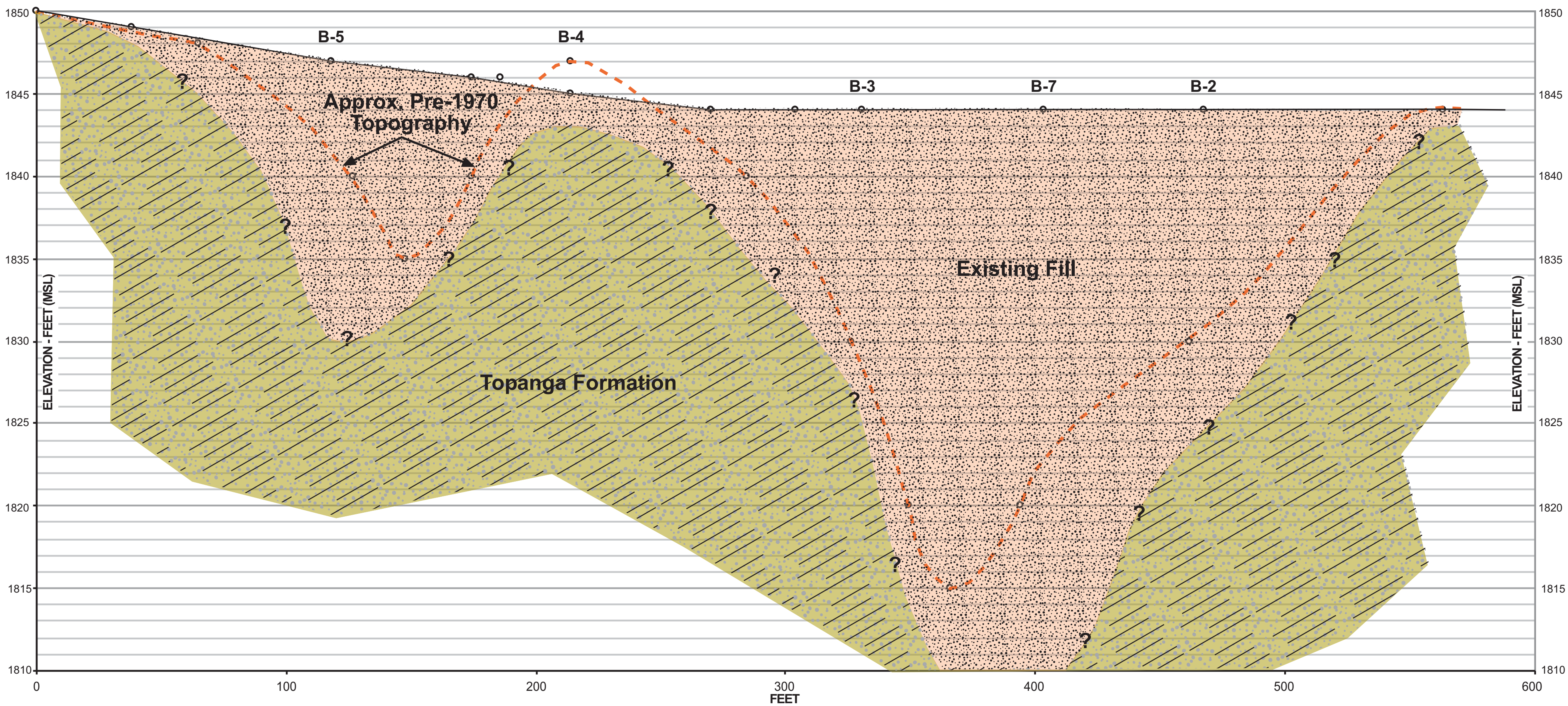
Project Name:	Gas Co./Aliso Cyn.	Tested By :	JK	Date:	10/24/06
Project No. :	0519	Data Input By:	KM	Date:	10/31/06
Boring No.:	B-2	Checked By:	AP	Date:	10/31/06
Sample No.:	BB-1				
Depth (ft.) :	1-10				
Soil Description :	Yellowish Brown Silty Sand				



CBR TEST DATA
TURBINE REPLACEMENT PROJECT
Aliso Canyon Facilities, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE 25



IDEALIZED SUBSURFACE PROFILE A-A

(Vertical scale exagerated)

Turbine Replacement Project

Aliso Canyon Facilities, California

For Southern California Gas Company

NOTE: Soil and ground water conditions were observed at the exploration locations and where readily visible. The locations of the geologic data were not surveyed and are shown approximately. Actual conditions encountered in the field will depend on the changes in strata and discontinuities in the related features. Depth of the competent rock strata may vary abruptly. Please refer to text of the report for complete description of materials.

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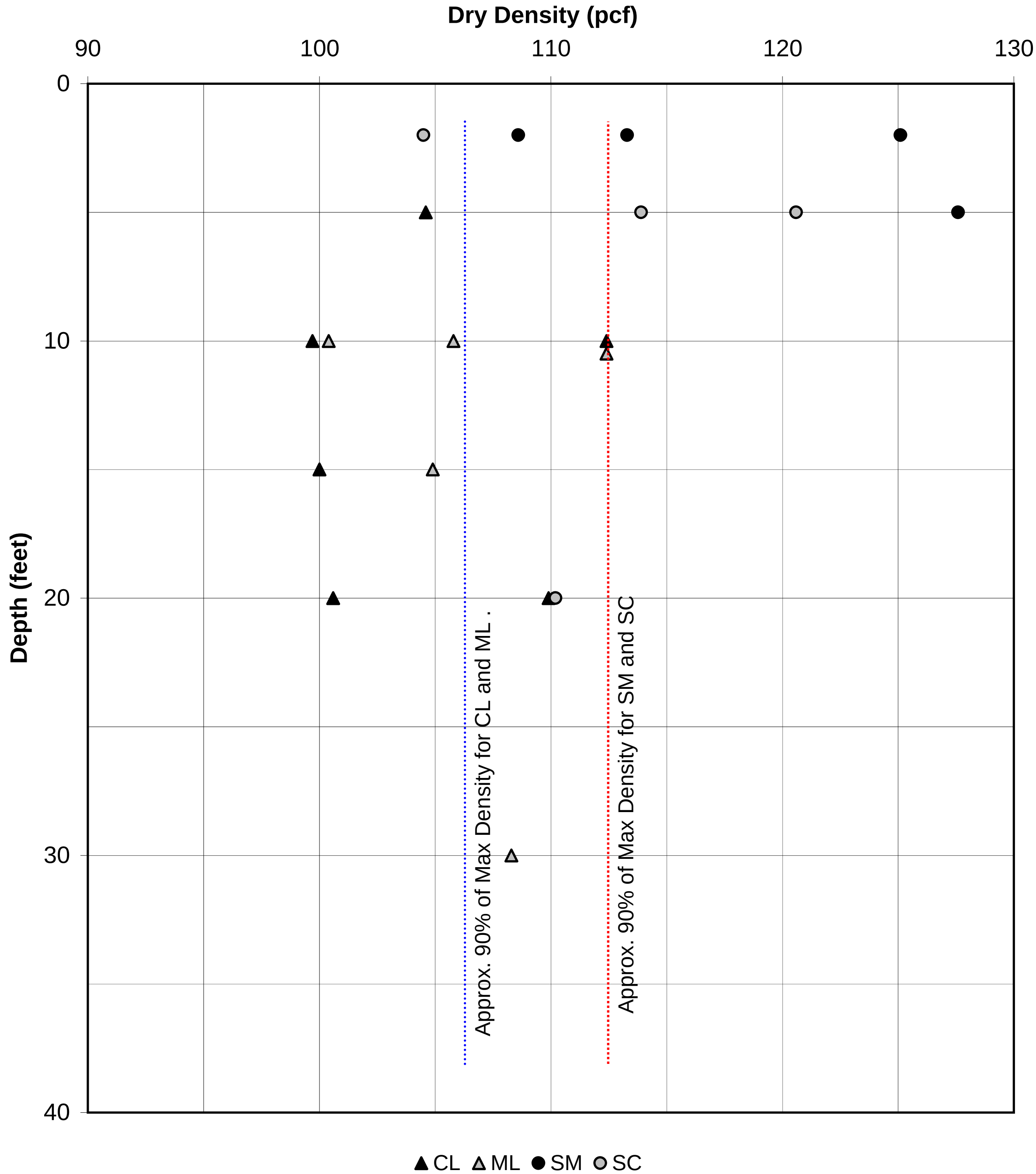
PLATE 26



Existing Fill - Dry Density Data

Aliso Canyon Turbine Replacement Project

For the Southern Califonia Gas Company

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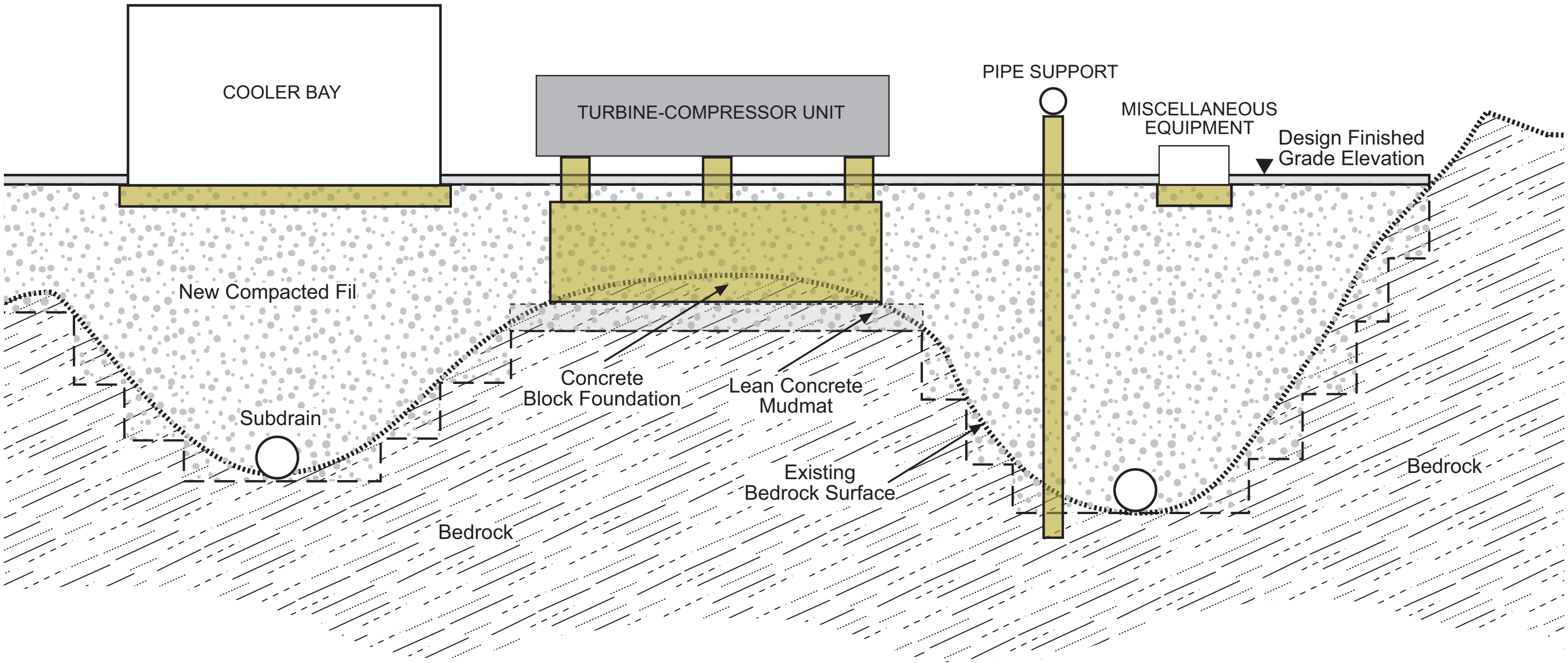
PLATE 27



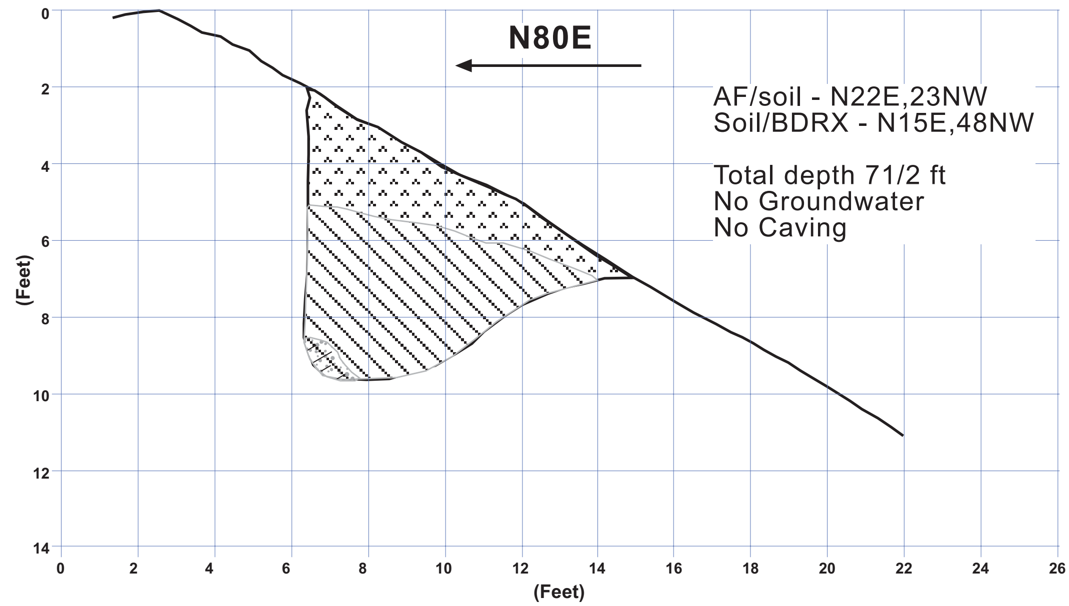
Conceptual Foundation Support Scheme
(Not to Scale)
Turbine Replacement Project
Aliso Canyon Facilities, California
For Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE 28

APPENDIX A
TEST PIT LOGS – TP-1 THROUGH TP-7

TEST PIT TP-1

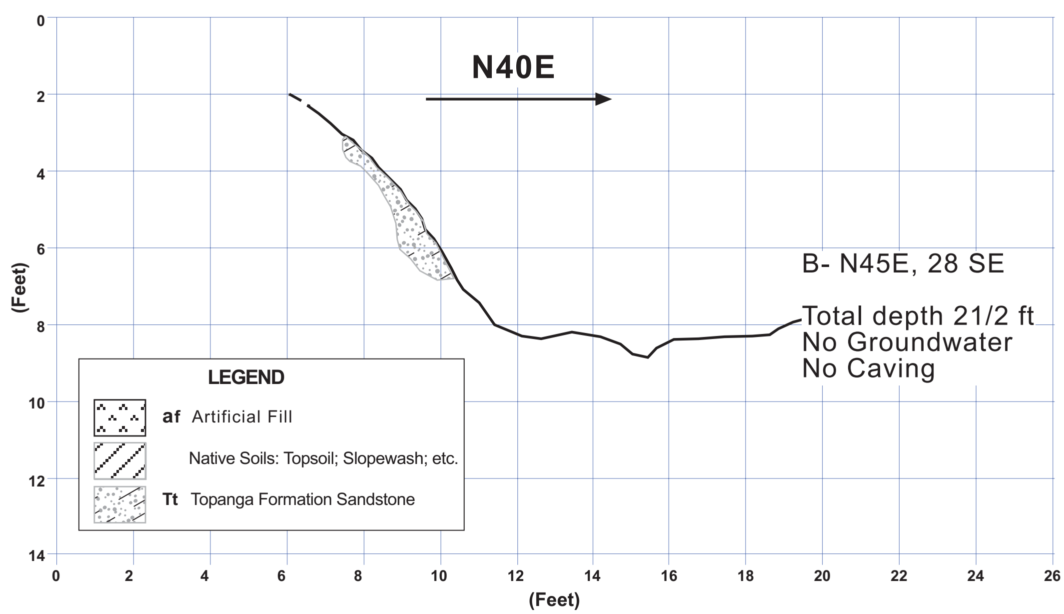


0--36" Artificial Fill(af); silty to clayey sand: mottled, moderate yellowish brown (10YR5/4) fine-grained; slightly moist to moist; loose to moderately dense.

36" - 61/2' TOPSOIL; sandy silt to silty sand; Dark yellowish-brown (10YR4/2);with light gray and orange mottling; moderately dense; moist; roots common;

61/2' - 71/2' BEDROCK - TOPANGA Fm(Tt) - sandstone: very pale orange(10YR8/2); very hard dry to slightly moist; massive.

TEST PIT TP-2



0--2" Surface soil: silty sand: yellowish-gray (5Y7/2); very fine-grained; dry, loose, pervasive roots.

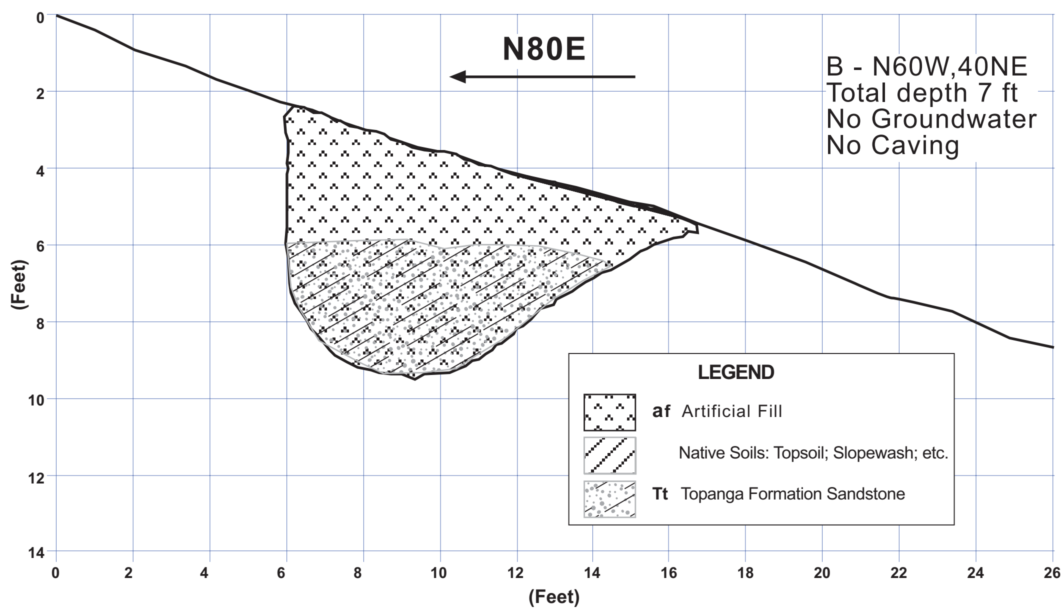
2" - 21/2' TOPANGA Fm (Tt) sandstoned siltstone and Sandstone is pale orange (10YR8/2); very fine grained; hard; dry; lightly fractured; Siltstone is dark yellowish orange (10YR6/6); hard; dry to slightly moist moderately to highly fractured in outer 12".

LOG OF TEST PITS
Proposed Turbine Replacement Project
Aliso Canyon Facilities, Northridge, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE A-1

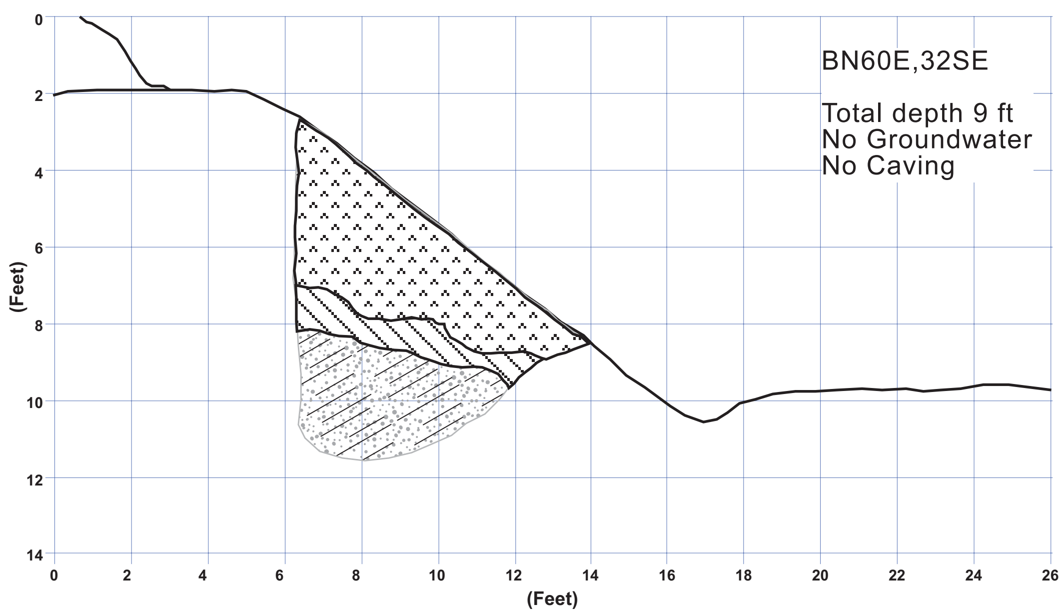
TEST PIT TP-3



0-4' ARTIFICIAL FILL(af) - Pebbly Sand;yellowish gray(5Y7/2); fine-grained, slightly silty;2-5% rounded granitic pebbles; loose to moderately dense;dry to slightly moist;lowest 6-12" is moderately yellowish brown, silty sand. Fill contact inclined slightly down slope

4'-7' BEDROCK-TOPANGA Fm(Tt) - SANDSTONE & conglomerate - moderate yellow (5Y7/6) to Dusky yellow (5Y6/4) fine-to medium grained - hard;slightly moist to moist;conglomerate is pebble to cobble sized, sedimentary& granitic clasts; contact irregular may be channelled-

TEST PIT TP-4



0-51/2' Artificial Fill (af) SILTY SAND: moderate yellowish brown (10YR5/4) with pale gray to dark brown mottling; dense;slightly moist; scattered pebbles and cobbles; lowest 10-12" is loose; moderate-brown silty sand - possible old topsoil horizon

51/2'-9' Bedrock- Topanga Fm(Tt) SANDSTONE: predominately dark yellowish orange (10YR6/6) fine to medium grained. moist; soft to moderately hard; overall degraded weathered appearance and texture; bedding poorly defined by overall texture and subtle color variations

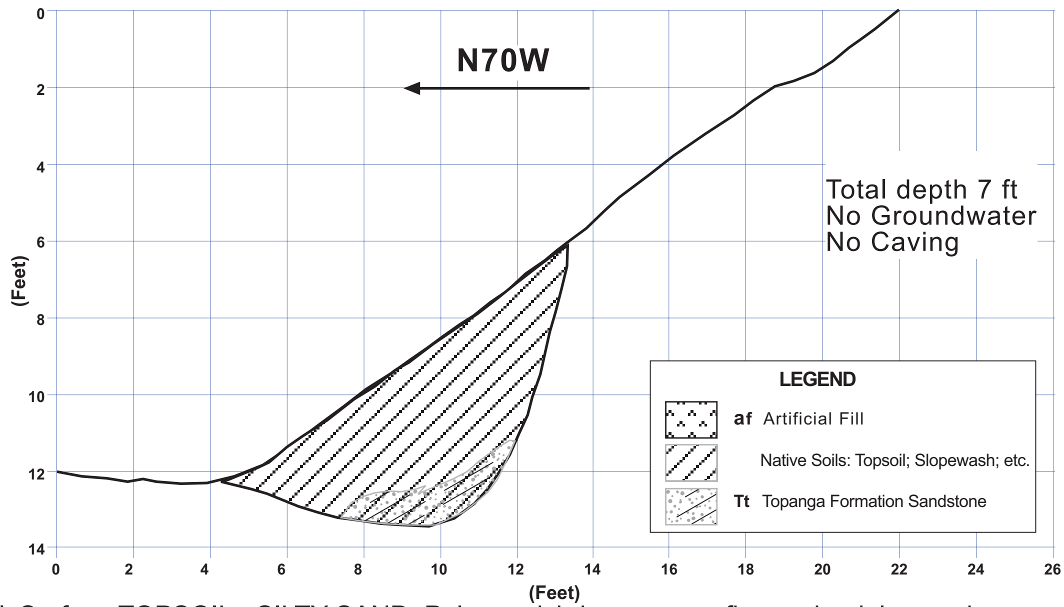
LOG OF TEST PITS

Proposed Turbine Replacement Project
Aliso Canyon Facilities, Northridge, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE A-2

TEST PIT TP-5

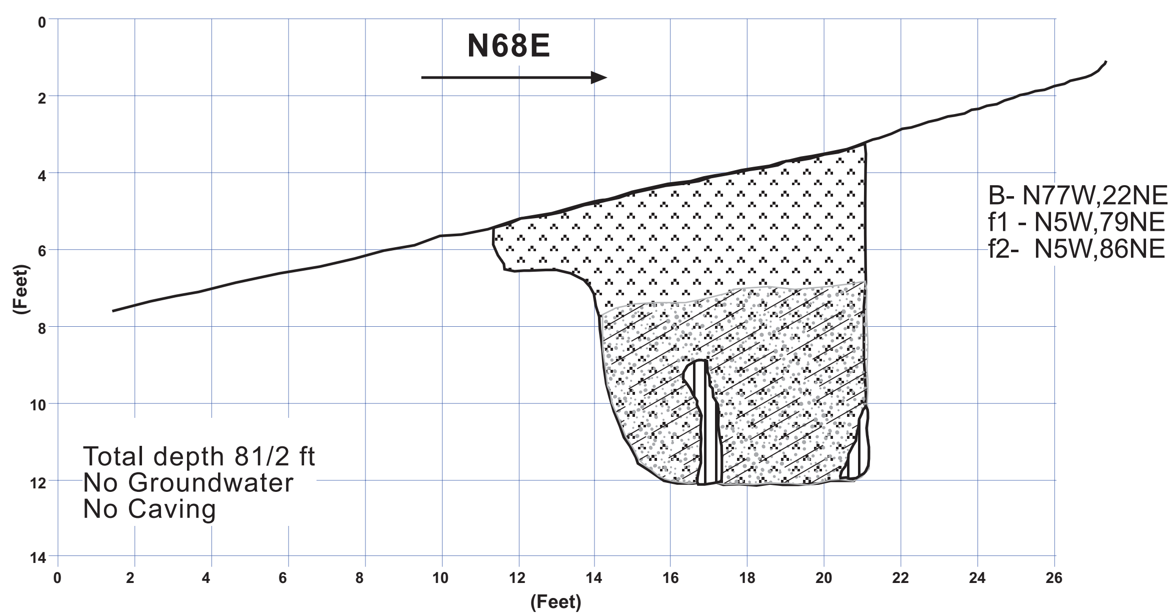


0--21/2" Surface TOPSOIL - SILTY SAND: Pale grayish-brown; very fine grained; loose; dry. very porous; ROOTS common in upper 6";

21/2' - 51/2' SLOPEWASH: GRAVELLY CLAY: dark yellowish brown(10YR4/2); 30-40% angular pebble to cobble sized clasts of siliceous siltstone and siltstone in clay matrix; slightly moist; very dense lower contact irregular

51/2'-7' BEDROCK - Topanga Fm(Tt). SANDSTONE: very pale orange (10YR 8/2) to grayish orange (10YR 7/4) very fine-grained; slightly moist; very hard; massive

TEST PIT TP-7



0-31/2' ARTFICIAL FILL (af) SILTY SAND: moderate yellowish brown (10YR5/4); fine-grained. dry to slightly moist; loose to moderately dense; locally very porous; contact inclined slightly downhill

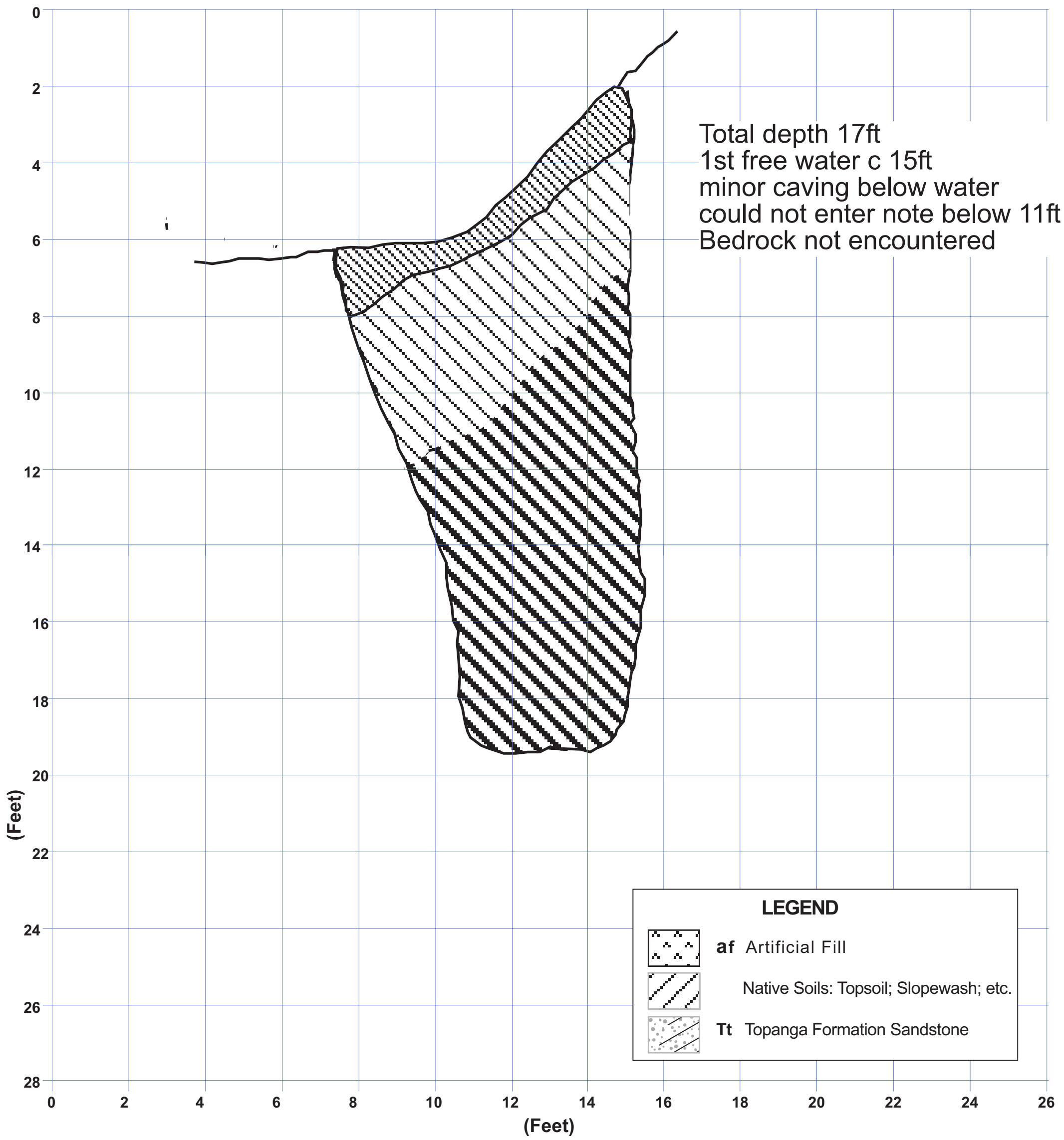
31/2'-81/2' BEDROCK- Topanga Fm(Tt) sandstone: mottled yellowish gray (5Y7/2) to dark yellowish-orange (10YR6/6)- medium grained. locally pebbly; moist; soft to moderately hard. Bedrock structure defined only by overall texture; well-defined bedding features discontinuous; locally truncated against fractures. rock adjacent to fractures soft and highly degraded; fractures lined with pale brown silty to clayey sand: - possible landslide debris?

LOG OF TEST PITS
Proposed Turbine Replacement Project
Aliso Canyon Facilities, Northridge, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE A-3

TEST PIT TP-6



0-18” surface soil - Silty sand to sandy silt - pale to moderate grayish-brown, very fine-grained slightly moist , loose porous. roots common in upper 6 inches.

18”-41/2’ Slopewash(sw) - Gravelly clay: dark yellowish brown (10YR4/2) ~20% angular pebble-to-cobble sized clasts of siltstone in clay matrix; slightly moist to moist.

41/2’ -17’ TALUS Gravelly silty sand: Pale to moderate yellow brown 10-15% pebble to cobble-sized gravel in silty sand matrix carbonate stringers pervasive throughout; siltstone clasts angular; granitic clasts rounded; slightly moist; loose to moderately dense very wet at 13ft.

LOG OF TEST PITS
Proposed Turbine Replacement Project
Aliso Canyon Facilities, Northridge, California
For The Southern California Gas Company

GLOBUS ENGINEERING INC.

PLATE A-4

APPENDIX B
PRELIMINARY FAULT HAZARD ASSESSMENT

PRELIMINARY FAULT HAZARD ASSESSMENT

INTRODUCTION

The proposed Turbine-compressor facility will be located within about one mile of faults included within a State of California Alquist-Priolo (A-P) Earthquake Fault Zone. This zone is terminated roughly one mile east-southeast of the site with a note on the maps indicating that the "Santa Susana Fault Zone extends to west, but not yet evaluated for zoning purposes." Published reports on this region provide preliminary data related to mapped fault traces of the Santa Susana fault extending just south of the site area. Ground rupture associated with the 1971 San Fernando earthquake occurred less than one mile southeast of the proposed project. Minor faults are mapped within the area.

The purpose of this supplemental fault study was to develop a better understanding of the fault hazard at the site and to provide related planning input to the project team. The supplemental study included the following tasks:

- Review of stereographic aerial photographs of the site dating from 1928 to 1973 for evidence of faulting at the site or projecting toward the site.
- Research and compilation of relevant data from published sources.
- Engineering geologic mapping of selected, readily evident bedrock exposures in the immediately surrounding area at a scale of 1" = 100'.
- Discussions with Mr. Jerry Treiman of the California Geological Survey regarding the status of the Alquist-Priolo Earthquake Fault Zone for the Santa Susana fault and the likelihood that it will be re-evaluated and possibly extended in the future.
- Compilation of the data and geologic analysis to assess areas for and extent of subsurface exploration that might yield useful information pertinent to the proposed site area.

The findings of this supplemental study are summarized below.

GEOLOGIC SETTING

The proposed site is located within the western Transverse Ranges geomorphic province of California, on the southern side of the Santa Susana Mountains. The Santa Susana Mountains consist of sedimentary bedrock ranging in age from Cretaceous to Late Pleistocene. This bedrock has been thrust southward over the San Fernando Valley as part of a mountain-building process believed to have begun less than one million years ago. Compressional forces associated with the uplift have deformed the sedimentary package into a complex system of west- to northwest-trending folds and reverse faults. The Santa Susana Mountains are bounded on the south by the San Fernando Valley across a system of reverse faults that include the Santa Susana fault, and on the north by the Santa Clara River and Newhall across the Oak Ridge fault and related structures. Westward, the Santa Susana Mountains give way to the Big Mountain, Oak Ridge and the Simi Hills, and east of Newhall Pass to the San Gabriel Mountains.

Movement along the frontal fault zone of the San Gabriel Mountains and to a lesser extent the Santa Susana Mountains generated the M 6.6 San Fernando Earthquake of February 9, 1971. Rupture primarily occurred along the San Fernando segment of the Sierra Madre fault with minor offset reported along the eastern end of the Santa Susana fault. Traces of the Santa Susana fault are mapped about 3,000 feet to the southeast and south of the site. Related traces are included in a State of California Earthquake Fault Zone (previously referred to as "Alquist-Priolo Special Studies Zones") about one mile south-southeast of the site. Short sections of ground rupture included within this zone were noted to have occurred as a result of the San Fernando Earthquake of 1971. Yeats reports that oil well casings in the Aliso Canyon Oil Field were not sheared off during the 1971 earthquake (Yeats, 1986).

SANTA SUSANA FAULT

The Santa Susana fault is mapped from the vicinity of Newhall Pass westward into the hills north of Simi Valley. The fault is a northerly member of a series of north-dipping faults that form the northern boundary of the San Fernando Valley below the Santa Susana Mountains. A similar system of faults continues east of Newhall Pass where they form the northern boundary of the San Fernando Valley below the San Gabriel Mountains. These faults accommodate north-to-south crustal shortening developed as a result of the "Big Bend" in the San Andreas fault that occurs roughly between the east end of the San Bernardino Mountains and Frazier Park. The San Fernando Earthquake of 1971 occurred as a result of slip along faults primarily easterly of Newhall Pass and involved uplift of the San Gabriel Mountains. Though most of the modern shortening west of Newhall Pass is currently believed to be accommodated by faults such as the Mission Hills, Devonshire and Northridge Hills faults, small sections of the Santa Susana fault were reported to have experienced displacement west of Newhall Pass in 1971. These displacements led State geologists to include sections of the Santa Susana fault within an Alquist-Priolo Earthquake Fault Zone on official maps published in 1976.

As interpreted by Saul (1979), Dibblee (1992) and Yeats (1987) there are two primary strands of the Santa Susana fault in the vicinity of Aliso Canyon. All authors interpret that the faults are inclined at steep angles where they lie at depth north of the proposed compressor facility. Yeats and Dibblee interpret separate strands at depth that shallow and merge near the surface. Saul interprets a single strand at depth that bifurcates near the surface where it shallows and is tightly folded. In both models, low angle faults are present in the relatively near subsurface below the proposed facility.

An isolated exposure of Modelo Formation south of Horse flats suggests that the shallow-dipping thrust sheet at one time continued over a mile south of the present surface exposure, and that a large volume of upper plate rock has been eroded away. This interpretation is supported by the presence of upper plate rock clasts in the younger, lower plate formations. Saul (1975) suggests that the Santa Susana fault has been inactive as a major tectonic feature since about the middle Pleistocene. Saul suggests that the displacements noted as a result of the San Fernando earthquake are local, non-tectonic features that developed along favorably oriented, pre-existing faults, bedding planes, or other planes of weakness (i.e. “sympathetic” or “triggered” movement).

Alternatively, Yeats (1987) identifies the upper and lower thrust sheets of Saul as older and younger strands of the fault. Saul apparently concluded the fault had not been active since the middle Pleistocene based on an exposure at Horse Flats where terrace deposits overlie the fault trace. Yeats argues that this evidence applies only to the older, more southerly strand of the fault. Yeats interprets that the younger strand of the fault offsets the older strand and that the younger strand is still an active structure.

As reported by Dolan et al. (2001) the Santa Susana fault has one of the highest documented, long term, reverse fault slip rates of southern California. Seismicity is documented along parts of the fault, and parts of the fault responded seismically during and after both the San Fernando Earthquake of 1971 and the Northridge Earthquake of 1994. Some speculate that the Pico Canyon Earthquake of 1893 may have occurred along the Santa Susana fault. Both the 1971 and 1994 earthquakes are thought to have transferred strain onto the Santa Susana fault, and this fault is therefore considered a significant seismic hazard in the area (Tsutsumi and Yeats, 1999).

The United States Geological Survey estimates a recurrence interval for the Santa Susana fault of 138 years (Peterson et al., 1996). This would appear to contradict Saul’s assessment that the fault has been inactive since the middle Pleistocene, as well as the lack of evidence for Holocene displacement as discussed in Dolan et al. (2001). No recent trenching studies of the fault are reported in the literature, and the one trenching study discussed by Dolan and others was reportedly completed across the older, possibly inactive strand. However, both the 1971 and 1994 earthquakes are thought to have transferred strain onto the Santa Susana fault. Yeats considers the Santa Susana fault the most significant seismic source in the northern San Fernando Valley.

The greatest probability of risk associated with ground deformation during future earthquakes is most likely related to distributed ground deformation that occurs as a result of a primary tectonic event on nearby faults – particularly faults of the frontal fault system. The faults most likely to generate distributed ground deformation in the Aliso Canyon area include the younger strand of the Santa Susana fault, and the Northridge Hills, Mission Hills and Devonshire faults that occur south of the Santa Susana fault farther out toward the valley. We have found no estimates of recurrence intervals for these particular faults. Recurrence intervals reported for similar frontal zone faults range from 138 years for the Santa Susana fault, to as much as 1,000 years for the San Fernando segment of the Sierra Madre fault. Estimates of recurrence intervals ranging from 500 to 600 years are common for reverse faults in the western Transverse Ranges.

POTENTIAL IMPACTS

As interpreted by Saul, Yeats and Dibblee, thrust surfaces of the Santa Susana fault are located in the near subsurface below the proposed compressor facility. Maps prepared by the California Geological Survey (formerly the California Division of Mines and Geology) include surface traces of the Santa Susana fault within Earthquake Fault Zones just southeast of the proposed facility. The possible scenarios of potential impacts associated with this condition include:

- Further evaluation of the Santa Susana fault may result in a westward extension of the existing A-P Earthquake Fault Zone, and that the extended zone might encompass the subject site.
- Renewed primary tectonic movement may occur along the Santa Susana fault.
- Significant faults may be uncovered during the future grading operations.
- Minor “sympathetic” fault displacements may occur at the site due to primary tectonic ruptures along other local faults in the frontal system.

These possible scenarios are discussed below based on currently available data.

Extension of the A-P Zone in the Site Area

The California Geological Survey is responsible for identifying those faults throughout California believed to be “sufficiently active and well-defined” to be included within California Earthquake Fault Zones. These zones delineate areas where studies are required to ensure that structures intended for human occupancy (defined as 2,000 person-hours per year) are not constructed over the traces of active faults. Active faults are defined as those that have experienced ground rupture at some time in the last about 11,000 years. Based on the current administrative interpretation of the original Act and supporting documentation, all faults within a zone, no matter how minor, must be considered active unless evidence is available to preclude activity in the last 11,000 years. Where such evidence is not available, all faults must be considered active. Based on this interpretation, the Act can have severe impacts on properties where fault relationships are not clear, or where evidence to preclude recent activity is not available.

If the Earthquake Fault Zone currently established along the Santa Susana fault were to be re-evaluated, we expect that the zone would be extended westward from the current location along the well-defined surface traces of the fault. Other faults that crop out north of the well-defined traces, and closer to the proposed compressor facility are interpreted by Saul as shallow, “rootless” features associated with past deformation in the upper plate. Based on currently available data, it appears that these breaks may not be “sufficiently active and well-defined” to be included in an extended zone.

Based on conversations with representatives of the California Geological Survey, we understand that re-evaluation of the Earthquake Fault Zone associated with the Santa Susana fault is not currently a priority. Obviously, if an earthquake occurs along the local frontal fault system this might change. It is expected that the proposed facility would most likely be completed prior to any re-assessment of this zone. Once constructed, there should be no practical impacts even if the boundaries of the existing A-P zone were changed to include the subject site as the prohibition against placing structures over AP fault traces is not retroactive. In such case, however, any future habitable development at this site could be impacted. In any case, all clients need to be aware of the risks involved in building on a potentially active fault and make informed decisions based on their willingness to assume that risk.

Tectonic Movement and Primary Ground Rupture

The Santa Susana fault lies near the uppermost position in a “stack” of thrust features along which the Santa Susan Mountains are being lifted above the San Fernando Valley. The older strand of the fault has been folded and highly eroded in the shallow subsurface below the site. As interpreted by Yeats, this older strand is truncated by a younger strand of the fault Some degree of movement was reported on the near-surface traces of the Santa Susana fault during the 1971 San Fernando Earthquake, and seismicity was noted associated with segments of the fault in response to the Northridge Earthquake and associated aftershocks. The fault surface is oriented in a manner favorable to accommodate north to south shortening that is clearly continuing across this area, so the potential for tectonic movement and primary ground rupture cannot be ruled out. Nonetheless, mapping to date suggests that no major surface trace of the Santa Susana fault extends through the site. The potential for any new faults to affect the subject site cannot be assessed at this time; however, in our opinion, the probability of this scenario is small.

Faults Exposed During Grading

The subject site is currently buried beneath a blanket of artificial fill, and it is possible that “active” faults unknown or unrecognized at this time may be uncovered during grading operations for the project. To assess the likelihood of such condition, we have reviewed the existing published data, and aerial photographs of the site area taken between 1928 and 1973. Additional site reconnaissance of available bedrock exposures was also performed.

Review of aerial photographs did not reveal strong lineaments consistent with significant faults immediately below the proposed facility. Published studies (Saul, 1979; Dibblee, 1992) indicate that the subject site is underlain by sandstone and conglomerate of the lower Topanga Formation. No juxtaposition of stratigraphic units indicative of significant offset is indicated. Based on additional field mapping of exposed bedrock outcrops completed as part of this supplemental study, we concur with the general geologic conditions portrayed on the published maps.

Our mapping defined a general anticlinal bedrock fold, interrupted by numerous faults with minor offsets, and local structural perturbations - most commonly associated with minor faults. These observed faults typically are very narrow fractures or crushed zones, and most have offsets that can be demonstrated to be on the order of a few feet. Others mark substantial changes in bedrock orientation where the amount of offset cannot be determined. Most are lined with carbonate or iron oxide; we observed no faults with well-developed clay gouge zones.

These faults are fairly ubiquitous. The greatest concentrations were observed near the north corner of the existing compressor facilities, where the faults are associated with local changes in bedrock structure. Saul (1979) maps two faults beneath the compressor site. Dibblee (1992) does not map the faults indicated by Saul. Our recent reconnaissance identified exposures likely to be the faults mapped by Saul. One is located in a roadcut at the southeast corner of the proposed compressor site. This road cut exposes a number of faults that strike nearly east-west and dip both to the north and the south at steep angles. These occur in the approximate location indicated by Saul, and project below the southwest corner of the proposed compressor facility. Most of these faults appear to be fairly minor features in that they have only narrow gouge zones, and juxtapose similar rock types. One feature may be more significant, in that it appears to juxtapose dissimilar rock types; however the fault occurs near the edge of the road-cut and is not well exposed. A better exposure of this fault will likely be available during grading. As mapped both by Saul and during our recent efforts, this fault projects under the southeast corner of the proposed compressor site. We expect that if judged advisable, it will not be difficult to avoid the projection of this fault with the future developments.

The other fault mapped by Saul is approximately coincident with the zone of concentrated faulting observed near the northwest corner of the existing compressor facility. These faults were observed to be oriented northerly to easterly and to dip at moderate to steep angles eastward. Bedding attitudes measured associated with this zone of faults are rotated from a northeasterly dip to a southeasterly dip. The fault mapped by Saul passes approximately through this exposure trending northeasterly, with a northwesterly dip. Dibblee maps a single bedding attitude with a southeasterly dip consistent with the discordant structure noted during our reconnaissance.

Projecting the trend of this zone of fractures is not straightforward. The overall trend appears to be southwestward from the primary exposure. This trend is approximately coincident with a fault mapped by Saul. Projected along this trend, this zone of fractures should be anticipated below the north end of the proposed facility in the vicinity of Trench T-4 and Boring B-5.

In our opinion, all of the faults observed during our reconnaissance are fairly minor features. There may be areas more prone to express distributed deformation as discussed below; however, they are not considered likely to develop significant offset. They are not primary tectonic faults. Discovery of significant faults is not anticipated during the future grading operations.

We expect that evidence to preclude activity during the last 11,000 years will not be available along the faults identified during our reconnaissance. Current interpretations of the Alquist-Priolo Act would require that habitable structures not be located over these minor faults if the area were to be included in a future Alquist-Priolo Earthquake Fault Zone.

Distributed Deformation

Distributed deformation occurs most commonly in the upper plates of reverse faults as rocks under relatively low overburden pressures respond to a variety of stresses imposed during the fault movement and intense ground shaking associated with major earthquakes. These deformations can take the form of broad arching, ground cracking, and minor offsets across pre-existing planes of weakness such as weak bedding planes, or pre-existing faults. Such offsets are usually small. These are the types of deformations that Saul argues are responsible for the ground rupture that occurred relatively near the facility during the 1971 San Fernando Earthquake.

The locations and style of this type of earthquake effect cannot be predicted with reliability. This is part of the rationale for prohibiting habitable structures over identifiable zones of weakness such as seemingly minor faults in defined Alquist-Priolo Earthquake Fault Zones. The potential for distributed deformation at the subject site cannot be ruled out. If a major seismic event were to occur along the main trace of the Santa Susana fault, some degree of distributed deformation should be expected at the subject site.

CONCLUSIONS

Although the subject site is not located within the A-P Zone, in our opinion, it is prudent to assess the fault rupture hazard at this site and implement the related remedial design measures in construction of the proposed facility. The Santa Susana fault is believed to be capable of generating a significant seismic event, though it is not currently possible to assign a numerical probability to the likelihood of its occurrence during the design life of the proposed facility. Some researchers believe that the Santa Susana fault is the most significant seismic source in the northern San Fernando Valley and argue that the fault is near the end of its “earthquake cycle” and due for an event. During such a seismic event, primary surface fault rupture is not likely to occur at the site; however, secondary deformation in the area where the site is located should be expected and planned for in addition to the strong ground motion. Regardless of the probability of occurrence of such a seismic event and displacement, in our opinion, engineering solutions should be possible to reduce the risk of substantial damage to the proposed facility at this site (which does not include any habitable structures) to an acceptable level. It is possible that some modifications to the currently recommended foundation scheme may be needed to implement such solutions. In addition to the proposed Turbine-compressor facility, the roads leading to the site, and pipelines associated with the project may be compromised during such an event, not only by fault rupture, but also by failures of the many steep slopes at the Aliso Canyon facility. Such facilities and areas are outside the scope of our current investigation.

Further evaluations of the overall seismic hazard are recommended during the detailed design phase of the project, as well as during construction. A geologist should map the site during site grading to note any fault related features and magnitude of their displacement(s). If faults are found in the area of the proposed facility, thin-section analysis is recommended to evaluate whether or not pedogenic clay down the fault plane has been sheared, which would indicate Holocene movement. This should help in obtaining more definitive data on the fault hazard at the site and in assessing the adequacy of the design measures planned for.

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Appendix C-4
Supplemental Noise Information

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Exhibit A-5 – Revised Noise Assessment for Fiber Optic Installation/Telecom Construction Activities

The use of pole replacement and placement noise levels for the installation of telecommunication lines is inappropriate. The removal and installation of poles is largely driven by large cranes, auger trucks, cement mixers, and jackhammers and is used as the basis of determining noise impacts in the ACTR DEIR as these are loudest pieces of equipment associated with these activities.

Telecom line installation typically involves the use of spool trucks and boom-lift, or man lift, trucks. Typically, the spool truck would be located at a single location for the majority of a single installation and is idling or sitting with the engine off the majority of the time. The boom truck moves from pole to pole to lift the technician to the top of the pole to install equipment and string the telecom line. The actual time spent at each pole is short-term and typically involves less than half an hour at any single pole.

Based on this scenario, noise levels from the simultaneous operation of both pieces of equipment is estimated to generate and hourly average noise level at 50 feet of 72 dBA L_{eq}. Individually the boom truck is estimated to generate 68 dBA L_{eq} at 50 feet and the spool truck is estimated to generate 70 dBA L_{eq} at 50 feet. Noise levels are modeled using the Federal Highway Administration's Road Construction Noise Model (RCNM) (FHWA 2006). RCNM does not include spool trucks so a flat bed truck was used in the model, which assumes the truck is operational a full power approximately 40 percent of an hour and is thus considered a conservative replacement for the spool truck. Based on the calculated noise levels telecom line installation is not anticipated to exceed local standards or result in substantial noise level increase at adjacent properties.

Noise modeling results presented in Attachment 1.

Federal Highway Administration (FHWA)

2006 Road Construction Noise Model, version 1.00. January.

Telecom Line

Roadway Construction Noise Model (RCNM),Version 1.0

Report date: 04/26/2012

Case Description:

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Unknonw	Residential	50.0	40.0	40.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	50.0	0.0
Flat Bed Truck	No	40		74.3	50.0	0.0

Results

Equipment	Calculated (dBA) Lmax	Leq
Man Lift	74.7	67.7
Flat Bed Truck	74.3	70.3
Total	74.7	72.2

Appendix D
Notice of Completion and Environmental Document Transmittal for the Draft EIR

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Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #2010101075

Project Title: Aliso Canyon Turbine Replacement Project

Lead Agency: California Public Utilities Commission
Contact Person: Andrew Barnsdale
Mailing Address: 555 Van Ness Avenue
Phone: (415) 703-3221
City: San Francisco Zip: 94102
County: San Francisco

Project Location: County: Los Angeles, Ventura City/Nearest Community: Porter Ranch, Santa Clarita, Simi Valley
Cross Streets: Tampa/Sesnon (LA), Lyons Ave./Wiley Canyon Rd. (Santa Clarita), F & 3rd (Ventura) Zip Code: 91326
Longitude/Latitude (degrees, minutes and seconds): 34 °18 ′26.67″ N / 118 °33 ′6.49 ″ W Total Acres: 128
Assessor's Parcel No.: Multiple Section: T2NR16 Twp.: T2NR16W Range: ____ Base: ____
Within 2 Miles: State Hwy #: SR-118, I-5, SR-210 Waterways: Santa Clarita River
Airports: Whiteman Airport Railways: Los Angeles Metro Schools: Bishop Alemany High

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Document Type:

CEQA: ☐ NOP ☒ Draft EIR
☐ Early Cons ☐ Supplement/Subsequent EIR
☐ Neg Dec (Prior SCH No.) ____
☐ Mit Neg Dec Other: ____

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other:

RECEIVED
APR 04 2012
STATE CLEARING HOUSE

Local Action Type:

☐ General Plan Update ☐ Specific Plan ☐ Rezone ☐ Annexation
☐ General Plan Amendment ☐ Master Plan ☐ Prezone ☐ Redevelopment
☐ General Plan Element ☐ Planned Unit Development ☐ Use Permit ☐ Coastal Permit
☐ Community Plan ☐ Site Plan ☐ Land Division (Subdivision, etc.) ☐ Other:

Development Type:

☐ Residential: Units ____ Acres ____
☐ Office: Sq.ft. ____ Acres ____ Employees ____
☐ Commercial: Sq.ft. ____ Acres ____ Employees ____
☐ Industrial: Sq.ft. ____ Acres ____ Employees ____
☐ Educational:
☐ Recreational:
☐ Water Facilities: Type ____ MGD ____
☐ Transportation: Type
☐ Mining: Mineral
☒ Power: Type Natural Gas Storag MW 165 billion cf
☐ Waste Treatment: Type ____ MGD ____
☐ Hazardous Waste: Type
☐ Other:

Project Issues Discussed in Document:

☒ Aesthetic/Visual ☐ Fiscal ☒ Recreation/Parks ☒ Vegetation
☒ Agricultural Land ☒ Flood Plain/Flooding ☒ Schools/Universities ☒ Water Quality
☒ Air Quality ☒ Forest Land/Fire Hazard ☒ Septic Systems ☒ Water Supply/Groundwater
☒ Archeological/Historical ☒ Geologic/Seismic ☒ Sewer Capacity ☒ Wetland/Riparian
☒ Biological Resources ☒ Minerals ☒ Soil Erosion/Compaction/Grading ☒ Growth Inducement
☐ Coastal Zone ☒ Noise ☒ Solid Waste ☒ Land Use
☒ Drainage/Absorption ☒ Population/Housing Balance ☒ Toxic/Hazardous ☒ Cumulative Effects
☒ Economic/Jobs ☒ Public Services/Facilities ☒ Traffic/Circulation ☐ Other:

Present Land Use/Zoning/General Plan Designation:

Natural Gas Storage Field: Rural General Plan, Heavy Agriculture (A2) Zoning (see Draft EIR for other designations)

Project Description: *(please use a separate page if necessary)*

Southern California Gas Company (the applicant) proposes to construct the Aliso Canyon Turbine Replacement Project in unincorporated and incorporated areas of Los Angeles and Ventura counties. New and modified Southern California Edison (SCE) electric service facilities would also be required to provide power for the proposed project. The primary project improvements would be undertaken by the applicant at the Aliso Canyon Gas Storage Facility, and would include the replacement of gas compressor equipment, the construction of new office buildings, and the installation of a 12-kV power line. SCE improvements include construction of a new substation, reconductoring approximately 8.2 miles of 66-kilovolt subtransmission line, and installation of approximately 28.4 miles of telecommunication cable.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

X	Air Resources Board	X	Office of Historic Preservation
	Boating & Waterways, Department of		Office of Public School Construction
X	California Emergency Management Agency	X	Parks & Recreation, Department of
	California Highway Patrol		Pesticide Regulation, Department of
S	Caltrans District # 7		Public Utilities Commission
	Caltrans Division of Aeronautics	S	Regional WQCB # 4
X	Caltrans Planning		Resources Agency
	Central Valley Flood Protection Board		Resources Recycling and Recovery, Department of
	Coachella Valley Mtns. Conservancy		S.F. Bay Conservation & Development Comm.
	Coastal Commission		San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
	Colorado River Board		San Joaquin River Conservancy
	Conservation, Department of		Santa Monica Mtns. Conservancy
	Corrections, Department of		State Lands Commission
	Delta Protection Commission		SWRCB: Clean Water Grants
	Education, Department of	X	SWRCB: Water Quality
X	Energy Commission		SWRCB: Water Rights
S	Fish & Game Region # 5		Tahoe Regional Planning Agency
	Food & Agriculture, Department of	S	Toxic Substances Control, Department of
X	Forestry and Fire Protection, Department of	X	Water Resources, Department of
	General Services, Department of		
X	Health Services, Department of		Other:
	Housing & Community Development		Other:
S	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date April 4, 2012 Ending Date May 22, 2012

Lead Agency (Complete if applicable):

Consulting Firm: Ecology and Environment, Inc.
Address: 505 Sansome Avenue #300
City/State/Zip: San Francisco/CA/94111
Contact: Christy Herron
Phone: (415) 398-5326 x4728

Applicant: Southern California Gas Company (Nadia Aftab)
Address: 555 West Fifth Street, GT14D6
City/State/Zip: Los Angeles/CA/90013
Phone: (213) 244-4843

Signature of Lead Agency Representative: [signature] **Date:** 3/27/12

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

Appendix E
Public Meeting Summary Report for the Draft EIR

PUBLIC MEETING SUMMARY REPORT FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT FOR SOUTHERN CALIFORNIA GAS COMPANY'S ALISO CANYON TURBINE REPLACEMENT PROJECT

CPUC APPLICATION NO.: A.09-09-020
SCH NO.: 2010101075

May 2012

Lead Agency:

California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102
Contact: Andrew Barnsdale
Tel: 415-703-3221

Prepared by:

ECOLOGY AND ENVIRONMENT, INC.
505 Sansome Street, Suite 300
San Francisco, CA 94111

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Table of Contents

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List of Abbreviations and Acronyms

applicant	Southern California Gas Company
CEQA	California Environmental Quality Act
CPUC	California Public Utilities Commission
Draft EIR	Draft Environmental Impact Report for the Aliso Canyon Turbine Replacement Project
E & E	Ecology and Environment, Inc.
Final EIR	Final Environmental Impact Report for the Aliso Canyon Turbine Replacement Project
kV	kilovolt
NOA	Notice of Availability
proposed project	Aliso Canyon Turbine Replacement Project
ROW	right-of-way
SA	Settlement Agreement
SCE	Southern California Edison
SCH	State Clearinghouse
SoCalGas	Southern California Gas Company
storage field	Aliso Canyon Gas Storage Field

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1 Overview of CEQA Public Review Process

1.1 Introduction

The California Public Utilities Commission (CPUC)'s environmental review process invites broad public participation through public meetings and comment periods to provide input on proposed projects and issues related to them, including environmental impacts and mitigation measures. As part of this process, a public review period was held to receive public and agency feedback on the draft Environmental Impact Report (Draft EIR) for the Aliso Canyon Turbine Replacement Project (proposed project).

Southern California Gas Company (SoCalGas, or the applicant) filed an application (A. 09-09-020) with the CPUC to amend its Certificate of Public Convenience and Necessity for the construction and operation of the proposed project on September 28, 2009. As the lead agency for the proposed project under the California Environmental Quality Act (CEQA), the CPUC prepared a Draft EIR and will prepare a Final EIR for the proposed project. The Draft EIR and its Notice of Availability (NOA) were published on April 4, 2012, through the State Clearinghouse (SCH No. 2010101075), initiating a 45-day public review period that ended on May 22, 2012.

The CPUC held two public meetings in May 2012 to explain the proposed project; discuss the impacts expected to result therefrom, as well as mitigation measures to address such impacts; and receive comments on the Draft EIR from the public. This report summarizes these public meetings. It also includes all written comments and a summary of oral comments on the Draft EIR as received from agencies and members of the public during the public review period in response to the NOA for the Draft EIR. The NOA is included in Appendix A.

1.2 Public Noticing and Availability of Draft EIR

The CPUC is required, per CEQA Guidelines Section 15087, to fulfill certain requirements with regards to providing public notice for a Draft EIR, including the following:

1. Provide public notice of the availability of a draft EIR at the same time the CPUC sends a notice of completion to the State of California Office of Planning and Research;
2. Mail notices to the last known name and address of all organizations and individuals who have previously requested such notice in writing; and
3. Provide further means of public notice, including publication of the notice at least one time in a newspaper of general circulation in the area affected by the proposed project.

The CEQA Guidelines further specify that, to make copies available to the public, lead agencies should furnish copies of draft EIRs to public library systems serving the project area and make copies available in the lead agency's office. With regards to public hearings on the environmental document during the review period, Section 15087(a) of the CEQA Guidelines also specifies that:

(a) Public hearings may be conducted on the environmental documents, either in separate proceedings or in conjunction with other proceedings of the public agency. Public hearings are encouraged, but not required as an element of the CEQA process.

Mailings

Prior to the start of the public review period, the CPUC mailed copies of the NOA for the Draft EIR for the proposed project, as well as electronic (compact disk) copies of the Draft EIR, to public agencies and interested parties. The NOA included a description of the proposed project; a summary of key environmental issues discussed in the Draft EIR; the date, times, and locations of two public meetings for the Draft EIR; and instructions for commenting on the Draft EIR. The Draft EIR included a detailed project description; a description of project alternatives; a description of the environment setting; an evaluation of the environmental impacts of the project and alternatives; and mitigation measures to avoid or reduce environmental impacts.

The NOA and an electronic copy of the Draft EIR were mailed to 30 federal, state, regional, and local agencies and planning groups and to over 140 other project stakeholders. This included all attendees of the CPUC's scoping meetings for the environmental document (held on November 4 and 5, 2010, in the project area) who indicated on the meeting sign-in sheets their desire to be mailed a copy of the Draft EIR. The NOA alone was also mailed to more than 830 interested and potentially interested parties. In accordance with CEQA Guidelines Section 15087, the CPUC also mailed electronic and paper copies of the Draft EIR to the San Fernando, Newhall, and Simi Valley Public Libraries.

Newspaper Notices

The CPUC placed notices announcing the availability of the Draft EIR, and the times and locations of the Draft EIR public meetings, in the *Santa Clarita Valley Signal*, *Los Angeles Daily News,* and *Ventura County Star* on April 4, 2012.

Hotline, Email, and Public Website

The CPUC maintains a telephone hotline and an email address for the proposed project through which the public can contact the CEQA team and comment on the proposed project. The CPUC also maintains a website containing information and documents related to the proposed project. This information was included in the NOA and newspaper notices and distributed at the public meetings as part of the project fact sheet and PowerPoint presentation. The project-specific email, fax, voicemail, and website are as follows:

- **Email:** AlisoCanyonNG@ene.com
- **Fax:** 415-398-5326
- **Voicemail:** 877-676-8678 (toll free)
- **Website:** www.cpuc.ca.gov/Environment/info/ene/aliso_canyon/aliso_canyon_home.html

1.3 Public Meetings

In accordance with CEQA Guidelines Section 15202, the CPUC hosted two public meetings in the vicinity of the proposed project to discuss the Draft EIR. These meetings were held on Wednesday May 2, 2012, and Thursday May 3, 2012, at Wiley Canyon Elementary School in the community of Newhall and at the Porter Valley Country Club in the city of Northridge, respectively.

The following materials were provided at the meetings and are also included in Appendix B:

- Sign-in sheet;
- Speaker card;
- Written comment sheet;
- Project fact sheet; and
- PowerPoint presentation.

For both meetings, the CPUC's consultant, Ecology and Environment, Inc. (E & E) provided an overview of the purpose of the meeting and described all methods for the public and agencies to comment on the Draft EIR. The CPUC followed with an overview of the CPUC and environmental review processes. Following the CPUC's presentation, E & E provided an overview of the proposed project and outlined the impacts and mitigation measures identified in the Draft

EIR. Following the presentations, all meeting attendees were given an opportunity to ask questions about the proposed project and provide oral comments.

Public and Agency Comments

Records of the attendees at each public meeting are provided in Appendix B. Written comments received during the public review period are provided in Appendix C. All written and oral comments received during the public review period will be included in the Final EIR, along with responses prepared by the CPUC for each comment.

2 Overview of the Proposed Project

2.1 Background

SoCalGas, the project applicant, is required to implement the proposed project in order to meet the terms of Phase 1 of the Settlement Agreement (SA) between SoCalGas and parties to the 2009 Biennial Cost Allocation Proceeding approved by the CPUC D.08-12-020. The SA requires that SoCalGas replace the turbine-driven compressors and expand the overall injection capacity at the Aliso Canyon Gas Storage Field (storage field) by approximately 145 million cubic feet per day. The new compressor motors would provide reliable, efficient, and increased injection capabilities, as required by the terms of the SA.

Details about the proposed project, including a description of the project and maps showing the location of the project components, may be found in the Draft EIR.

2.2 Project Description

The proposed project would be located mainly in an unincorporated area of Los Angeles County. The main project site is located within the storage field, which is approximately 3,600 acres in size and is located in Los Angeles County, north of the City of Los Angeles. Project components would pass through unincorporated Los Angeles, the city of Los Angeles, the city of Santa Clarita (in Los Angeles County), the Community of Mission Hills (in Los Angeles County), and unincorporated Ventura County.

The proposed project would primarily involve replacing existing natural gas compressors at the storage field facility, which would allow SoCalGas to increase the facility's natural gas injection capacity from 300 to 450 million cubic feet per day. The storage and daily withdrawal capacity of the facility would remain the same.

Upgrades to Southern California Edison (SCE) electric infrastructure would be required to provide power to the new compressors and would also be a part of the project. The proposed project includes several components to be constructed by SoCalGas and SCE, including:

1. Construction of a new Central Compressor Station at the storage field facility site, including the installation of three electric-driven variable-speed compressors;
2. Relocation of on-site office facilities and an on-site guardhouse;
3. Construction of a new on-site, approximately 1,200-foot-long, 12-kilovolt (kV) Plant Power Line that would provide dedicated electric services to the proposed Central Compressor Station;
4. Construction of a new 56-megavolt-ampere, 66/12-kV electric substation (the Natural Substation) by SCE;
5. Modifications that would be made by SCE to approximately 8 miles of two existing 66-kV subtransmission lines in order to serve the proposed Central Compressor Station;
6. Modifications that would be made by SCE to three existing substations (Newhall, Chatsworth, and San Fernando Substations); and
7. Installation of approximately 28 miles of new fiber optic telecommunications cable, in existing SCE rights-of-way (ROWs).

2.4 Identified Project Impacts and Mitigation Measures

No significant and unavoidable adverse impacts from the proposed project were identified in the Draft EIR. The Draft EIR includes a discussion of adverse environmental impacts that would result from the proposed project and would be mitigated, including impacts related to:

- **Biological Resources:** Construction activities could result impacts on sensitive species, such as coastal California gnatcatcher, and on native habitat, including Venturan coastal sage scrub and wetlands.
- **Hazards:** Project activities could temporarily result in an increased fire risk during construction in both the areas of the storage field facility and the SCE infrastructure to be upgraded.
- **Air Quality:** Construction activities could result in an exceedance of emissions of nitrogen oxides above the CEQA threshold.

2.5 Project Alternatives

The Draft EIR describes a reasonable range of alternatives to the proposed project, including design, electrical, routing, and siting alternatives. Eleven alternatives were identified, and three, including the no project alternative, were carried forward for full analysis in the draft EIR. These included the alternatives that could feasibly accomplish the proposed project's objectives and could avoid or substantially lessen one or more significant impacts such as wildfire risk, impacts on air quality, and impacts to coastal California gnatcatcher species and habitat.

3 Summary of Public Meeting Comments

This section summarizes oral comments received from members of the public during the two public meetings held by the CPUC. Ten people attended the public scoping meeting held on May 2, 2012, in Newhall, and nine people attended the public scoping meeting on May 3, 2012, in Northridge. Audio files of both meetings were recorded digitally.

Concerns and requests raised during the public scoping period are summarized below.

3.1 CEQA Process/Public Notification

Multiple comments addressed the public noticing process. Comments included:

1. Concerns that residents in the vicinity of the project area did not receive enough notification of the public meetings for the Draft EIR; and
2. Requests that notices for public meetings related to the project be published in additional news sources.

3.2 Project Objectives, Project Description, and Alternatives

Project Objectives

One comment addressed the objectives of the project, and included:

- A request for an explanation for the purpose of the project (why the existing turbines at the storage field facility needed to be replaced).

Project Description

Several comments addressed aspects of the project, and included the following requests for information about:

1. Whether the new 66-kV subtransmission line support structures would be cement or steel;

2. Whether the proposed project includes replacing or upgrading the SCE power lines in the area of the Chatsworth to Natural telecommunications project component (Telecommunications Route #2); and
3. Whether the existing SCE distribution line from the Chatsworth substation to the Natural substation (the location of proposed Telecommunications Route #2) is located underground.

Alternatives

Multiple comments addressed alternatives to the proposed project that would result in a reduction in the risk of fire represented by the project. Comments included requests that:

1. The CPUC consider alternatives for supplying power to the storage field facility that would have lower fire risk than the proposed project;
2. The CPUC consider project alternatives that include undergrounded power lines in areas of rugged terrain, because fires in these areas are extremely difficult to suppress, and because such alternatives would be economically feasible;
3. The CPUC consider alternatives that include less populated siting locations for the storage field facility; and
4. The CPUC provide information about whether the project applicant had considered propane as an alternative means of fueling the storage field facility.

One comment also addressed the no project alternative. The commenter asked what would happen if the project was not constructed.

3.3 Environmental Resources

Comments primarily addressed impacts of the proposed project on the human environment, most often with regard to fire hazards and cultural resources. Comments pertaining to impacts on specific environmental resources are described below.

Cultural Resources

Several comments addressed project impacts to cultural resources, and included the following requests for information:

1. Whether the parts of the project area that are identified in the Draft EIR as being in the "ROW" are located in the road right-of-way;
2. A description of how and whether impacts to cultural resources related to ground disturbance from project construction would be addressed; and
3. Whether archeological observers and/or Native American observers would be present during project construction.

Geology, Soils, and Mineral Resources

Several comments addressed project impacts in relation to geology, soils, and mineral resources. Comments included:

- Concerns that the project would be located in a seismically active area.

Hazards and Hazardous Materials

Several comments addressed impacts related to hazards. Comments addressed hazards related to natural gas storage operations at the facility, as well as hazards related to fire.

Natural Gas Hazards

Several comments addressed hazards related to natural gas injection and storage operations at the facility. Comments included:

1. Concerns that the proposed increase in natural gas injection capacity at the facility would result in an explosion and fire that would be similar to the Pacific Gas & Electric natural gas pipeline explosion that occurred in San Bruno in 2010, and that would threaten existing homes in the vicinity of the storage field;
2. Concerns regarding accidents that have taken place at the storage field facility since the applicant began operations, and that the facility should be dismantled rather than expanded, because the commenter did not believe that the applicant has operated it safely;
3. A concern that the proposed project would result in an expansion of the storage field facility although the commenter does not believe the existing facility is being managed safely; and
4. A request that the CPUC consider increasing protections related to safe operation of the storage field facility in accordance with and in proportion to each increase in natural gas capacity.

Fire Hazards

Multiple comments also addressed hazards related to fires that could result from inadequate maintenance and brush clearance within the ROWs for the project components that involve overhead electric lines or telecommunications routes. Comments included:

1. Concerns that the applicant's and SCE's ROWs below existing electric lines are not adequately maintained with regards to brush clearance;
2. Concerns that the existing overhead electric lines in the project area are themselves not sufficiently maintained, and that the new electric line and

telecommunications project components would not be sufficiently maintained; and

3. A request for information about whether the CPUC visually inspects electric lines for brush clearance.

Multiple comments also addressed hazards related to the risk of fire in general. Comments included:

1. Concerns that the mitigation measures in the Draft EIR are insufficient or inadequate in addressing fire hazards, specifically with regards to fire hazards associated with the overhead electric line project components;
2. A request for information about why fire risks would be reduced rather than increased with implementation of the project, in light of the expansion in capacity at the storage field facility;
3. Concerns addressing the existing high fire risk in the area resulting from conditions including local winds of up to 120 miles per hour;
4. A concern that the proposed electric line project components would increase fire risk in wooded areas, from downed electrical equipment or lines;
5. Concerns regarding potential fire hazards associated with existing storage field facility infrastructure;
6. A request that the applicant consider implementing animal (cow) grazing in the area of the storage field facility site to accomplish brush clearance; and
7. Concerns addressing the importance of acknowledging the risk of human failure related to maintenance of the project components.

Multiple comments also addressed existing fire prevention and suppression regulations and protocols. Comments included:

1. A request for information about the applicant's existing protocol for fire prevention and suppression: how long the protocol has been in effect, when the protocol was last updated, and whether the protocol was updated before or after the 2008 Sesnon fire; and
2. A request for information regarding state-level fire prevention and suppression regulations and standards: who enforces the regulations and standards, who ensures that the regulated entities are compliant with the regulations and standards, and whether the regulations and standards were updated after the Sesnon fire.

Hydrology and Water Quality

Several comments addressed impacts related to hydrology and water quality. Comments included:

- Concerns related to the existing natural gas injection operations at the storage field facility, and possible impacts to local groundwater wells that could result from these operations.

Land Use

Several comments addressed land use in the project area. Comments included:

1. A request for information about which company owned the storage field facility in 1974, and which year the applicant purchased the facility; and
2. A request that the CPUC consider existing and planned housing developments located in proximity to the storage field facility in the analysis of project impacts in the Draft EIR.

Noise

One comment addressed project impacts related to noise, and included:

- A request for information about noise levels that would result from decommissioning and dismantling of the existing compressor station at the storage field facility.

Public Services and Utilities

One comment addressed project impacts related to public services and utilities, and included:

- A request that the CPUC consider requiring the applicant to install a new fire prevention and suppression facility (in-house fire department) at the storage field facility site;

General Comments

Several general comments received during the public meetings included:

1. A request for information about whether the CPUC had completed a site inspection at the storage field facility; and
2. Comments in favor of the proposed replacement of the gas turbines at the storage field facility.

Comments Addressing the 2008 Sesnon Fire

Multiple comments received during the public meetings addressed the Sesnon fire. In October 2008, the Sesnon fire caused wide-ranging damage in the Porter Ranch, Twin Lakes, and Indian Hills communities. From October 13 to 18, the fire burned more than 14,000 acres, resulting in large-scale evacuations in the area. During the fire, 89 structures were damaged, and 15 residences were destroyed. The cause of the fire was attributed to a downed electrical distribution line in the area (CAL FIRE 2008). Comments included:

1. A request for information about whether the CPUC has conducted a detailed analysis of the Sesnon Fire;
2. Concerns regarding what is, in the commenter's opinion, an existing lack of adequate fire emergency response services in the project area, as evidenced by the response to the Sesnon fire; and
3. Concerns about the applicant's role in fire prevention and response during the Sesnon fire (especially in regards to what was, in the commenter's opinion, the inadequacy of the response), in relation to the ongoing need for fire prevention and response activities on the storage field facility site during and after project construction.

Fire hazards and issues related to public safety are addressed, and mitigation measures are included, in Section 4.8, Hazards and Hazardous Materials, of the Draft EIR. The Final EIR will not address comments specifically related to the Sesnon fire received during the public comment period that were not also related to the proposed project.

References

California Department of Forestry and Fire Protection (CAL FIRE). 2008. Sesnon Fire Incident Information. October 18.

A Notice of Availability

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STATE OF CALIFORNIA
PUBLIC UTILITIES COMMISSION
555 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

Edmund G. Brown Junior, *Governor*

Notice of Availability and Public Meetings

Environmental Impact Report
Aliso Canyon Turbine Replacement Project

Proposed by Southern California Gas Company
Application No. A.09-09-020

California SCH #2010101075

To:	All Interested Parties/Readers of the Draft Environmental Impact Report
From:	Andrew Barnsdale, California Public Utilities Commission, EIR Project Manager
Subject:	**Notice of Availability and Public Meetings,** Draft Environmental Impact Report For the Proposed Aliso Canyon Turbine Replacement Project
Date:	April 4, 2012

On September 28, 2009, Southern California Gas Company (applicant) filed Application No. A.09-09-020 with the California Public Utilities Commission (CPUC) to amend its Certificate of Public Convenience and Necessity for the construction and operation of the Aliso Canyon Turbine Replacement Project (project). The purpose of the proposed project is to comply with the terms of a settlement agreement implemented by CPUC decision D.08-12-020 while maintaining or improving the reliability and efficiency of Aliso Canyon Natural Gas Storage Field (storage field) operations. To carry out this purpose, the proposed project would replace the existing, obsolete, gas turbine-driven compressors at the storage field with electric-driven compressors, and increase natural gas injection capacity at the storage field to 450 million cubic feet per day.

The CPUC, as Lead Agency under the California Environmental Quality Act (CEQA), has prepared a Draft Environmental Impact Report (Draft EIR) for consideration of the proposed project.

A. Proposed Project Description and Location

The main proposed project site is located within the storage field. The storage field is approximately 3,600 acres in size and is situated in the Santa Susana Mountains approximately 20 miles north of downtown Los Angeles. Most of the storage field site is located in unincorporated Los Angeles County; the southernmost and easternmost parts of the storage field are located in the City of Los Angeles, and its address, 12801 Tampa Avenue, is within the City of Los Angeles. South of the storage field site are the communities (each within the City of Los Angeles) of Porter Ranch, Granada Hills, Chatsworth, and Northridge.

The existing Aliso Canyon Plant Station (Plant Station) includes a compressor station with three gas turbine-driven compressors, an operations facility/control center, a main office building, a crew-shift building, and injection and withdrawal pipelines. A single-circuit, 16-kilovolt (kV) distribution line provides electrical power to the storage field's facilities. A single-circuit, 66-kV subtransmission line crosses the southern half of the storage field through an easement granted to Southern California Edison (SCE) by the applicant. New and modified SCE electric service facilities, both on- and offsite, would also be required to provide power for the proposed project.

Components of the proposed project that would be constructed and operated at the storage field by the applicant include:

1. A new, electric-driven Central Compressor Station at the Plant Station site to replace the existing compressors, including three variable frequency drive compressor trains, compressors, piping, coolers, and other required equipment;
2. Relocated office facilities. The existing trailers at the Plant Station site would be replaced by new, permanent office and crew shift buildings at a location in proximity to the proposed Central Compressor Station;
3. Relocated guardhouse. The new guardhouse would be located 500 feet north of the existing guardhouse to relieve traffic congestion at the facility entrance; and
4. A new, four circuit, approximately 1,200-foot, 12-kV Plant Power Line that would provide dedicated electric services to the proposed Central Compressor Station. The Plant Power Line would be interconnected from the proposed SCE Natural Substation to the Central Compressor Station, and would be owned by the applicant.

Components of the proposed project that would be constructed and operated by SCE at and in the vicinity of the storage field would include:

1. A new, 56-megavolt-ampere, 66/12-kV substation (Natural Substation), which would be constructed and operated at the storage field on an approximately 1-acre site. This project component would be constructed and owned by SCE;
2. Upgrades of up to 8.2 miles of electrical subtransmission lines in the area of the proposed project, along segments of SCE's Chatsworth–MacNeil–Newhall–San Fernando 66-kV Subtransmission Line and MacNeil–Newhall–San Fernando 66-kV Subtransmission Lines. Upgrades would consist of reconductoring (conductor wire replacement), and tower/pole replacement. This project component would be constructed and owned by SCE;
3. Installation of up to 28.4 miles of telecommunications cable on existing structures in the area of the proposed project. This project component would be constructed and owned by SCE; and
4. Upgrades (installation of new equipment) at three existing SCE substations (Newhall, Chatsworth, and San Fernando Substations) that support the two existing SCE 66-kV subtransmission lines. This project component would be constructed and owned by SCE.

B. Significant Adverse Environmental Impacts from the Proposed Project

The Draft EIR has identified no significant and unavoidable adverse impacts from the proposed project. Potentially significant impacts with regards to Aesthetics; Air Quality; Biological Resources; Cultural Resources; Geology, Soils, and Mineral Resources; Greenhouse Gases; Hazards and Hazardous Materials; Noise; Public Services and Utilities; and Transportation and Traffic that would result from construction, operation, and maintenance of the proposed project were identified. With the implementation of mitigation and applicant proposed measures, impacts related to these resource areas would be less than significant. All other project impacts were determined to be less than significant, or reduced to a less than significant level with the implementation of the mitigation and applicant proposed measures in the Draft EIR. No portion of the proposed project would be located on a hazardous materials site pursuant to Government Code Section 65962.5.

C. Environmentally Superior Alternative

Pursuant to CEQA Guidelines 15126.6, the Draft EIR analyzes a range of reasonable alternatives to the proposed project. Among those alternatives analyzed for the proposed project include a design alternative (Alternate Compressor Drive Type, a Non-wires Alternative), a routing alternative (Telecommunications: Sylmar Substation to San Fernando Substation), and a No Project Alternative. Because the proposed project, during operations, would avoid or reduce long-term impacts from air pollutant emissions and result in a net reduction of greenhouse gas emissions in comparison to the design alternative, and construction noise from the routing alternative would impact fewer sensitive noise receptors, the proposed project with the routing alternative has been identified as the Environmentally Superior Alternative.

D. Public Review Period/Draft EIR Information

The CPUC will receive comments on the Draft EIR for a 45-day period starting April 4, 2012, and ending May 22, 2012. A telephone hotline for project information has been established at (877) 676-8678. Faxes may be sent to (415) 398-5326. Email queries and comments may be sent to AlisoCanyonNG@ene.com. Written comments may be sent to:

Aliso Canyon Turbine Replacement Project
505 Sansome Street, Suite 300
San Francisco, CA 94111

Information about the proposed project, including the environmental review process, the Draft EIR, and the Final EIR will be posted on the Internet at: http://www.cpuc.ca.gov/Environment/info/ene/aliso_canyon/aliso_canyon_home.html. The Draft EIR will also be placed in three repository sites to allow the public access to the document. EIR-related documents, including this Draft EIR and the Final EIR will be made available upon their release to the public at these locations:

San Fernando Library
217 North Maclay Avenue
San Fernando, CA 91340
(818) 365-6928

Newhall Library
22704 W. Ninth Street
Santa Clarita, CA 91321
(661) 259-0750

Simi Valley Library
2969 Tapo Canyon Road
Simi Valley, CA 93063
(805) 526-1735

E. Public Hearings

Following the release of the Draft EIR, the CPUC will hold two public meetings to explain the proposed project, discuss the proposed project's significant impacts and receive comments on the Draft EIR from the public (see table below).

Time, Date, and Location of Public Meetings

Time	Date	Location
From 6:30 to 9:00 PM	Wednesday, May 2, 2012	Wiley Canyon Elementary School, 24240 La Glorita Circle, Newhall, CA 91321
From 6:30 to 9:00 PM	Thursday, May 3, 2012	Porter Valley Country Club, 19216 Singing Hills Drive, Northridge, CA 91326

B Public Meeting Materials

Sign-in Sheets

Speaker Cards

Blank Written Comment Sheets

Project Fact Sheet

PowerPoint Presentation

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SIGN IN SHEET

California Public Utilities Commission

Public Meeting on the Draft EIR for the Proposed Aliso Canyon Turbine Replacement Project
Wiley Canyon Elementary School, May 2, 2012

Note: Before including your address, telephone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

Name	Affiliation (If Applicable)	Address	Email	Request CD of Draft EIR?
Rachel de St. Jean			Rdestjean@gmail.com	No
Teena Takata	Chatsworth Neighborhood Council, SSMPA		teena@besttax.com	No
[redacted]	[redacted]	[redacted]		no
Christine McLeod	SCE			NO

California Public Utilities Commission

Public Meeting on the Draft EIR for the Proposed Aliso Canyon Turbine Replacement Project
Wiley Canyon Elementary School, May 2, 2012

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Name	Affiliation (If Applicable)	Address	Email	Request CD of Draft EIR?
Al GARCIA	SCG	[redacted]	agarcia6@semprautilities	
Ken Langan	SCG	[redacted]	KLangan@semprautilities.com	
ANNA Frutos-Sanchez	SCE	[redacted]	anna.frutossanchez@sce.com	
NADIA AFTAB	SCG	[redacted]	NAFTAB@SEMPRAUTILITIES.COM	
Tony Tartaglia	SCG	[redacted]	ttartaglia@semprautilities.com	
David Buczkowski	SCG	[redacted]	DLBuczkowski@semprautilities.com	
CRAIG SIMON		[redacted]	csimon@bergerkahn.com BERGERKAHN.COM ↑ please send PPT	

California Public Utilities Commission

Public Meeting on the Draft EIR for the Proposed Aliso Canyon Turbine Replacement Project
Porter Valley Country Club, May 3, 2012

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Name	Affiliation (If Applicable)	Address	Email	Request CD of Draft EIR?
AL GARCIA	SCG	[redacted]	agarcia@semprautilities.com	
DANIEL DUKE	SCE	[redacted]	DANIEL.DUKE@SCE.COM	
DAVE HASSON	N/A	[redacted]	pic6dave@hotmail.com	yes.
Michele Riordan (Rucker)		[redacted]	michele.riordan@sbcglobal	yes
N Scott Rucker		[redacted]	SRuckeresq@Gmail.com	yes
NADIA AFTAB	SCG	[redacted]	NAFTAB@SEMPRAUTILITES.COM	SEND
Dick Rippey	PRNC	[redacted]	darip@earthlink.net	yes

California Public Utilities Commission

Public Meeting on the Draft EIR for the Proposed Aliso Canyon Turbine Replacement Project
Porter Valley Country Club, May 3, 2012

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Name	Affiliation (If Applicable)	Address	Email	Request CD of Draft EIR?
Rochelle Silsbee	So Cal Gas	[redacted]	rsilsbee@semprautilities.com	yes
Edward West	Porter Ranch Resident	[redacted]	ejw1966@gmail.com	Yes.

NAME: DAVE HASSON

AFFILIATION (if applicable):

No Job No Work

Dick Rippey
Retired

No Phone No Address

California Public Utilities Commission

Public Meeting on the Draft EIR for the Proposed Aliso Canyo
Replacement Project

Wiley Canyon Elementary School, May 2, 2012

REQUEST TO SPEAK

NAME: CRAIG Simon

AFFILIATION (if applicable):

California Public Utilities Commission

Public Meeting on the Draft EIR for the Proposed Aliso Canyon Turbine Replacement Project

Wiley Canyon Elementary School, May 2, 2012

REQUEST TO SPEAK

NAME: SCOTT RUCKER

AFFILIATION (if applicable):

California Public Utilities Commission

Public Meeting on the Draft EIR for the Proposed Aliso Canyon Turbine Replacement Project

Wiley Canyon Elementary School, May 2, 2012

REQUEST TO SPEAK

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California Public Utilities Commission

Public Meeting on the Draft EIR for the Proposed Aliso Canyon Turbine Replacement Project
Wiley Canyon Elementary School, May 2, 2012

Thank you for participating in tonight's public meeting. We would like to hear your comments.

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Name (please print): ______________________________

Affiliation (if applicable): ______________________________

Phone: ______________________ Email: ______________________

Address: ______________________________

City, State, Zip: ______________________________

COMMENTS

Comments must be received by May 22, 2012
Mail comments to: Aliso Canyon Turbine Replacement Project c/o Ecology and Environment, Inc.,
505 Sansome Street, Suite 300, San Francisco, CA 94111
Fax: (415) 398-5326 Project Voicemail: 877-676-8678 email: AlisoCanyonNG@ene.com

COMMENTS *(Continued)*

California Public Utilities Commission

Public Meeting on the Draft EIR for the Proposed Aliso Canyon Turbine Replacement Project
Porter Valley Country Club, May 3, 2012

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Affiliation (if applicable): ____________________

Phone: ____________________ Email: ____________________

Address: ____________________

City, State, Zip: ____________________

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505 Sansome Street, Suite 300, San Francisco, CA 94111
Fax: (415) 398-5326 Project Voicemail: 877-676-8678 email: AlisoCanyonNG@ene.com

COMMENTS *(Continued)*

State of California
Public Utilities Commission

FACT SHEET

May 2012

Aliso Canyon Turbine Replacement Project

Project Overview

The Southern California Gas Company (SoCalGas) is proposing to construct the Aliso Canyon Turbine Replacement Project (Aliso Canyon Project) at the Aliso Canyon natural gas storage field facility. The Aliso Canyon Project would primarily involve replacing existing natural gas compressors at the facility, which would allow SoCalGas to increase the facility's natural gas injection capacity from 300 to 450 million cubic feet per day. The storage and daily withdrawal capacity of the facility would remain the same. The project would be located mainly in an unincorporated area of Los Angeles County. Upgrades to Southern California Edison (Edison) electric infrastructure would be required to provide power to the new compressors and would also be a part of the project.

The California Public Utilities Commission (CPUC), as Lead Agency under the California Environmental Quality Act (CEQA), has prepared a Draft Environmental Impact Report (EIR) for the project. This environmental document describes the nature and extent of the impacts resulting from the project and project alternatives and presents mitigation measures for identified adverse impacts.

Project Components

The Aliso Canyon Project would involve the following:

1. Construction of a new Central Compressor Station at the storage field facility site, including the installation of three electric-driven variable-speed compressors;

2. Relocation of on-site office facilities and an on-site guardhouse;

3. Construction of a new on-site, approximately 1,200-foot-long, 12-kilovolt (kV) Plant Power Line that would provide dedicated electric services to the proposed Central Compressor Station;

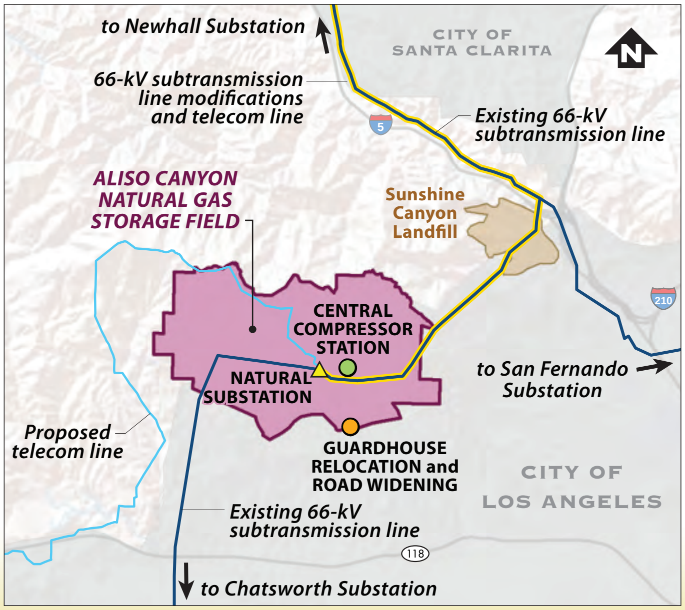
4. Construction of a new 56-megavolt-ampere, 66/12-kV electric substation (the Natural Substation) by Edison;

5. Modifications that would be made by Edison to approximately 8 miles of two existing 66-kV subtransmission lines in order to serve the proposed Central Compressor Station;

6. Modifications that would be made by Edison to three existing substations (Newhall, Chatsworth, and San Fernando Substations); and

7. Installation of approximately 28 miles of new fiber optic telecommunications cable, in existing Edison right-of-way.

Hikers above O'Melveny Park



Project vicinity map

Objectives of the Turbine Replacement Project

SoCalGas is proposing the Aliso Canyon Project to meet the terms of a Settlement Agreement between SoCalGas and parties to the 2009 Biennial Cost Allocation Proceeding (Decision D.08-12-020) approved by the CPUC. The project's objectives are to comply with the terms of the Settlement Agreement and to maintain or improve the reliability and efficiency of operations at the Aliso Canyon natural gas storage field facility.

Draft Environmental Impact Report

No significant and unavoidable adverse impacts from the project were identified in the CPUC's Draft EIR. The Draft EIR includes a discussion of adverse environmental impacts that would result from the project and would be mitigated, including impacts related to:

Biological Resources: Construction activities could result in impacts on sensitive species, such as coastal California gnatcatcher, and on native habitat, including Venturan coastal sage scrub and wetlands.

Hazards: Project activities could temporarily result in an increased fire risk during construction in both the areas of the storage field facility and the Edison infrastructure to be upgraded.

Air Quality: Construction activities could result in an exceedance of emissions of nitrogen oxides above the CEQA threshold.

The Draft EIR also includes a discussion of three project alternatives.

Public Comments and Next Steps

The CPUC invites the public to submit comments about the Draft EIR. Comments may be mailed, emailed, or communicated verbally at one of two public meetings or on the CPUC's hotline for the project (provided below). All public comments must be postmarked by May 22, 2012. Once the public review period ends, the CPUC will prepare a Final EIR, which will be circulated for review and further comment.

Coast live oak

Coastal sage scrub

Red-tailed hawk

For more information...

Website: http://www.cpuc.ca.gov/Environment/info/ene/aliso_canyon/aliso_canyon_home.html
Email: AlisoCanyonNG@ene.com
Mail: Aliso Canyon Project, c/o Ecology and Environment, 505 Sansome Street #300, San Francisco, CA 94111
Information Hotline: (877) 676-8678

Southern California Gas Company's Aliso Canyon Turbine Replacement Project

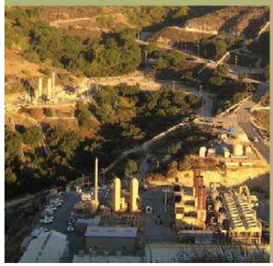
CPUC Public Meeting on the Draft EIR

Please:

Sign in and pick up meeting materials
Fill out a speaker card if you want to comment
Pick up comment cards for written comments

Public Review Period for Draft EIR Ends May 22, 2012

ALISO CANYON TURBINE REPLACEMENT PROJECT

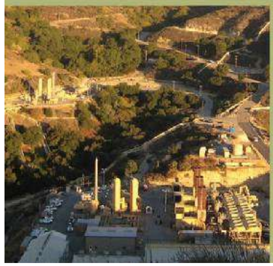



Aliso Canyon Turbine Replacement Project Draft EIR

CEQA Public Meetings on the Draft EIR

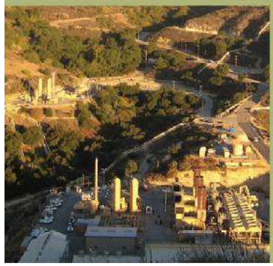
May 2 and 3, 2012

ALISO CANYON TURBINE REPLACEMENT PROJECT




Public Meeting Agenda

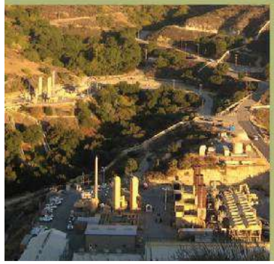
- Introduction
- Purpose of the Public Meeting
- CPUC and Environmental Review Process
- Description of the Project and Alternatives
- Environmental Impacts
- How to Comment



Aliso Canyon Project Introduction and Background

- The Southern California Gas Company (SoCalGas) has filed an application (Certificate of Public Convenience and Necessity, or CPCN) with the CPUC to replace the compressor turbines and expand injection capacity at the Aliso Canyon Natural Gas Storage Facility.

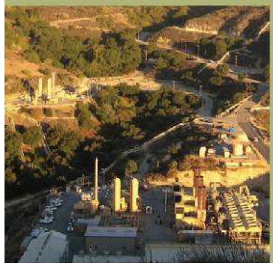
- This project will allow SoCalGas to comply with a Settlement Agreement approved by the CPUC in Decision D.08-12-020.



Purpose of the Public Meeting

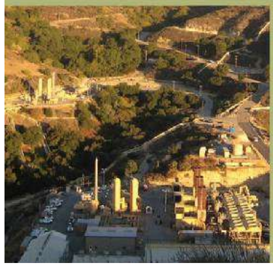
- Share information about the Aliso Canyon Project Draft EIR

- Solicit input from the public to include in the Final EIR



CPUC and the Environmental Review Process

ALISO CANYON TURBINE REPLACEMENT PROJECT



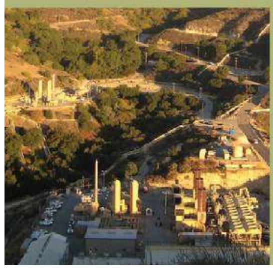
CPUC Process for Project Review

The CPUC process has two parts

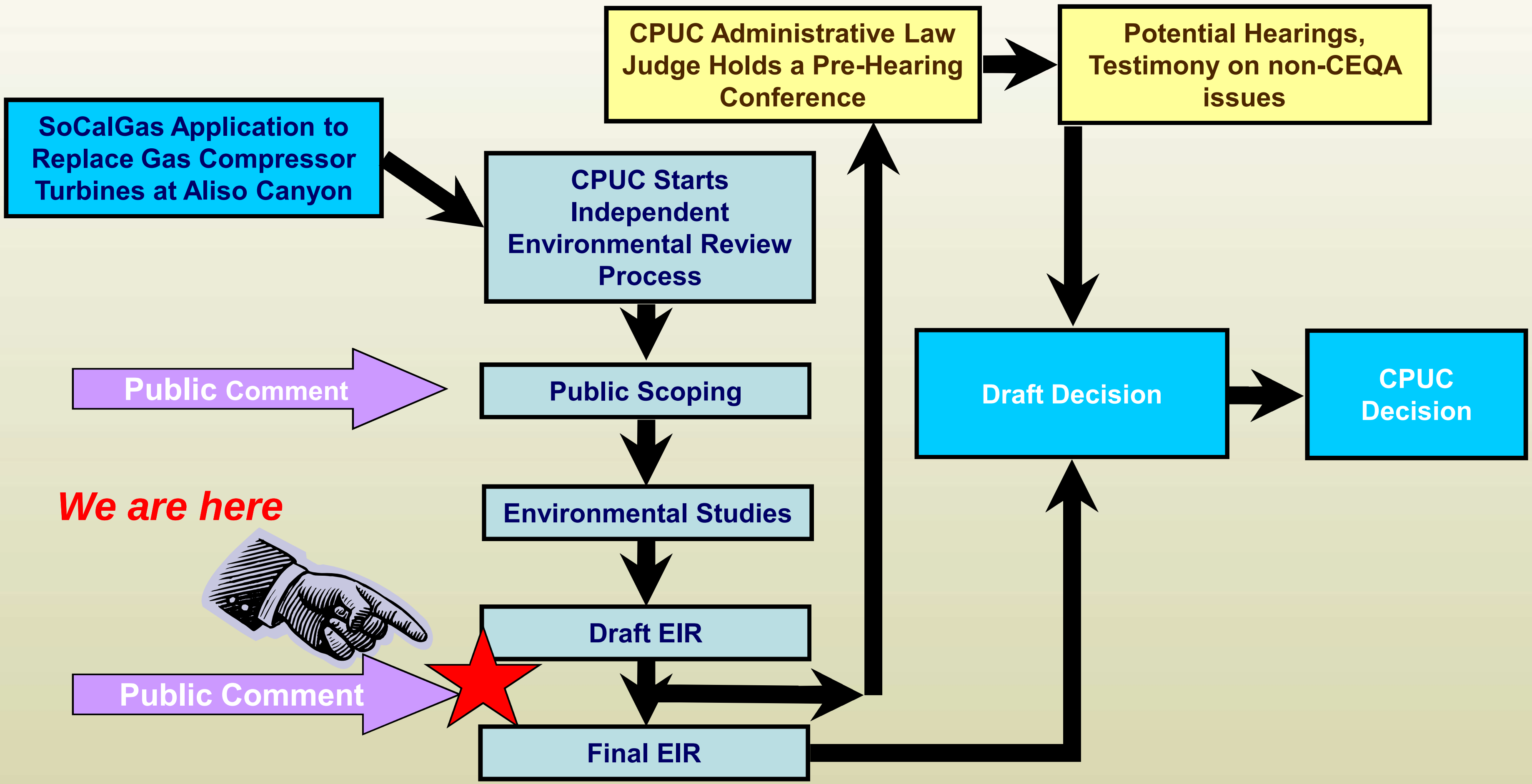
1. Ratemaking (need, cost, feasibility and rates)
2. Environmental Review

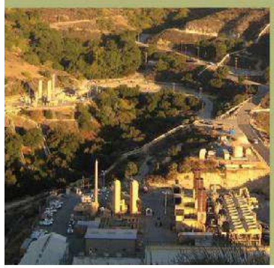
Today's meeting is about Environmental Review

- Compliance with California Environmental Quality Act (CEQA)

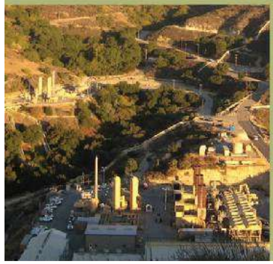


CPUC Process for Project Review



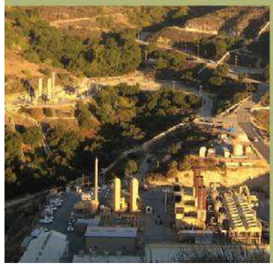


For Additional Information:
http://www.cpuc.ca.gov



Aliso Canyon Project and CEQA Document

ALISO CANYON TURBINE REPLACEMENT PROJECT



History of the Aliso Canyon Natural Gas Storage Field

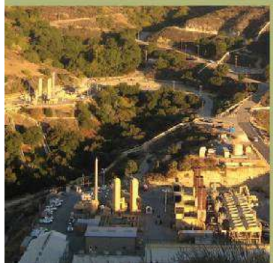
1936 – 1974: Oil and natural gas reservoir

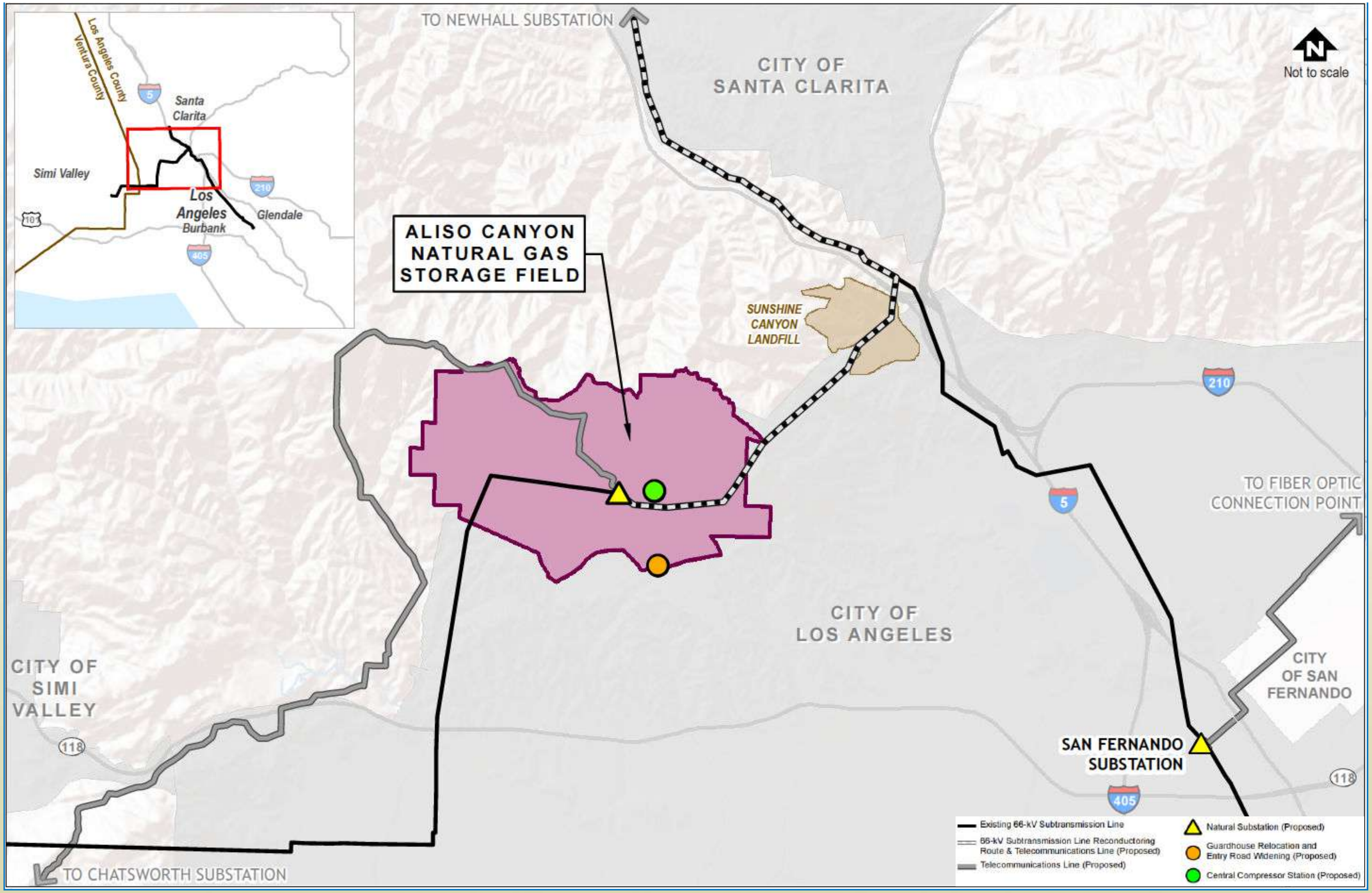
1974: Began serving as a natural gas storage field

- Three gas turbine-driven compressors installed in 1970s
- 84 billion cubic feet (Bcf) working storage capacity
- 1.875 Bcf per day withdrawal
- 300 million cubic feet per day injection

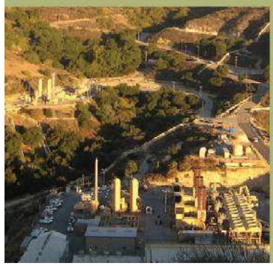
SoCalGas's largest field, one of largest in U.S.

Today: Existing gas turbines are from the 1970s, and obsolete





ALISO CANYON TURBINE REPLACEMENT PROJECT



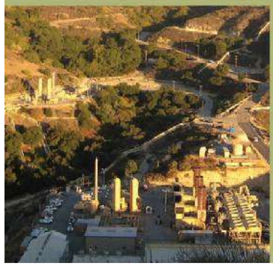
Description of the Aliso Canyon Project: Components

Natural Gas Storage Field:

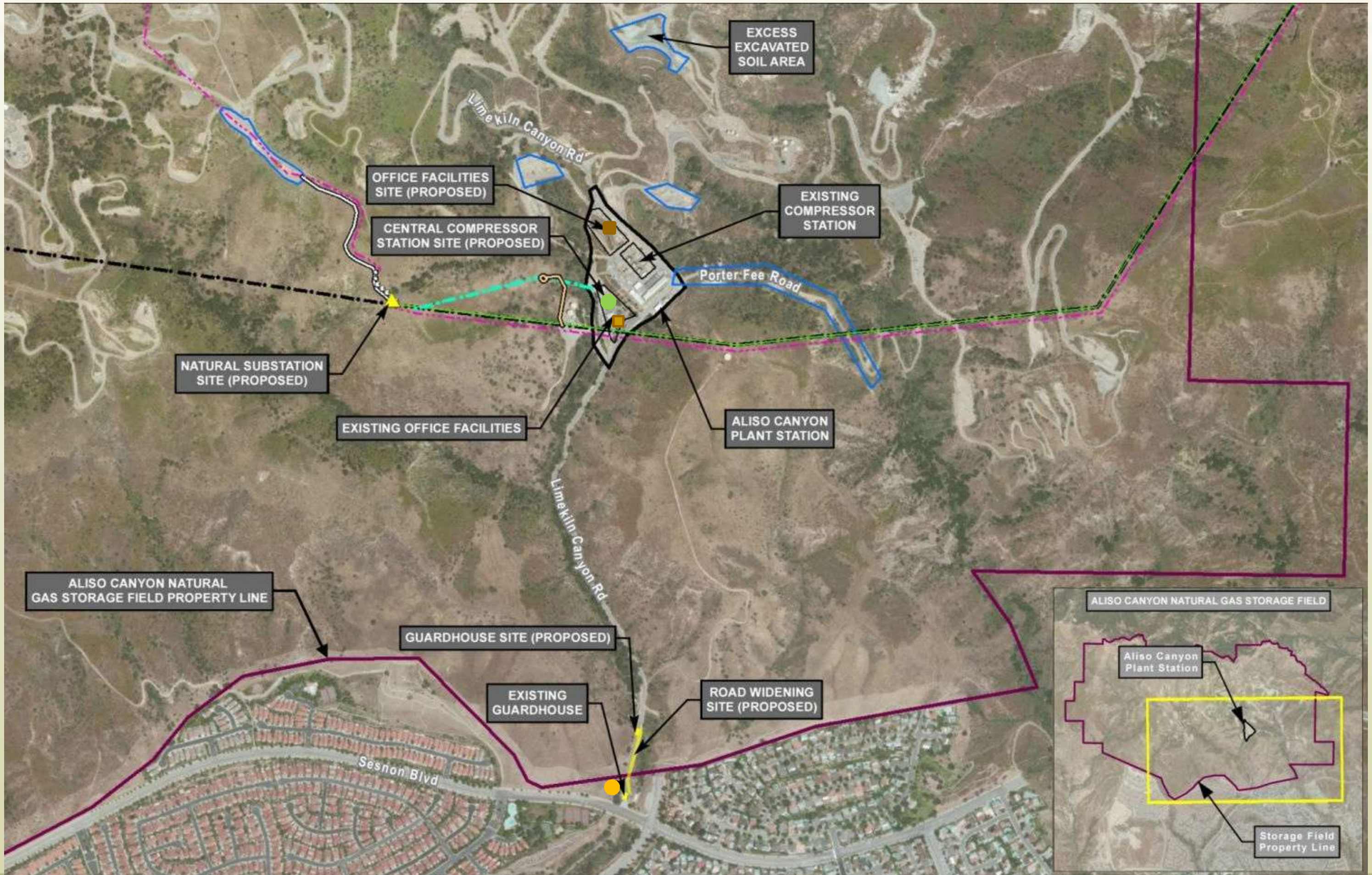
- Entry road and guardhouse
- Central Compressor Station
- Natural Substation
- Plant Power Line (12 kV) for Central Compressor Station
- Office and crew-shift buildings

Off-Site Components (Southern California Edison):

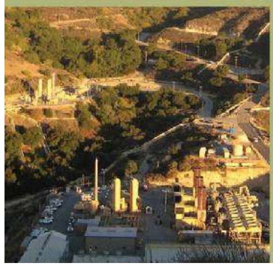
- Reconductor 66-kV subtransmission lines (about 8 miles)
- Modifications to three existing substations
- Install fiber optic telecommunications cable (about 28 miles)



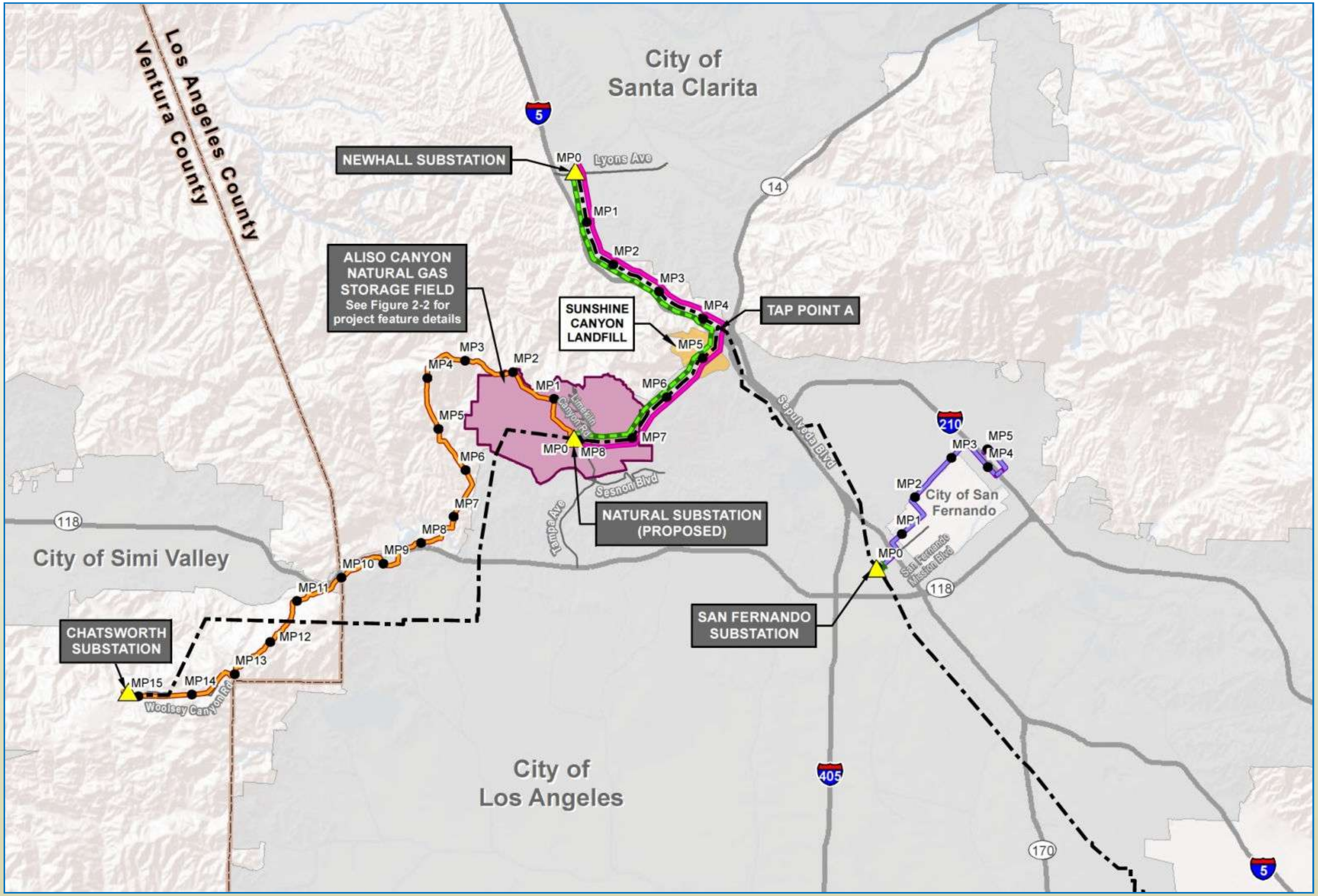
Aliso Canyon Project: Storage Field



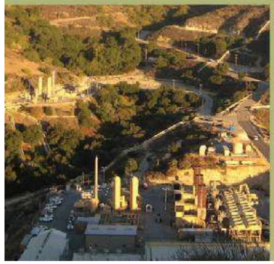
ALISO CANYON TURBINE REPLACEMENT PROJECT



Aliso Canyon Project:
Guard House and Access Road



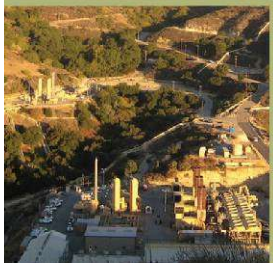
ALISO CANYON TURBINE REPLACEMENT PROJECT



CEQA Approach

- SoCalGas has submitted an application to the CPUC
- CPUC is the CEQA lead agency
- E&E (CPUC contractor) is conducting the CEQA review:

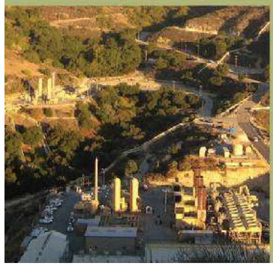
Environmental Impact Report



Aliso Canyon Project: Environmental Impacts

Environmental impacts and mitigation identified for:

• Aesthetics	• Hazards/Hazardous Materials
• Air Quality	• Hydrology and Water Quality
• Biological Resources	• Noise
• Cultural Resources	• Public Services and Utilities
• Geology/Soils/Minerals	• Transportation and Traffic

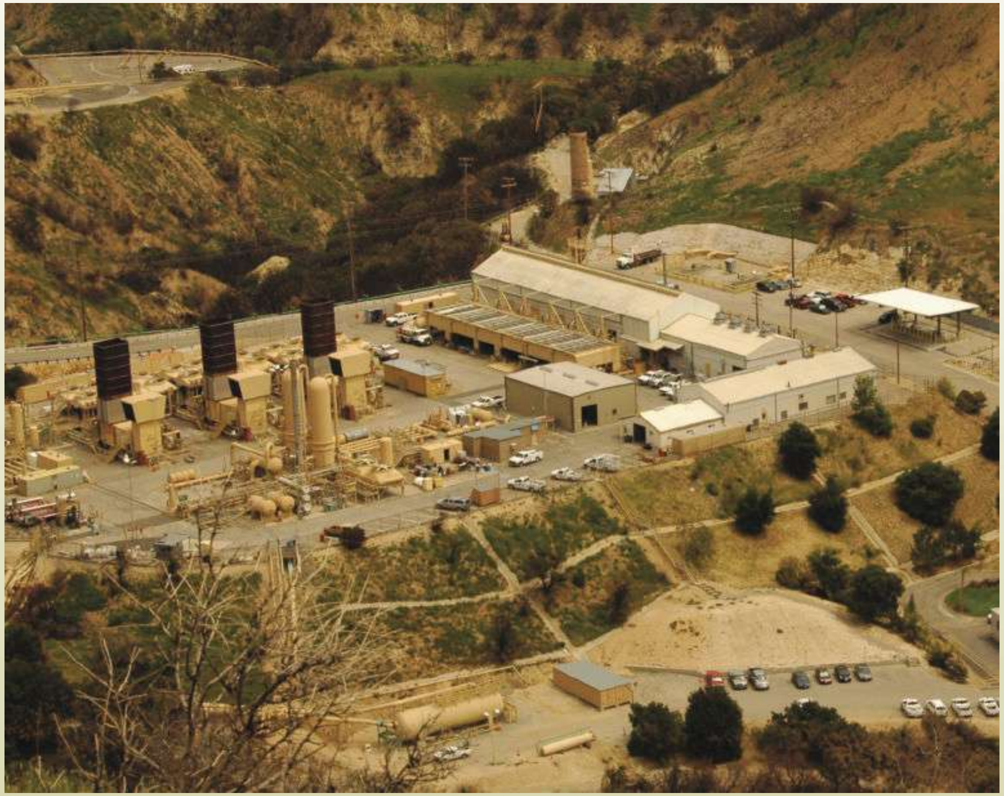


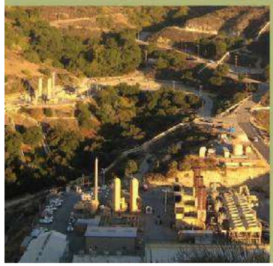
Aliso Canyon Project: Air Quality

Air Quality:

- NO_x, ROG (Construction)

- Mitigation:
  Offsets, emissions
  controls





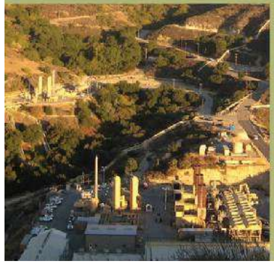
Aliso Canyon Project: Biological Resources

Biological Resources Impacts:

- Coastal California gnatcatcher
- Venturan coastal sage scrub
- Wetlands

Mitigation:

- Construction timing
- Avoidance/buffers
- Habitat restoration
- Pre-construction surveys
- Wetland mitigation



Aliso Canyon Project: Noise

Noise Impacts:

Construction – Southern CA Edison

Operational noise – SoCalGas

Mitigation:

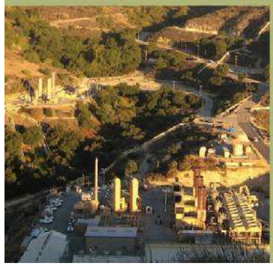
Construction –

- *Equipment measures*
- *Construction traffic routing*

Operations –

- *Acoustic barriers as needed*

Source: SoCalGas 2009



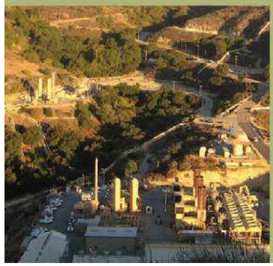
Aliso Canyon Project:
Hazards and Hazardous Materials

Impacts Related to Fire Hazards:

- Construction of SoCalGas, SCE project components
- Operation of project components

Mitigation:

- Preparation of fire management plans (SoCalGas and SCE)
- Coordination with fire departments and CAL FIRE



Aliso Canyon Project: Project Alternatives

Alternatives Screening Process
- Ten alternatives identified
- Eight alternatives screened

Three Alternatives Evaluated in EIR
1. Design Alternative
   - *Gas compressor drive*
2. Routing Alternative A
   - *Telecommunication route*
3. No Project Alternative

Environmentally Superior Alternative: Proposed Project with Routing Alternative A

ALISO CANYON TURBINE REPLACEMENT PROJECT

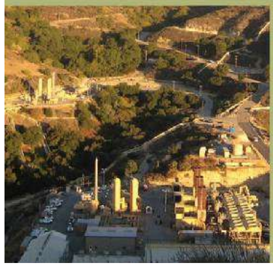
How to Make Comments

Provide comments in person at this meeting, or submit written comments via mail or email:

Email: AlisoCanyonNG@ene.com

Mail: Aliso Canyon Project
c/o Ecology and Environment, Inc.
505 Sansome Street, Suite 300
San Francisco, CA 94111

Information Hotline: (877) 676-8678

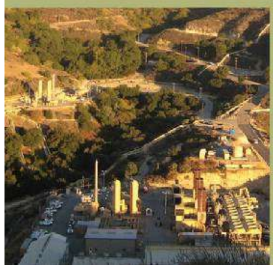


For More Information

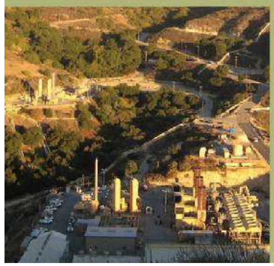
CPUC Website for the Aliso Canyon Project:

www.cpuc.ca.gov/Environment/info/ene/aliso_canyon/aliso_canyon_home.html

Written public scoping comments must be postmarked by May 22, 2012



Thank You.



C Comment Letters

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COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294
(323) 881-2401

DARYL L. OSBY
FIRE CHIEF
FORESTER & FIRE WARDEN

April 25, 2012

Andrew Barnsdale, Project Manager
State of California Public Utilities Commission
Aliso Canyon Turbine Replacement Project
505 Sansome Street, Suite 300
San Francisco, CA 94111

Dear Mr. Barnsdale:

DRAFT ENVIRONMENTAL IMPACT STATEMENT, NOTICE OF AVAILABILITY AND PUBLIC MEEETINGS, ENVIRONMENTAL IMPACT REPORT, SCH NO. 2010101075, PROPOSED BY SO CAL GAS CO., APPLICATION NO. A.09-09-020, ALISO CANYON TURBINE REPLACEMENT PROJECT, ITS A PLANT STATION AND STORAGE FIELD FOR GAS AND ELECTRIC SERVICES, 12801 TAMPA AVENUE, LOS ANGELES CITY AND PART OF L A COUNTY (FFER #201200051)

The Draft Environmental Impact Statement has been reviewed by the Planning Division, Land Development Unit, Forestry Division and Health Hazardous Materials Division of the County of Los Angeles Fire Department. The following are their comments:

PLANNING DIVISION:

4.13 Public Services and Utilities

Table 4.13-1 Public Service Providers by Jurisdiction

Page 4.13-1:

County of Los Angeles – The address for Los Angeles County Fire Department, Fire Station 75 should be corrected to 23310 Lake Manor Drive, Chatsworth.

Page 4.13-3:

City of Santa Clarita – The nearest County Fire Station should be corrected to: Fire Station 124, at 25870 Hemingway Avenue, Stevenson Ranch. It is approximately 1.9 miles from the Newhall Substation, with an approximate response time of 6 minutes.

4.13.1.1 Emergency Response

Fire Protection and Emergency Response

Page 4.13-4, Paragraph 2, should be corrected to read as follows:

The LACFD would respond to fire emergencies in the area of the proposed project in unincorporated Los Angeles County. The LACFD operates ~~21~~ <u>22</u> battalions to provide fire protection to more than four million residents in a ~~2,296~~ <u>2,305</u>-square-mile service area. Battalion Six, which includes ~~13~~ <u>8</u> fire stations, providing service to the ~~cities~~ C<u>ity of Santa Clarita and the communities</u> of Canyon Country, Chatsworth, Gorman, Newhall, ~~Santa Clarita~~ Stevenson Ranch and Valencia. LACFD Fire Station 75 would be the primary responder to the storage field site; Fire Station ~~73~~ <u>124</u> would be the primary responder to the Newhall Substation.

<u>LAND DEVELOPMENT UNIT:</u>

1. The development of this project must comply with all applicable code and ordinance requirements for construction, access, water mains, fire flows and fire hydrants.

2. This property is located within the area described by the Forester and Fire Warden as a Fire Zone 4, Very High Fire Hazard Severity Zone (VHFHSZ). All applicable fire code and ordinance requirements for construction, access, water mains, fire hydrants, fire flows, brush clearance and fuel modification plans, must be met.

3. Every building constructed shall be accessible to Fire Department apparatus by way of access roadways, with an all-weather surface of not less than the prescribed width. The roadway shall be extended to within 150 feet of all portions of the exterior walls when measured by an unobstructed route around the exterior of the building.

4. Access roads shall be maintained with a minimum of 10 feet of brush clearance on each side. Fire access roads shall have an unobstructed vertical clearance clear-to-sky with the exception of protected tree species. Protected tree species overhanging fire access roads shall be maintained to provide a vertical clearance of 13 feet 6 inches.

5. The maximum allowable grade shall not exceed 15% except where topography makes it impractical to keep within such grade. In such cases, an absolute maximum of 20% will be allowed for up to 150 feet in distance. The average maximum allowed grade, including topographical difficulties, shall be no more than 17%. Grade breaks shall not exceed 10% in ten feet.

6. The development may require fire flows up to 8,000 gallons per minute at 20 per square inch residual pressure for up to a five-hour duration. Final fire flows will be based on the size of buildings, installation of fire sprinklers and the type of construction used.

7. Fire hydrant spacing shall be 300 feet and shall meet the following requirements:

   a) No portion of lot frontage shall be more than 200 feet via vehicular access from a public fire hydrant.

b) No portion of a building shall exceed 400 feet via vehicular access from a properly spaced public fire hydrant.

c) Additional hydrants will be required if hydrant spacing exceeds specified distances.

8. Turning radii shall not be less than 32 feet. This measurement shall be determined at the centerline of the road. A Fire Department approved turning area shall be provided for all driveways exceeding 150 feet in-length and at the end of all cul-de-sacs.

9. All on-site driveways/roadways shall provide a minimum unobstructed width of 26 feet, clear-to-sky. The on-site driveway is to be within 150 feet of all portions of the exterior walls of the first story of any building.

10. Driveway width for non-residential developments shall be increased when any of the following conditions will exist:

a) Provide 34 feet in-width, when parallel parking is allowed on one side of the access roadway/driveway. Preference is that such parking is not adjacent to the structure.

b) Provide 42 feet in-width, when parallel parking is allowed on each side of the access roadway/driveway.

c) Any access way less than 34 feet in-width shall be labeled "FIRE LANE" on the final recording map and final building plans.

d) For streets or driveways with parking restrictions: The entrance to the street/driveway and intermittent spacing distances of 150 feet shall be posted with Fire Department approved signs stating "NO PARKING - FIRE LANE" in three-inch high letters. Driveway labeling is necessary to ensure access for Fire Department use.

11. All access devices and gates shall comply with California Code of Regulations, Title 19, Articles 3.05 and 3.16.

12. All access devices and gates shall meet the following requirements:

a) Any single gated opening used for ingress and egress shall be a minimum of 26 feet in-width, clear-to-sky.

b) Any divided gate opening (when each gate is used for a single direction of travel i.e., ingress or egress) shall be a minimum width of 20 feet clear-to-sky.

c) Gates and/or control devices shall be positioned a minimum of 50 feet from a public right-of-way and shall be provided with a turnaround having a minimum of 32 feet of turning radius. If an intercom system is used, the 50 feet shall be measured from the right-of-way to the intercom control device.

d) All limited access devices shall be of a type approved by the Fire Department.

e) Gate plans shall be submitted to the Fire Department, prior to installation. These plans shall show all locations, widths and details of the proposed gates.

13. Additional access and water system will be addressed with the submittal of the site plan.

14. The County of Los Angeles Fire Department, Land Development Unit appreciates the opportunity to comment on this project.

15. Should any questions arise regarding water systems and/or access, please contact the County of Los Angeles Fire Department, Land Development Unit Inspector, Wally Collins, at (323) 890-4243.

FORESTRY DIVISION – OTHER ENVIRONMENTAL CONCERNS:

1. The statutory responsibilities of the County of Los Angeles Fire Department, Forestry Division include erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources and the County Oak Tree Ordinance.

2. We have not received an Oak Tree Permit application or report for review. An Oak Tree Permit may be required for this project.

HEALTH HAZARDOUS MATERIALS DIVISION:

1. Southern California Gas Company owns and operates the facility and the site of the proposed project, located at 12801 Tampa Avenue, Northridge, California 91326. The facility is currently permitted for above ground storage tank, hazardous materials and hazardous waste program elements. The facility previously held a CalARP (California Accidental Release Prevention Program) permit. However, regulated substances were eliminated or reduced below the threshold quantity and the permit was subsequently inactivated in November 2006.

   Initial review of the environmental impact report did not provide any detailed information regarding proposed chemical usage or quantities. It is unknown if the project will use regulated substances above threshold quantities in a covered process; if so, a Regulated Substance Registration Form must be submitted to this Department to comply with the requirements of the California Accidental Release Prevention Program, as specified in Title 19 CCR § 2740.1. The Health Hazardous Materials Division (HHMD) of this Department conducts facility inspections to ensure compliance with Titles 19 and 22 of the California Code of Regulations and Chapters 6.5, 6.67 and 6.95 of the California Health and Safety Code.

   The location of the proposed project is in a mountainous and hilly region of Los Angeles County. In October 2008, the Sesnon fire burned approximately 14,000 acres of land. Due to the close proximity of the residential population at Porter Ranch, located within a Very High Fire Hazard Severity Zone, several homes were also destroyed. The fire department inspectors determined that the cause of the fire was an electrical distribution line falling onto dry brush. Although, HHMD does not enforce brush clearance standards and regulations, it is recommended that power lines are inspected and maintained on a regular basis and brush under the lines cleared regularly to prevent fires, especially as the project proposes expansion of power lines.

This Department looks forward to receiving additional information to further assess the potential environmental impacts resulting from this project. If you have any questions, please contact Fariba Khaledan, HMS III, at (310) 348-1786.

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

Frank Vidales

FRANK VIDALES, ACTING CHIEF, FORESTRY DIVISION
PREVENTION SERVICES BUREAU

FV:ij

Herron, Christy

From: Jeff_Phillips@fws.gov
Sent: Monday, April 09, 2012 1:14 PM
To: Herron, Christy
Cc: Yolanda_Ledesma@fws.gov
Subject: Turbine Replacement Project

To Whom it May Concern,

The U.S. Fish and Wildlife Service Ventura, CA field office has received the Draft Environmental Impact Report for the above-referenced project. The EIR recognizes likely impacts to federally listed threatened and/ or endangered species and the habitats upon which they depend. Section 2.6, page 2-62 identifies that a Section 7 or Section 10 of the Federal Endangered Species Act permit for incidental take of listed species will likely be required. We agree that the proposed project may have adverse impacts upon listed species and/or their supporting habitat, but because we are anticipating further coordination from the project proponent, we are not formally commenting on the draft EIR at this time.

Sincerely,
Jeff

Jeff Phillips
Deputy Assistant Field Supervisor, South Coast Division
U.S. Fish and Wildlife Service, Ventura Field Office
2493 Portola Road, Suite B
Ventura, CA 93003
(805) 644-1766 x 285

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City of
SANTA CLARITA

23920 Valencia Boulevard • Suite 300 • Santa Clarita, California 91355-2196
Phone: (661) 259-2489 • FAX: (661) 259-8125
www.santa-clarita.com

May 14, 2012

RECEIVED MAY 17 2012

Aliso Canyon Turbine Replacement Project
California Public Utilities Commission
505 Sansome Street, Suite 300
San Francisco, CA 94111

Subject: Comments on Draft Environmental Impact Report (DEIR) for the Aliso Canyon Turbine Replacement Project

Thank you for the opportunity to review and comment on the above referenced DEIR. The City recognizes the public necessity of this project and is supportive of the project goals.

Project Description: To provide sufficient power for the new electric compressors at the Southern Califonia Gas Company's Aliso Canyon underground natural gas storage facility, the 64-kV subtransmission line running between the Newhall substation and the Aliso Canyon site in Porter Ranch must be upgraded. All existing lattice steel towers (64 towers in total) within the existing Southern California Edison right-of-way will be replaced by up to 78 tubular steel towers. Approximately 19 of the towers to be removed and replaced are within the City boundary, most are abutting Wiley Canyon Road between Lyons Avenue and Calgrove Avenue. The existing towers along Wiley Canyon Road range between 40-65 feet in height; the replacement towers in this area could be up to 85 feet in height. The new towers within the rugged terrain to the south of Calgrove Avenue could be up to 150 feet in height.

For the most part, the DEIR adequately assesses potential project impacts and outlines reasonable mitigation measures to reduce potential project impacts to less than significant levels. Based on the visual simulations, which are included in the DEIR, we agree with the conclusion of the DEIR that the overall visual impact of the new taller towers will be less than significant due to the sleeker, single-pole tubular design.

City Request for Mitigation Measures: The City does request incorporation of additional mitigation measures into the Final EIR to further address potential temporary construction impacts within the following functional areas:

Noise: According to the project description (pages 2-46) wire-stringing activities are expected to take approximately 38 days. During wire-stringing activities, helicopters would be used for approximately six hours per day. Table 4.11-18 indicates that daytime noise standards will be exceeded at multiple sensitive receptor locations, in some instances exceeding the noise standard by more than 20 decibels (dBA). The only proposed mitigation measures addressing temporary construction noise impacts is APM NS-3 Notification Procedures, which requires the applicant to notify sensitive receptors within 300 feet of construction activities at least two weeks prior to commencement of construction activities. While a 300-foot notification radius may provide adequate notification for ground-based construction noise impacts, the City recommends a broader and more robust public outreach effort given the more extensive temporary impact footprint of the anticipated aerial operations. The City strongly encourages the CPUC to include an additional mitigation measure, which requires the applicant to provide broad-based community outreach utilizing a combination of direct mail and media press releases to provide project background and specific information concerning the construction schedule, hours and duration, particularly with respect to helicopter operations. The City of Santa Clarita can assist in this effort by reposting the applicant's press releases in an appropriate location on the City's website.

Traffic: Tower removal and replacement is likely to require temporary lane closures along Wiley Canyon Road, with possible temporary lane closures on Lyons Avenue and Calgrove Avenue near Wiley Canyon road. Potentially significant traffic impacts could occur if multiple lanes were closed simultaneously or if lane closures occurred during peak traffic hours or during special events. Consequently, the City strongly encourages the CPUC to include an additional traffic mitigation measure requiring the applicant to confer with the City Traffic Engineer and to incorporate his recommendations into the Traffic Control Plan prior to commencing work within the City's boundaries.

If you have any additional questions, please contact me or David Koontz, Associate Planner, at (661) 255-4330.

Sincerely,

Robert Newman
Acting Director of Community Development

RN:DK:lep
S:CD\current\irp\irp files\socalgas\Aliso Canyon DEIR.doc

cc: Ken Pulskamp, City Manager
Ken Striplin, Assistant City Manager
Jeff Hogan, Planning Manager
David Koontz, Associate Planner

Herron, Christy

From: Daniel Blankenship <DSBlankenship@dfg.ca.gov>
Sent: Monday, May 21, 2012 1:06 PM
To: Herron, Christy
Cc: Siu, Jennifer D.
Subject: Re: Aliso Canyon - Draft EIR discussion and comments SCH 2010101075

The Department has been included in early coordination along with the U.S. Fish and Wildlife Service regarding potential biological impacts related to project implementation. The Department appreciates the early coordination efforts with Ecology and Environment, Inc. Staff to fully evaluate potential biological impacts within the project footprint and habitats adjacent to the project. The Department concurs with the proposed biological mitigation measures and would like to recommend the development of a formal Nesting Bird Management Plan (NBMP). This NBMP should be developed in concert with the USFWS approximately 6 months prior to project implementation. Please contact Dan Blankenship well in advance to schedule staff time to help develop and comment on the NBMP. Thank you for the opportunity to review and comment on this DEIR

Daniel S. Blankenship
Staff Environmental Scientist
CA Department of Fish and Game
P.O. Box 802619
Santa Clarita, CA 91380-2619
phone/fax (661) 259-3750
cell (661)644-8469
dsblankenship@dfg.ca.gov

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Herron, Christy

From: Craig Simon <craigscottsimon@me.com>
Sent: Monday, May 21, 2012 5:03 PM
To: andrew.barnsdale@cpuc.ca.gov
Cc: Herron, Christy
Subject: Aliso Canyon Turbine Project/Public Commentary

Attached please find a courtesy copy of a letter mailed to Andrew Barnsdale and "AlisoCanyonNG@ene.com," with public comment on the Aliso Canyon Turbine Project of Southern California Gas Company.

Craig S. Simon

Click here to report this email as spam.

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Craig S. Simon
Irvine, California
craigscottsimon@me.com

May 21, 2012

Via Email to:
AlisoCanyonNG@ene.com
andrew.barnsdale@cpuc.ca.gov

and Overnight Mail to:

Aliso Canyon Turbine Replacement Project
505 Sansome Street, Suite 300
San Francisco, CA 94111

Andrew Barnsdale, CPUC Project Manager
California Public Utilities Commission
505 Sansome Street, Suite 300
San Francisco, CA 94111

Re: Aliso Canyon Turbine Project
Public Comment on Draft EIR Information

To the California Public Utilities Commission:

This public comment is submitted because of my genuine concern as a citizen about whether Southern California Gas Company will adequately set up its business practices to guard against the risk of fire resulting from the operation of the high voltage lines that will be necessary to run the contemplated new turbine engines.

While a customer of the Gas Company, my knowledge of the Aliso Canyon operation comes from being the attorney for entities suing Southern California Gas Company for starting the Sesnon fire of October 13, 2008.[1]

---

[1] This letter is written by Craig S. Simon as an individual and not on behalf of my clients. In the current litigation that is still pending in Los Angeles Superior Court, the Gas Company denies responsibility for a fire that started when a high voltage conductor broke, fell to the ground in an energized state, ignited brush, and then spread by wind to destroy surrounding neighborhoods. The Gas Company takes the position that since it hired an electrical contractor that only the electrical contractor could be liable. The electrical contractor has testified that he tried to sell a regular inspection program to the Gas Company, but was told by the manager of the Aliso Facility that the Gas Company did not have a budget for routine inspections!

The Gas Company's litigation position in the Sesnon fire case is concerning because the Gas Company claims that it can escape liability because it has no sophistication or knowledge in the area of electricity and the only party that could be held liable for a fire from the high voltage electrical grid is its electrical contractor. **If the new high voltage lines somehow cause a new fire in the future, is it the Gas Company's position that it is just "tough luck" for the nearby homeowners, and they have zero responsibility for actions or inactions of their electrical contractor Henkels and McCoy, Inc.?**

I have conducted or attended the depositions of 15 key Aliso Canyon employees, including but not limited to Lawrence Bittleston. Mr. Bittleston's deposition was taken May 3, 2012 and he stated that if this project was approved, he would be in charge of overseeing the electrical grid supplying energy to the turbine engines. He also admitted that he did not have expertise in electricity. The following were questions I asked and Mr. Bittleston's responses:

Q Are you in charge of the electrical system
now at Aliso?

A I'm in charge of the maintenance of it; yes.

Q Okay. And if the new turbines that you guys
want to put in are approved, there'll be a lot of
electrical work there, right?

A Yes.

Q You've seen the EIR?

A I've seen parts of it.

Q They're going to bring in new lines from
Chatsworth for So. Cal Edison?

A That's incorrect.

Q Oh, okay. What are they going to do, build a
new 66 KV line?

A No.

Q What are they going to do for electricity?
A They're bringing in a new line from Newhall
to Aliso Canyon.

Q And what voltage is it going to be?

A I believe it's 66 KV.

Q Okay. And are you going to be the person in charge of taking care of that line and making sure it's maintained?

A Yes.

Q And do you have any expertise in electricity that allows you to oversee that?

A No.

It is common knowledge that the Gas Company is owned by Sempra Energy, which also owns San Diego Gas & Electric. I would feel more comfortable with the electrical facilities at the Gas Company if the PUC required SDG&E to be involved in overseeing the maintenance of the lines. Rudy Weibel (now retired, but Director of Gas Storage Operations), who was the direct supervisor of the plant manager of the Aliso Canyon facility in 2008, testified on February 15, 2012 that he never asked anyone at SDG&E to come out to look at the electric line at Aliso Canyon (between 2000 and 2008) and did not think it was a good idea for the Gas Company to do so. He only called upon the expertise of SDG&E as a “political move” to come out right after the fire:

Q Did you ever ask anyone at San Diego Gas and Electric to come out to the Aliso Canyon facility and view the electric line at any time?

A Yes.

Q Okay, I’m going to now say from the time 2000 to the fire in 2008.

A No.

Q Why not?

A I didn’t feel it was required.

Q You think it would have been a good idea?

A No.

Q …What was the reason - you said at some point you did talk to them about that?

A Yes.

Q When was that?

A After the fire.

Q What was the need to call them after the fire?

A To assure that the line was being maintained adequately, the lines.

Q Okay. Why did you need to determine that at that point, whether the lines were being maintained adequately?

A To bluntly put, protect from second guessing from corporate entities.

Q Like who?

A Senior management.

Q At San Diego Gas and Electric at Sempra?[2]

A And So. Cal.

Q So essentially getting the electric company involved was a good political move so that you couldn't be second guessed at the gas company later about the electric lines at the gas company?

A Correct.

Getting SDG&E involved in the high voltage electric system at Aliso is more than a good political move. I think it is required to ensure the safe operation of the electrical system given SCGC's position that it knows nothing about electricity.

This new turbine project is being instituted as part of a settlement between the CPUC and the Gas Company, and I do realize the absolute necessity of gas storage to the

[2] Official transcript says "at" but I believe the audio recording will show that the word was "and."

delivery of gas to the customers of the Gas Company. I am in favor of new turbines that will allow for faster and more efficient gas injection. But from my observations, Gas Company personnel have not applied the right resources to the maintenance of the high voltage electrical system that is necessary for injection and withdrawal and - as part of any approval process - they should be required to take responsibility should a fire occur. The nearby homeowners should not bear a greater risk of system failure than other customers of the Gas Company.

I would like the opportunity to address the decision makers at the CPUC and/or any involved Administrative Law Judges regarding the material and information that has come to light regarding the Gas Company's prior and current operations at the Aliso Canyon facility.

Very truly yours,

Craig S. Simon

CRAIG S. SIMON

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Herron, Christy

From: Craig Simon <craigscottsimon@me.com>
Sent: Tuesday, May 22, 2012 9:26 AM
To: andrew.barnsdale@cpuc.ca.gov; Herron, Christy
Subject: PS re Aliso Canyon Turbine Project/Public Commentary
Attachments: 2012_05_22_09_18_56.pdf

Please add this post script to the public comments. This is being served by email only.

Craig Simon

Click here to report this email as spam.

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Craig S. Simon
Irvine, California
craigscottsimon@me.com

May 22, 2012

Via Email Only to:
AlisoCanyonNG@ene.com
andrew.barnsdale@cpuc.ca.gov

Aliso Canyon Turbine Replacement Project
505 Sansome Street, Suite 300
San Francisco, CA 94111

Andrew Barnsdale, CPUC Project Manager
California Public Utilities Commission
505 Sansome Street, Suite 300
San Francisco, CA 94111

Re: Aliso Canyon Turbine Project
Public Comment on Draft EIR Information

To the California Public Utilities Commission:

Please add this post script to my public comment sent yesterday, May 21, 2012. Henkles and McCoy, Inc. began work at Aliso Canyon well after the Sesnon fire and had nothing to do with it. The use of the term "the electrical contractor" elsewhere in the letter and in footnote 1 refers to the prior electrical contractor.

My point in paragraph 1 on page 2 is that the Gas Company should take responsibility for any future fire caused by its electrical system and should not try to delegate the duty it owes to its customers and nearby neighbors to some other third party.

Very truly yours,

Craig S. Simon

CRAIG S. SIMON

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May 22, 2012

STATE OF CALIFORNIA

PUBLIC UTILITIES COMMISSION

555 Van Ness Avenue

San Francisco, Ca. 94102-3298

Proposed by Southern California Gas Company

Application # A.09-09-020

To: CPUC

Comment [SD

I live on Browns Canyon Road Chatsworth Ca which is ½ mile over the hill from the Aliso Canyon SCGC facility.

My life on October 12, 2008 was perfect. I had a beautiful ranch, grand children and dogs playing, fruit orchards, beautiful 100 year old oaks for shade, and a landscape out of Home and Garden. I had realized my dream.

Then on October 13, 2008 our dreams became a nightmare we would never forget. And maybe never survive especially in my case as I never came so close to death as I did that day.

On that day the fire roared through our canyon with my wife and grandson barely got out of the canyon with 50 foot flames to accompany her out of the canyon. My grandson to this day, as he was 1 year old on that day and now almost five, still thinks he will be burned in a fire. Thought his granddaddy and husband was just getting the dogs and leaving. But instead my family watched the TV as the news helicopters broadcast the fire and there was no sign that I was going to get out. I was trapped for over 7 hours defending our home with no water as the power was out and no fire department as they could not get in the canyon. I watched as my property was destroyed,14 vehicles burned to the ground, which took my business with it. The property which we pain staking work so hard to create an oasis for family was gone. We now live with no potable water, temporary power, slopes that are slipping because all the oak trees were burned and are falling. Now after almost 4 years I do understand the term “GROUND ZERO” because I survived it and now live it.

In the almost 4 years since the Sesnon fire SCGC has not offered to help us. We our suing the SCGC for what they did. In my case I am learning that the fire was caused when a high voltage power line that was a part of SCGC Aliso Canyon facility fell and ignited the dry overgrown brush and trees below. There was no program of periodically inspecting and maintaining of the electric system. The electrical contractor testifies that he asked SCGC many times to allow him to do a careful inspection of the entire system, but they would not, saying that SCGC didn't have the money in the budget. NO ONE AT SCGC HAD ANY EXPERIENCE OR KNOWLEDGE ABOUT HIGH VOLTAGE POWERLINES. This expertise was available at its sister company, San Diego Gas and Electric, but SCGC management never called upon this expertise. The neglect is consistent with SCGC track record of non maintenance of their facility. As a result of this indifference to the risks to the public, my family and I are now suffering and all we worked for and our dreams are now just memories. And that is not living a dream.

Now SCGC wants to build even more power lines and expand its gas facility. I believe SCGC has proven they can't be trusted with the risk it entails.

UNTIL SCGC RESOLVES THE DISASTER THEY CAUSED AND MAKES GOOD ON THE DAMAGE THE SESNON FIRE CREATED, SCGC SHOULD BE PUT ON PROBATION AND NOT ALLOWED TO BUILD OR RENOVATE THIS FACILITY SURROUNDED BY A RESIDENTIAL COMMUNITY.

The fire in which I endured the challenge to fight the fire and to stay alive, which the investigations by your agency as well as every agency has agreed that the fire was started by SCGC and was on their property, and then moved though the communities to devastate more than 18,000 acres and the lives of the customers in the community where SCGC maintains the Aliso Canyon facility in Chatsworth California.

Given the above scenario in which you will never feel the impact of the words until you are faced with a wall of fire almost 100 feet tall and the wind gusting with speeds of 105 mph and your duty is to defend this.

Now it has been almost 4 years and everyone moves on except the people of the Sesnon fire. The canyons and all its surroundings are burnt beyond recognition and will never recover to the place on earth that was like a page out of travel brochure and all you wanted was to visit. Now all the people want, are to figure out how to get out of this GROUND ZERO that the SCGC has created for us and never even acknowledged our heartache.

I personally live in a home that is now inhabitable but I have nowhere to go or the financial where with all to change my situation. Do you think that the SCGC has ever offered anything to us to make us whole?

NO. But have they moved on with business as usual with this application in Sept. 2009 not even 10 months after the fire in Oct. 2008.

It is my position that this project that the SCGC has brought before the CPUC should have the language in it as follows. The notice says "NO PROJECT ALTERNATIVE" and I believe and follow the community's opinion that it should read. "NO PROJECT AT THIS TIME UNTIL SCGC DEMOSTRATES THAT IT HAS CONCERN FOR THE PUBLIC'S SAFETY"

BACKGROUND

The Aliso Canyon facility at the present time has capacity of 84 billion cubic feet of natural gas and would like to expand the capacities to over 124 billion cubic feet. Did anyone at the CPUC see the residential plan in which the SCGC is in the middle of 12500 homes with a build out of more than 3000 more homes? We could not protect the homes in the 2008 Sesnon fire, and the fire presence was non-existent in that fire. What makes us think now the situation will change with even more volatile conditions that with the new proposed transmission lines that we could defend against even larger fire.

SCGC avoidance of safety and maintenance responsibilities at the Aliso Canyon facility demonstrates at best, a complete lack of understanding of the dangerous nature of their operation, or much worse, a willingness to make trade-offs in operational expenses (brush clearance/line inspection costs) at the expense of neighboring community safety.

The application A.09-09-020 SCGC Aliso Canyon facility project serves as more corroboration of a public utility that has completely missed the mark on public safety and its meaning. From application A.09-09-020, see the examples below that support this view.

Application states, "project not subject to public notice requirements but SCGC voluntarily did so with 8" x 12" signs of notice of hearing 2 feet off the ground to solicit community input. Public documents and meetings never used the term "expansion or increased capacity", only "replacement". Granted this is not a safety issue, just more disingenuous SCGC behavior. Public notice also stated, "PEA (Pre-Environmental Assessment) concluded no significant environmental impacts as a result of the project." With no mention of the Sesnon fire. Burning up to 18,000 acres of land and trees is a significant environmental impact. Without improved safety and management practices at the site, past performance is all we have to go on.

Application A.09-09-020 requests preemption of local regulations with CPUC receiving preemptive authority, yet decides NOT TO COMPLY with the CPUC brush clearance and power line maintenance standards. Also does not want to meet local grading codes and oak tree protection requirements.

Application A.09-09-020 states "no impact on the surrounding community that cannot be mitigated to a level below significant." Does this mean that SCGC considers the Sesnon fire below significant?

Application states “no recreational or park land will be disturbed or otherwise affected “Any guarantees? Sesnon fire burned down the park lands.

Application states”SCGC strong track record on maintenance efforts at Aliso Canyon facility.” (The CPUC should request site maintenance logs for brush clearance and power line inspections)

Application states SCGC formed a team in partnership with Southern California Edison. Two huge, independent agencies working together. How does conflict resolution place? How are we assured that no one will drop the ball in handoffs from one agency to anther? Recipe for disaster. Besides, SCE DOES NOT DO BRUSH CLEARENCE IN THE CHATSWORTH TAP LINE. Also with the building department of the respective city and county’s allowing SCGC to operate a facility with residential neighborhoods at their front door. Public Safety is present?

Application states “SCGC does not believe that approval of this application will require hearings.” SCGC, of course, ASSUMES safety and management competency. The public can not afford this assumption with the safety track record SCGC has, and has demonstrated with the Sesnon fire.

Public outreach notices of application signage posted in the community were nonexistent and the showing of the public was an embarrassing amount due to the efforts of SCGC in promoting the town hall meeting. The area which has a population of over 3 million people drew 6 people to the public comment portion on May 3, 2012 at Porter Valley C/C. When asked why no one was notified both the CPUC and representatives for the EIR report had no comment. So in short us the public are getting the short in of the stick.

PEA states “SCGC will incorporate measures for fire and detection in order to lower the risk of initiating wild land fires during construction”. Based on SCGC track record how can we be certain?

PEA states “SCE protocols will be in place for red flag warning days” How do we know these protocols will be followed and what about SCGC? What protocols do they have to follow?

PEA states “fire risk will be low because construction areas would be grubbed of vegetation and graded”. What about the new power line installation from the Chatsworth Tap (Newhall) to the facility? What about the oil wells and expedition that exists at the SCGC Aliso Canyon facility?

Given the economic financial downturn with the closures of some of the public services such as Fire Departments and mutual aid for neighboring city fire departments. How the CPUC answer the question of PUBLIC SAFETY NOW when the SCGC could not ensure the public safety before.

So with this tract record I feel that the CPUC must recommend that the new transmission lines will be a direct burial line in order to re-enforce that the public is NOT in harm's way again considering that the Aliso Canyon facility is in a 10 fire zone rating in which that is the highest. As well, leading up to the Sesnon fire SCGC did not respect the nature of the business as well as the location of the facility.

Given the track record of SCGC Aliso Canyon facility management we believe they cannot be trusted to make decisions in the best interest of public safety. Therefore the public must impose safety requirements upon the facility. The CPUC should deny all SCGC Aliso Canyon facility expansions and upgrades applications until a complete investigation are completed to see IF SCGC HAS THE MANAGEMENT STAFF TO MANAGE A FACILITY OF THIS CAPACITY.

In closing I would like to plead with the commission to realize that this application is not as it appears, we need to broaden the scope of the investigation in regards to SCGC ability to manage and maintain this proposed facility. With that assumption in place if we are wrong we could end up with another San Bruno. The reason we bring that point to the surface is for the mirror fact that the above ground natural gas transmission lines were supported by wood pedestal prior to the Sesnon fire, and are still in service burned from the fire. How we justify this application for SCGC to expand this facility with these protocols in place to protect the public?

Also to further document are argument to have this application stopped is that we have documents we would like the CPUC to review in regards to SCGC Aliso Canyon facility which will prove beyond a conclusive opinion that SCGC does not and will not in the future have the ability to operate a facility of this capacity.

Scott and Michele Rucker

Dartagnan Riordan- Grandson

Survivors of the Sesnon fire

Herron, Christy

From:	Barnsdale, Andrew <andrew.barnsdale@cpuc.ca.gov>
Sent:	Tuesday, May 22, 2012 6:28 PM
To:	Daniel Garcia
Cc:	Hammond, Christine J.; Herron, Christy; Borak, Mary Jo
Subject:	RE: Aliso Canyon Turbine Replacement Project
Importance:	High

Mr. Garcia: the CPUC will accept late comments from the SCAQMD regarding the Aliso Canyon Turbine Replacement Project.

Please submit your comments to us by Friday May 25th, 2012, or as soon as possible thereafter.

Thank you.

Andrew Barnsdale
Infrastructure Permitting and CEQA
Energy Division
California Public Utilities Commission
Phone: 415-703-3221

From: Daniel Garcia [mailto:dgarcia@aqmd.gov]
Sent: Tuesday, May 22, 2012 10:54 AM
To: Barnsdale, Andrew
Subject: Aliso Canyon Turbine Replacement Project

Mr. Barnsdale,

As a result of overlapping projects with limited staff resources I respectfully request that the California Public Utilities Commission provide the South Coast Air Quality Management District Staff a few more days (until Friday May 25, 2012) to submit comments on the Aliso Canyon Turbine Replacement Project. Please inform me of your agency's decision regarding this request.

Regards,

Dan Garcia
Air Quality Specialist
Planning, Rule Development, and Area Sources
21865 Copley Drive
Diamond Bar, CA 91765-4178
P: (909) 396-3304
F: (909) 396-3324

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Herron, Christy

From: Daniel Garcia <dgarcia@aqmd.gov>
Sent: Tuesday, May 22, 2012 6:44 PM
To: Herron, Christy; andrew.barnsdale@cpuc.ca.gov
Cc: Ian MacMillan
Subject: Aliso Canyon Turbine Replacement Project
Attachments: DEIRAlisoCanyonTurbineReplacementProject.pdf

The South Coast Air Quality Management District's comments are provided in the attached letter. Please be advised that you will also receive this letter by U.S. Mail.

Regards,

Dan Garcia
Air Quality Specialist
Planning, Rule Development, and Area Sources
21865 Copley Drive
Diamond Bar, CA 91765-4178
P: (909) 396-3304
F: (909) 396-3324

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South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 • www.aqmd.gov

E-Mailed: May 22, 2012
AlisoCanyonNG@ene.com

May 22, 2012

Mr. Andrew Barnsdale,
Aliso Canyon Turbine Replacement Project
505 Sansome Street, Suite 300
San Francisco, CA 94111

Review of the Draft Environmental Impact Report (Draft EIR) for the Proposed Aliso Canyon Turbine Replacement Project

The South Coast Air Quality Management District (AQMD) appreciates the opportunity to comment on the above-mentioned document. The following comments are meant as guidance for the lead agency and should be incorporated into the Final Environmental Impact Report (Final EIR) as appropriate.

The AQMD staff is concerned about the project's potentially significant regional air quality impacts from construction of the proposed project. Specifically, the lead agency determined that the project will exceed the AQMD's CEQA regional significance thresholds for NOx and VOC emissions. As a result, the lead agency incorporated Mitigation Measure AQ-1 (MM AQ-1) that requires the purchase of Regional Clean Air Incentive Market Trading Credits (RTCs). Therefore, to ensure insignificant air quality impacts from the proposed project the AQMD staff recommends that the lead agency revise MM AQ-1 in the Final EIR to make certain that, "All emission credits used to mitigate significant air quality impacts from construction of the proposed project adhere to the AQMD's CEQA policies and procedures document titled: Revised CEQA Policy and Procedures in Allowing the Use of Emissions Credits to Mitigate Significant Air Quality Impacts from Construction" (See Attachment). Also, the AQMD staff notes that past projects that have selected this type of mitigation measure required the Mitigation Agreement for the credits to be presented to the AQMD Governing Board. Consistent with this document the AQMD staff recommends that the lead agency also include the following mitigation measures pursuant to Section 15126.4 of the CEQA Guidelines.

- Require the use of 2010 and newer diesel haul trucks (e.g., material delivery trucks and soil import/export) and if the lead agency determines that 2010 model year or newer diesel trucks cannot be obtained the lead agency shall use trucks that meet EPA 2007 model year NOx emissions requirements,

- During project construction require all internal combustion engines/construction equipment operating on the project site greater than 50 hp to meet EPA Tier 4 emission standards, where available. Also, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.

- A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment.

- Encourage construction contractors to apply for AQMD "SOON" funds. Incentives could be provided for those construction contractors who apply for AQMD "SOON" funds. The "SOON" program provides funds to accelerate clean up of off-road diesel vehicles, such as heavy duty construction equipment. More information on this program can be found at the following website: http://www.aqmd.gov/tao/Implementation/SOONProgram.htm

For additional measures to reduce off-road construction equipment, refer to the mitigation measure tables located at the following website: www.aqmd.gov/ceqa/handbook/mitigation/MM_intro.html.

Pursuant to Public Resources Code Section 21092.5, AQMD staff requests that the lead agency provide the AQMD with written responses to all comments contained herein prior to the adoption of the Final EIR. Further, staff is available to work with the lead agency to address these issues and any other questions that may arise. Please contact Dan Garcia, Air Quality Specialist CEQA Section, at (909) 396-3304, if you have any questions regarding the enclosed comments.

Sincerely,

Ian V. MacMillan

Ian MacMillan
Program Supervisor, CEQA Inter-Governmental Review
Planning, Rule Development & Area Sources

IM:DG

LAC120404-01
Control Number

Attachment

Revised CEQA Policy and Procedure in Allowing the Use of Emission Credits to Mitigate Significant Air Quality Impacts from Construction Phase

To allow the use of emission credits to mitigate significant air quality impacts from the construction phase of a project, the project applicant should pursue the following procedure in order to comply with this SCAQMD CEQA Policy.

Alternative Technology Mitigation

1. Initially, the project applicant should attempt to reduce construction NOx emissions by using off-road construction equipment that meets lower future emission standards, alternative fuels and control technology on the construction equipment. If the project applicant is unsuccessful in locating equipment retrofitted with NOx oxidation catalysts and meeting the California 2001 off-road emission standards, the project applicant may request the SCAQMD's approval to surrender emission credits as CEQA mitigation to mitigate the exceedances in construction NOx emissions as a good faith effort to the SCAQMD and the lead agency.

Localized Impacts

2. Prior to the approval of the mitigation measure, the project applicant shall provide a localized air quality modeling analysis to demonstrate that localized NO_2 impacts would be less than significant. The SCAQMD has established a significance threshold for NOx construction emissions recommended for use by lead agencies to ensure that the effort to achieve federal or state ambient air quality standards for ozone is not hindered. The use of emission credits to mitigate NOx construction emissions may mitigate regional air quality impacts, but will not ensure that localized impacts are not significant.

Emission Credits

3. Prior to commencement of the construction project in accordance with established procedures set forth under SCAQMD's Regulation XX – Regional Clean Air Incentives Market (RECLAIM), the project applicant shall purchase the amount of pounds of NOx emission credits needed to mitigate the exceedance of the construction significance threshold for NOx emissions from the construction phase of the project. The offset credits must meet the following criteria:

   (a) The project applicant must demonstrate that the emission credits were derived from emission reduction project(s) through existing SCAQMD protocols.

   (b) The credit needs to be current for the time the project takes place meaning the RTCs/MSERCs have not expired before or during the time period when the emissions from the project would occur.

Surrendering Emission Credits

4. The project proponent is required to retire the entire amount of NOx emission credits needed to mitigate the exceedance of the construction significance threshold for NOx emissions prior to commencement of the construction project.

Penalty for Not Reconciling in a Timely Manner

5. If NOx emissions exceed the original estimation, the project applicant or consultant shall reconcile NOx (and, if applicable, ROG, CO and SOx) emissions that exceed the original estimation of emission credits purchased. The project proponent will be given a 15-day reconciliation period without penalties to purchase additional emission credits, if needed, to continue the project; and failure to do so will result in a penalty of purchasing additional credits in an amount equal to the additional excess emissions plus 100 percent of the additional excess emissions. For example, if the project emits 500 pounds of additional excess NOx emissions beyond the required amount of pounds of NOx credits, and the 500 pounds of additional excess NOx emissions are not mitigated with suitable emission credits within the reconciliation period, then the project proponent will be responsible for providing 1,000 pounds of NOx credits to the SCAQMD;

Recordkeeping and Reporting

6. Construction contractor shall record the hour meter reading for each piece of equipment and the project applicant shall record all the equipment used and hours of operations. The project applicant or consultant shall prepare and submit a monthly report within seven days after the end of each construction month to demonstrate that conditions have been met. The monthly report shall summarize equipment used, hours of operation, NOx emissions as well as identifying any problems that occur and corrective actions implemented by the contractor. If NOx emissions exceed the original estimation, the report should also include the additional ROG, CO and SOx emissions emitted to ensure no exceedance of the SCAQMD's CEQA NOx construction significance threshold.

Posting of Contacts

7. The project applicant shall post a sign at the project boundary containing contact information (contact name, telephone number, and email address) for lead agency people with questions or comments regarding construction activities at the site.

Approval Documentation

Because the SCAQMD is not the Lead Agency for land development projects, it is not responsible for approving the environmental document and/or Mitigation Monitoring Plan (MMP) in which the mitigation measure is required. However, the SCAQMD typically has approval authority over the mitigation measure as well as enforcement and monitoring responsibility under the MMP. In accordance with the Public Resources Code §21081.6, the MMP should outline the party responsible for implementing mitigation and the enforcement agency. Pursuant to CEQA Guidelines §15126.4(a)(2), to ensure that the mitigation measure is fully enforceable through a legally binding instrument, a Memorandum of Understanding (MOU) or other legally binding contractual agreement should be prepared. The MOU must be signed by the project proponent, the SCAQMD and the Lead Agency.

Purchasing and Surrendering Mobile Source Emission Reduction Credits (MSERCs) as CEQA Mitigation for Construction Emissions
CEQA Policy, March 2005

1. Comply with the "Revised CEQA Policy and Procedure in Allowing the Use of Emission Credits to Mitigate Significant Air Quality Impacts from Construction Phase" by:
    a. providing a localized air quality modeling analysis to demonstrate that localized NO_2 impacts would be less than significant;
    b. demonstrating that the emission credits were derived from emission reduction project(s) through existing SCAQMD protocols (e.g., Rule 1612 – Credits for Clean On-Road Vehicles);
    c. ensuring the credit is current for the time the project takes place meaning the MSERCs have not expired before or during the time period when the emissions from the project would occur;
    d. reconciling NOx (and, if applicable, ROG, CO and SOx) emissions that exceed the original estimation of emission credits purchased if NOx emissions exceed the original estimation; and
    e. preparing and submitting a monthly report within seven days after the end of each construction month to demonstrate that conditions have been met.
2. Contact Vicki White, Air Quality Specialist, in the SCAQMD Technology Advancement Office, at (909) 396-3436 who can provide the list of MSERC brokers.
3. Contact the broker to negotiate the purchase of the amount needed to offset the emissions which exceed the daily significance threshold during the construction phase of the project.
4. Retire the entire amount of NOx emission credits prior to commencement of the project to mitigate the exceedance of the construction significance threshold for NOx emissions to the SCAQMD through one of two means:
    a. Convert the credit amount into a physical certificate which is issued to the purchaser of the credit and is surrendered back to the SCAQMD; or
    b. Establish an MSERC account with the SCAQMD (Vicki White) and transfer the MSERCs into that account to retire them with the SCAQMD.

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Herron, Christy

From: Christine.Mcleod@sce.com
Sent: Tuesday, May 22, 2012 3:48 PM
To: Herron, Christy
Subject: SCE's Comments on the Draft Environmental Impact Report (SCH 2010101075) for the Aliso Canyon Turbine Replacement Project (A.09-09-020)
Attachments: Telecom Route 4_Map.jpg; Natural 66 kV SLD rev 3.pdf; SCE Comment Table - SCG Aliso Canyon CPCN - CPUC DEIR.pdf; SCE Comment Letter - May 22 2012 - SCG Aliso Canyon CPCN - CPUC DEIR.pdf; Telecom Route 4 Description .pdf

Dear E&E,
Enclosed please find Southern California Edison Company's (SCE) submittal package on the Draft Environmental Impact Report (SCH 2010101075) for the Aliso Canyon Turbine Replacement Project (A.09-09-020).

Please do not hesitate to contact me at the phone numbers below if you have any questions. Thank you for the opportunity to comment.

Christine McLeod
Project Manager - Regulatory Affairs
Regulatory Policy & Affairs Dept.
Southern California Edison
2244 Walnut Grove Avenue, Quad 3D, 388L
Rosemead, CA 91770
Phone (626) 302-3947, Fax (626) 302-4332, Cell (626) 695-2787

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SOUTHERN CALIFORNIA
EDISON®
An *EDISON INTERNATIONAL*® Company

May 22, 2012

Aliso Canyon Turbine Replacement Project
505 Sansome Street, Suite 300
San Francisco, CA 94111
Email: AlisoCanyonNG@ene.com

Re: SCE's Comments on the Draft Environmental Impact Report (SCH 2010101075) for the Aliso Canyon Turbine Replacement Project (A.09-09-020)

Dear Ladies and Gentlemen:

Enclosed please find Southern California Edison Company's (SCE) comments to the above-referenced Draft Environmental Impact Report (DEIR) circulated by the California Public Utilities Commission (CPUC) on April 4, 2012.

The majority SCE comments to the Southern California Gas Company (SCG) Aliso Canyon Turbine Replacement Project (Proposed Project) DEIR are in the enclosed comment table; however, SCE discusses two key concerns in this letter relating to the (i) Mitigation Monitoring Plan (MMP) and (ii) a minor scope addition to the Telecommunications Routes.

Mitigation Monitoring Plan:

The draft MMP does not clearly assign responsibility for compliance with Mitigation Measures (MMs) and Applicant Proposed Measures (APMs) and in some cases incorrectly assigns responsibility to either the applicant (So Cal Gas) and/or SCE for measures that should be assigned to the other utility. Accordingly, SCE recommends that the assignment of responsibility for compliance with the MMs and APMs be made either through a separate agreement among the Gas Company, SCE and the CPUC or through the Final Mitigation, Monitoring, Reporting, and Compliance Program (MMRCP).

Telecommunications Routes:

Three telecommunications routes are discussed in the DEIR. However, in order for SCE to effectively interconnect the Natural Substation to the SCE system and provide the required subtransmission line protection, SCE has determined that the fiber optic ring associated with the Proposed Project needs to include an additional 5.5 mile fiber optic cable segment (to be called Telecommunications Route #4) from SCE's San Fernando Substation to the entrance to the Sunshine Canyon Landfill in Sylmar. A description of the route and a map are attached.

P.O. Box 800
2244 Walnut Grove Ave.
Rosemead, CA 91770

Telecommunications Route #4 is anticipated to use existing[1] overhead SCE and Los Angeles Water & Power (LADWP) wood distribution poles and LADWP subtransmission wood poles and require short spans of underground construction. One new pole is anticipated to be required at a location near Sepulveda Boulevard and San Fernando Road.

SCE anticipates that Telecommunications Route #4 construction requirements and impacts will be generally similar to those discussed in the DEIR for Telecommunications Segment #3, including Sections 2.2.9.1 (New Structures and Rights-of-Way), 2.2.10 (Access Roads), 2.3.1 (Construction Schedule, Personnel and Equipment), 2.3.3 (General Construction Methods and Materials), 2.3.10 (Reconductoring, Fiber Optic Cable Installation, and Structure Replacement), 2.3.1.3 (Staging Areas), 2.4.3 (Natural Substation, 66-kV Subtransmission Line, and Fiber Optic Cable Operations and Maintenance), and 2.5 (Plans and Applicant Proposed Measures).

In addition, please note that the majority of the route for Telecommunications Route #4 has been evaluated by the CPUC in the DEIR due to the fact it follows a large portion of the same route as the DEIR's proposed Routing Alternative A (Sylmar Substation to San Fernando Substation), which the Draft EIR recommends as the Environmentally Superior Alternative.

Because Routing Alternative A overlaps a significant portion of Telecommunications Route #4, Routing Alternative A would conflict with SCE's ability to maintain required diverse telecommunications paths. Accordingly, SCE respectfully requests the CPUC to eliminate Routing Alternative A from consideration because Routing Alternative A presents feasibility and operability concerns to SCE in that it would preclude SCE from having four separate, diverse fiber optic telecommunications paths required for the Proposed Project due to the significant route overlap with Telecommunications Route #4. SCE urges the CPUC to ensure the Proposed Project includes not only the newly identified Telecommunications Route #4 but also Telecommunications Route #3 (San Fernando Substation to Fiber Optic Connection Point) instead of Routing Alternative A.

SCE understands the CPUC may wish to understand Telecommunications Route #4 more fully. SCE looks forward to working with the CPUC to provide any clarifying or more detailed information for inclusion in the Final EIR. While this presents a new segment scope to the telecommunications system, the addition is not likely to present any impacts not already evaluated in the DEIR.

Thank you for your consideration of these comments. Please note that in addition to the accompanying comment table, SCE has included the following attachments:

- Natural 66 kV Single Line Diagram
- Telecommunications Route #4 Description

[1] As discussed in the Draft EIR regarding Telecommunications Routes #2 and #3, while SCE anticipates that existing overhead poles would be used for Telecommunications Route #4, SCE would not be able to determine if any poles require replacement in order to attach the new fiber optic cables until final engineering and windloading tests have been completed.

- Telecommunications Route #4 Map

Thank you for the opportunity to comment on the DEIR.

Sincerely,

Christine McLeod
SCE Regulatory Affairs

cc: Nadia Aftab, So Cal Gas
Albert Garcia, So Cal Gas
Daniel Duke, SCE
Beth Gaylord, SCE

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SCE COMMENTS & SUGGESTED REVISIONS – MAY 22, 2012

Comment #	Section	Page	Comment	Suggested Revision
1	Acronyms and Abbreviations	xv	**Acronym Table**: The acronym for megavolt ampere is listed twice. Please remove "MWA" reference to this term, as it is incorrect.	~~MWA megavolt ampere~~
2	Executive Summary	ES-2	**Figure E-1 Legend**: depicts a yellow triangle for the proposed Natural Substation. However, the figure displays yellow triangles for both Natural and San Fernando Substations.	Please correct figure as appropriate.
3	Executive Summary	ES-3	The second sentence of **Footnote 2** reads, "SCE estimates that 50 megawatts of electricity would be required to meet the increase in electrical demand from operation of the proposed electric–driven compressors…" This refers to an estimate presumably provided by SCE. Please note that the estimated load was based on information provided by the applicant and not SCE. The load estimate should be provided in MVA.	Please revise the second sentence in the footnote to read as follows: "The ~~SCE~~ applicant estimates that ~~50~~ xx ~~megawatts~~ MVA of electricity…"

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DRAFT ENVIRONMENTAL IMPACT REPORT

SCE COMMENTS & SUGGESTED REVISIONS – MAY 22, 2012

Comment #	Section	Page	Comment	Suggested Revision
4	Chapter 1 Introduction	1-4	**Lines 11-21:** This section does not accurately explain or cite CPUC General (GO) Order 131-D. Please amend this section to accurately characterize GO 131-D requirements.	Please revise as follows: Pursuant to Article XII of the California Constitution, the CPUC is vested with jurisdiction over this project. ~~The applicant and SCE would still be required to obtain all building, encroachment, and other ministerial (administrative) permits from local jurisdictions~~. CPUC General Order 131-D, ~~which~~ establishes requirements for the ~~planning and~~ construction of certain electric facilities. ~~Facilities for the generation and transmission of electricity.~~ General Order 131-D clarifies that local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or other electric facilities constructed by public utilities subject to the (CPUC's) jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters and obtain any non-discretionary local permits required for the construction and operation of these projects. (~~requires the applicant and SCE to comply with local building, design, and safety standards to the greatest degree feasible to minimize project conflicts with local conditions. General Order 131-D also requires the CPUC to contact and coordinate with local planning agencies regarding land use concerns that could result from the proposed project.~~
5	Chapter 2 Project Description	Entire Section	Please refer to comments within the attached May 22, 2012 letter from SCE regarding revised telecommunications scope.	

Comment #	Section	Page	Comment	Suggested Revision
6	Chapter 2 Project Description	2-2	**Lines 2-4:** SCE's existing easement on property owned by the applicant will also need to be enlarged in order to construct and operate the 66 kV subtransmission lines. However, it is anticipated that any expansion of the easement would occur within the geographic boundary of the study area utilized in the DEIR, and would not create a new significant impact or a substantial increase in the severity of a previously identified significant impact.	In addition, the applicant would apply to the California Public Utilities Commission (CPUC) to enlarge SCE's existing easement on the storage field site, which would be necessary for SCE to construct and operate the Natural Substation, and/or 66kV transmission lines.
7	Chapter 2 Project Description	2-11	**Footnote 4**: The reference to Segment C is incorrect. Segments A and B form the double circuit subtransmission line.	Please revise as follows: "Segments A and ~~C~~ B form a double-circuit, alternating-current subtransmission line with six conductors (three conductors on each side of each structure supporting the line)…".
8	Chapter 2 Project Description	2-22	**Lines 27-29** read, "Along Segment E, the existing 66-kV lines from MacNeil Substation to San Fernando Substation would be looped through the San Fernando Substation on new conductor to create the MacNeil–San Fernando No. 1 and MacNeil–San Fernando No. 2 66-kV subtransmission lines."	Please revise as follows: "Along Segment D and E, the existing Chatsworth-MacNeil-Newhall-San Fernando 66-kV line~~s~~ from ~~MacNeil~~ Newhall Substation to ~~San Fernando~~ MacNeil Substation would be looped through the San Fernando Substation on new conductor in proximity to San Fernando Substation and ~~to~~ would create the new Natural-Newhall ~~MacNeil~~ San Fernando 66-kV subtransmission Line and the MacNeil-San Fernando ~~No. 1 and MacNeil San Fernando No. 2~~ 66-kV subtransmission line~~s~~." Please see attached Figure to correct Figure 2-6 in the Draft EIR.

Comment #	Section	Page	Comment	Suggested Revision
9	Chapter 2 Project Description	2-20	**Lines 10-11:** Please note minor technical revision.	Please revise as follows: SCE would provide two bidirectional 64-kilo~~byte~~bit-per-second digital channels (C37.94) for each new 66-kV line terminal.
10	Chapter 2 Project Description	2-22	**Line 36-38**: As SCE has thus far only completed preliminary engineering, the exact number of TSPs at/near San Fernando Substation is not yet confirmed. Consistent with Table 2.2 Footnote (b), the exact number of TSPs to be installed will be determined during final engineering. The potential range for TSPs to be installed at/near San Fernando Substation may range between 3 and 6.	Please consider using a range of TSPs and update applicable sections accordingly.
11	Chapter 2 Project Description	2-23	Under the section heading **2.2.7.1 New Conductor, Table 2-2** shows Segment A/B length/structures as the Segment C length/structures, and vice versa.	Please correct segment labels in first column.

Comment #	Section	Page	Comment	Suggested Revision
12	Chapter 2 Project Description	2-22	**Lines 23-30:** Please note minor technical revision.	Please revise as follows: "The line from Newhall Substation to San Fernando Substation, which includes Segments B and D, would be called the MacNeil-Newhall–San Fernando-_66-kV Subtransmission Line. Along Segment E, ~~the~~ one existing 66-kV line~~s~~ from MacNeil Substation to San Fernando Substation would be looped through the San Fernando Substation on new conductor to create the MacNeil–San Fernando 66-kV Subtransmission Line ~~No. 1 and the MacNeil–San Fernando No. 2 66-kV Ssubtransmission Llines.~~ The length of each 66-kV segment and the number of structures to be replaced are provided in Table 2-2."
13	Chapter 2 Project Description	2-25	On **Table 2-3, Row 42 Column 'Existing Type'** reads, "LWS/H-frame (2 Poles)." Structure No. 42 is now a three-pole structure.	Please add the following Structure ID Number to Row 42 and revise type description: 4513741E
14	Chapter 2 Project Description	2-26	On **Table 2-3, Row 43**, Structure No. 43 has been removed from the subtransmission design.	Please remove Structure accordingly.

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DRAFT ENVIRONMENTAL IMPACT REPORT

SCE COMMENTS & SUGGESTED REVISIONS – MAY 22, 2012

Comment #	Section	Page	Comment	Suggested Revision
15	Chapter 2 Project Description	2-26	On **Table 2-3, Row 44**, the Structure ID Numbers for Structure No. 44 are inaccurate.	Please revise as follows: ~~4476889E, 4476890E, 447689XE~~ 4539201E, 4539202E, 4539203E

Comment #	Section	Page	Comment	Suggested Revision
16	Chapter 2 Project Description	2-26 and 2-27	**Lines 13 – 16 (page 2-26) through Lines 1-3 (page 2-27):** Please note, a portion of SCE's Chatsworth MacNeil-Newhall-San Fernando 66 kV Subtransmission Line may be relocated under a separate project (Sunshine Gas Producers Renewable Energy Project), which involves the construction of a gas turbine electrical generation facility at the Sunshine Canyon Landfill and for which SCE will install new 66 kV interconnection facilities. The Sunshine Gas Producers Renewable Energy Project, was approved by the South Coast Air Quality Management District (SCAQMD) in April 2012 (Final Supplemental Environmental Impact Report (FSEIR), State Clearinghouse No. 92041053). In the event that the Sunshine Gas Producers Renewable Energy Project is constructed prior to the separate relocation project requested by the Sunshine Canyon Landfill for which SCE will be filing a Permit to Construct application at the CPUC, SCE would construct the scope of work required for the Sunshine Gas Producers Renewable Energy Project, including relocating four of the existing poles in the landfill pursuant to CPUC GO 131-D, Section III.B.1.f.	Please revise as follows: ~~Relocation of the subtransmission line would require approval by the CPUC~~. SCE anticipates filing ~~will file~~ a separate Permit to Construct application with the CPUC, which the CPUC will evaluate pursuant to CEQA separate from this EIR, for the relocation of all or a portion of the subtransmission line segment across Sunshine Canyon Landfill. However, a portion of the subtransmission line may be relocated under a separate project related to the interconnection of the Sunshine Gas Producers Renewable Energy Project, which has been evaluated pursuant to CEQA by the South Coast Air Quality Management District (SCAQMD) in April 2012 (Final Supplemental Environmental Impact Report (FSEIR), State Clearinghouse No. 92041053). In the event that the Sunshine Gas Producers Renewable Energy Project is constructed prior to the separate relocation project requested by the Sunshine Canyon Landfill, a portion of the proposed relocation in the landfill associated with the Sunshine Gas Producers Project will be constructed by SCE, exempt from CPUC Permit to Construct requirements, pursuant to CPUC GO 131-D, Section III.B.1.f. ~~The proposed relocation will be evaluated pursuant to CEQA separately from this EIR.~~ SCE has stated that if the landfill relocation project or the renewable generator interconnection project does not occur or if ~~it~~ the separate projects occur~~s~~ after construction of the Aliso Canyon Turbine Replacement Project, reconductoring and structure replacement for Segment C would follow the existing alignment across the landfill (SoCalGas 2009). The Sunshine Canyon Landfill Project and the Sunshine Gas Producers Renewable Energy Project ~~is~~ are further discussed in Chapter 6, "Cumulative Impacts and Other CEQA Considerations."

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DRAFT ENVIRONMENTAL IMPACT REPORT

SCE COMMENTS & SUGGESTED REVISIONS – MAY 22, 2012

Comment #	Section	Page	Comment	Suggested Revision
17	Chapter 2 Project Description	2-27	**Lines 22-25**: Minor revisions to text recommended to clarify scope of work within San Fernando Substation.	Please revise as follows: Within the footprint of the existing San Fernando Substation, ~~four~~ two 66-kV circuit breakers, ~~eight~~ four sets of disconnect switches, and associated equipment would be installed for the proposed 66-kV reconductoring work to create ~~two~~ one new position~~s~~ on the existing switchrack, and would require ground-disturbing activities.
18	Chapter 2 Project Description	2-27	**Line 47:** The fiber optic line associated with Telecommunication Route #1 will be overbuilt and not underbuilt as the DEIR indicates.	Please revise as follows: Telecommunications Route #1 would consist of the installation of a new fiber optic cable on new structures ~~(underbuilt)~~ (overbuilt) along 66-kV Segments A, B, and C between Newhall Substation and the proposed Natural Substation. Please also revise Chapter 4.1 as appropriate to account for an overbuild of the fiber optic line.
19	Chapter 2 Project Description	2-28	**Lines 8-12**: Minor text revisions recommended clarifying routing of Telecommunications Route #3.	Please revise as follows: Telecommunications Route 3 would consist of the installation of a new fiber optic cable on existing overhead SCE and Los Angeles Department of Water and Power(LADWP) wood poles and in new underground conduit and structures, from the San Fernando Substation east to tap an existing fiber optic cable within the ROW of an existing SCE 220-kV subtransmission line corridor.
20	Chapter 2 Project Description	2-30	**Lines 12-14**: Minor text revisions recommended clarifying routing of Telecommunications Route #3.	Please revise as follows: Fiber optic cable would be installed overhead on existing SCE and LADWP wood poles except for approximately 1200 feet that would be installed in new underground conduit and structures (Figure 2-8).

ALISO CANYON

DRAFT ENVIRONMENTAL IMPACT REPORT

SCE COMMENTS & SUGGESTED REVISIONS – MAY 22, 2012

Comment #	Section	Page	Comment	Suggested Revision
21	Chapter 2 Project Description	2-30	**Line 17**: Minor text revisions to correct typo related to line voltage.	Please revise as follows: SCE's San Fernando Substation, and approximately 200 feet of this route, which would be within SCE's existing ~~200-kV~~ 220-kV ROW in Sylmar
22	Chapter 2 Project Description	2-30	**Lines 25-27**: Minor text revisions recommended clarifying routing of Telecommunications Route #3.	The cable would be installed overhead for approximately 300 feet southwest along the north side of McClay Street to an LADWP pole where it would transition down the pole and be installed ~~on~~ in new underground conduit.
23	Chapter 2 Project Description	2-30	**Footnote 9**: Minor addition to text recommended to clarify the easement acquisition needed for the Gavin Distribution Line Extension Project.	Please revise as follows: The proposed Gavin Distribution Line Extension Project is scheduled for completion before construction of the Natural Substation would commence (Chapter 6, "Cumulative Impacts and Other CEQA Considerations") and would be addressed in accordance with SCE tariff rules and subject to the Gas Company granting SCE an easement pursuant to authorization under CPUC Code Section 851
24	Chapter 2 Project Description	2-31	**Lines 1-2**: Minor text revisions recommended clarifying routing of Telecommunications Route #3.	The cable would continue overhead southeast along the alley for approximately 1,100 feet and then approximately 430 feet southwest along San Fernando Mission Boulevard to an SCE pole.

ALISO CANYON

DRAFT ENVIRONMENTAL IMPACT REPORT

SCE COMMENTS & SUGGESTED REVISIONS – MAY 22, 2012

Comment #	Section	Page	Comment	Suggested Revision
25	Chapter 2 Project Description	2-31	**Lines 19-21:** In order to accommodate two-way traffic to and from the proposed Natural Substation site, it has been determined that the width of the existing road would need to be increased to 24 feet, rather than 18 feet as stated in the DEIR.	Please revise as follows: The existing 1,500-foot dirt road to the proposed Natural Substation site would be modified, graded, and paved (Figure 2-2). Its width would be increased from 12 to ~~18~~ 24 feet. The road extends from an existing wellhead site at the storage field. Please update Table 2-7, Land Disturbance, consistent with this suggested revision.
26	Chapter 2 Project Description	2-36	**Footnote e**: Text revision recommended in order to build in flexibility based on field conditions related to location of wire pulling, splicing, and tensioning locations.	Please revise as follows: Wire-pulling, tensioning, and splicing locations would be sited ~~no more than~~ approximately every 6,000 feet along the 66-kV subtransmission line reconductoring and fiber optic cable installation routes.
27	Chapter 2 Project Description	2-44	**Line 43:** Minor text revision recommended to reflect accurate curing time for concrete mix.	Please revise as follows: The concrete mix typically used by SCE takes 20 ~~working~~ days to cure to an engineered strength.
28	Chapter 2 Project Description	2-44	**Line 30**: Minor text revision recommended to clarify the timing for adding mud slurry.	Please revise as follows: If this is the case, ~~the applicant~~ SCE would add mud slurry into the borehole ~~after~~ during drilling to prevent the sidewalls from sloughing.

Comment #	Section	Page	Comment	Suggested Revision
29	Chapter 2 Project Description	2-45	**Line 10**: Minor text revision recommended to clarify process for assembly of TSPs	Please revise as follows: Occasionally, TSPs may be ordered in three sections or more, if needed, to reduce the weight or length of sections to be installed in constrained access areas.
30	Chapter 2 Project Description	2-46	**Line 34**: Recommended text addition to clarify that restoration would restore wire pull locations to their previous condition or to the conditions agreed to with the land owner.	Please revise as follows: The wire-pull locations would be temporary and the land would be restored to its previous condition or to the conditions agreed to with the landowner following completion of pulling and splicing activities.
31	Chapter 2 Project Description	2-47	**Line 2**: Minor text revision to clarify that conductor material would not be transported from Pardee Substation.	Please revise as follows: Helicopter staging ~~(loading helicopters with conductor materials)~~ would take place at SCE's Pardee Substation.
32	Chapter 2 Project Description	2-49	**Lines 41-42** read, Please note - SCE's Northern Transmission/Substation Regional Facility at Pardee Substation in Santa Clarita may not be the primary staging area.	Please revise as follows: ~~The primary~~ One of the staging areas for the 66-kV subtransmission line reconductoring would be SCE's Northern Transmission/Substation Regional Facility at Pardee Substation in Santa Clarita.

ALISO CANYON

DRAFT ENVIRONMENTAL IMPACT REPORT

SCE COMMENTS & SUGGESTED REVISIONS – MAY 22, 2012

Comment #	Section	Page	Comment	Suggested Revision
33	Chapter 2 Project Description	2-53	**Lines 13-14 read,** "The reconductored 66-kV subtransmission lines would be maintained consistent with CPUC General Orders 95 and 165." Text revision recommended to clarify that SCE will conduct routine patrols as part of ongoing operations and maintenance activities.	Please revise as follows: "The reconductored 66-kV subtransmission lines would be routinely patrolled and maintained consistent with CPUC General Orders 95 and 165."
34	Chapter 2 Project Description	2-62 and 2-63	**Approval/Consultation Requirement under the State and Local Headings:** Minor text clarification to cite appropriate section of Clean Water Act and typo within the "purpose" column. Recommend removing this requirement under the "local" heading as it is not a local permit.	Please revise as follows: **Approval/Consultation Requirement**. Section 401 ~~402~~ of the Federal Clean Water Act, National Pollutant Discharge Elimination System General Permit for Discharge of Construction Related Storm Water **Purpose.** As directed by State Water Resources Control Board, monitor development and implementation of Stormwater Pollution Prevention ~~otection~~ Plans and other aspects of the National Pollutant Discharge Elimination System permit and 401 certification program. SWPPPs are required for storm water discharges associated with construction activities that disturb more than one acre of land.
35	Chapter 3 Description of Alternatives	3-7	Please refer to comments within the attached May 22, 2012 letter from SCE regarding revised telecommunications scope.	

Comment #	Section	Page	Comment	Suggested Revision
36	Chapter 4.1 Aesthetics	4.1-7 et seq.	Under the heading **Regional and Local**, please clarify that all references to local land use regulations are included for informational purposes only.	Please insert the following language under the heading **Regional and Local**: "CPUC General Order 131-D explains that local land use regulations would not apply to the Proposed Project. However the following are included for informational purposes only." Please also revise all references in the General Plans discussed in the Regional and Local section to clarify they are being provided for reference only and that they do not "apply to" the Proposed Project.
37	Chapter 4.1 Aesthetics	4.1-26 To 4.1-31	Please note: The fiber optic line associated with Telecommunication Route #1 will be overbuilt and not underbuilt as the DEIR indicates.	Please conform the text to be consistent with the figures representing that the line will be overbuilt. See figures in Chapter 2 and Key Viewpoints in 4.1.

Comment #	Section	Page	Comment	Suggested Revision
38	Chapter 4.1 Aesthetics	4.1-31	**Line 35:** Please note: Consistent with Section 2.2.7.2 of the DEIR Project Description, SCE would file the necessary FAA Form 7460 for structures (poles/towers/conductors) that exceed notification requirements outlined in FAA Part 77. SCE would file the form upon completion of final engineering and prior to construction per FAA Part 77. All FAA recommendations, including the lighting of TSPs will be implemented into the design of the project if necessary.	Please consider potential lighting of TSPs resulting from FAA consultation throughout Chapter 4

Comment #	Section	Page	Comment	Suggested Revision
39	Chapter 4.3 Air Quality	Entire Section	Please note: The Chatsworth Substation and portions of Telecommunications Route #2 are located in Ventura County. Work done in these areas is therefore under the jurisdiction of the Ventura County Air Pollution Control District (VCAPCD). The Air Quality section of the DEIR only takes into consideration the rules, regulations and thresholds established by the South Coast Air Quality Management District (SCAQMD). Typically if a linear project crosses through multiple Air Basins, the impacts to each Air Basin are analyzed independently. In this way, the emissions generated in each Air Basin can be compared to the threshold set forth by each respective Air District. Furthermore, the rules and regulations within the jurisdiction of VCAPCD may differ from those of SCAQMD.	SCE recommends that emissions generated in the Ventura County Air Basin be compared to the applicable rules, regulations and thresholds set forth by the VCAPCD, and the Impact Analysis be updated throughout Chapter 4.
40	Chapter 4.2 – Agriculture and Forestry Resources	4.2.3	Under the heading **Regional and Local**, please clarify that all references to local land use regulations are included for informational purposes only.	Please insert the following language under the heading **Regional and Local**: "<u>CPUC General Order 131-D explains that local land use regulations would not apply to the Proposed Project. However the following are included for informational purposes only."</u>

Comment #	Section	Page	Comment	Suggested Revision
41	Chapter 4.3 Air Quality	4.3-9	**Lines 8-10:** Please note, SCE will utilize unpaved access roads for portions of the subtransmission and telecommunications line construction.	SCE recommends that the text be revised accordingly within the description on page 4.3-9 and emissions calculations in Appendix H be updated to account for any travel on unpaved roads. In addition, the Impact Analysis in Chapter 4 should be updated accordingly.

Comment #	Section	Page	Comment	Suggested Revision
42	Chapter 4.4 Biological Resources	4-4.35 and 4.4-53 – 4.4.54	**Significant Ecological Area Discussion:** Please note, Los Angeles County Significant Ecological Areas (SEA), which are designated by the County General Plan and which require conditional use permit review for development within an SEA unless exempt, are preempted by CPUC General Order 131-D. Therefore, SCE is not subject to Los Angeles County/SEATAC permitting. Please also note that the CPUC has affirmed this in its Final EIR issued for the Tehachapi Renewable Transmission Project. For example, the CPUC's TRTP Final EIR Biological Resources Section notes as follows in the discussion about SEAs: *"The CPUC has preemptive jurisdiction over construction, maintenance, and operation of public utilities in California (CPUC's General Order Number 131-D)… Therefore, no local discretionary permits (e.g. Conditional Use Permits or Specific Plan approval) or local plan consistency evaluation is required for the proposed Project or the Project alternatives. However, SCE would be required to obtain all ministerial building and encroachment permits from local jurisdictions (counties and incorporated cities)."* In addition, the CPUC's TRTP Final EIR Appendix H (Response to Comments) states as follows: *"Thank you for your comment. The Lead Agencies recognize that this area is in a Significant Ecological Area (SEA). However, the CPUC has preemptive jurisdiction over the construction, maintenance, and operation of public utilities in California. Therefore, no local discretionary permits, such as a SEA Conditional Use Permit, are required. This area was considered generally in the analysis along with other sensitive areas…"*	Please revise the analysis throughout the Biological Resources Section with respect to all references to SEAs to clarify SCE is not subject to local discretionary permitting for its construction within Los Angeles County SEAs.

Comment #	Section	Page	Comment	Suggested Revision
43	Chapter 4.5 Cultural Resources	4.5-11	Under the heading **Local**, please clarify that all references to local land use regulations are included for informational purposes only.	Please insert the following language under the heading **Local**: "CPUC General Order 131-D explains that local land use regulations would not apply to the Proposed Project. However the following are included for informational purposes only."
44	Chapter 4.8 Hazards and Hazardous Materials	4.8-12 **and 4.8-31**	**Lines 24 – 41 (page 4.8-12) and Lines 1- 19 (page 4.8-31):** Electric and Magnetic Fields are non-CEQA issues. SCE respectfully requests it to be moved to a separate chapter of the EIR. Further, EMF is not a hazard in the context of CEQA.	EMF is not a hazard in the context of CEQA. If the CPUC wishes to have a discussion of this non-CEQA issue, SCE respectfully requests it be included in a separate chapter of the EIR.
45	Chapter 4.8 Hazards and Hazardous Materials	4.8-12	**Lines 35-36:** The word "mitigation" in this line is typically used only to describe environmental impacts under CEQA. Revision suggested to clarify that "EMF reduction measures" be implemented.	Please revise as follows: The decision directed utilities to use a 4 percent benchmark for low cost ~~mitigation~~ EMF reduction measures.
46	Chapter 4.8 Hazards and Hazardous Materials	4.8-17 and 18	**Lines 49 – 2**: Minor text revision to correct typo	Wood waste, including wooden utility poles, may have been treated with ~~pesticides~~ preservatives to protect the wood during use. Because these preservative ~~pesticide~~ treatments could leach into water supplies when disposed of, Section 25150.7 was developed to restrict how and where treated wood waste could be disposed.

Comment #	Section	Page	Comment	Suggested Revision
47	Chapter 4.8 Hazards and Hazardous Materials	4.8-24	**Table 4.8-5, Proposed 66 kV subtransmission line reconductoring route, "Hazardous Materials and Wastes Used or Generated During Proposed Project Construction"** In some cases the wood poles would be removed in their entirety. Suggest adding wood poles to the list of materials in this cell.	Please revise as follows: Fuels, concrete, minor vehicle maintenance, and other construction materials. Waste soil, wood poles, and scrap steel from old ~~structures~~ poles.
48	Chapter 4.8 Hazards and Hazardous Materials	4.8-30	**Lines 42-46.** SCE is not required to develop and implement operational SWPPPs for substations or linear operations. Suggested revision to eliminate any reference to SWPPPs for SCE substations.	Please revise as follows: In addition to these plans, procedures, and measures, the applicant's ~~and SCE's~~ existing site-specific Hazardous Material Business Plans, SPCC Plans and SWPPPs address hazardous materials and waste storage, handling, and emergency procedures for proposed project activities at the storage field. SCE's existing site-specific Hazardous Material Business Plans, SPCC Plans, and standard SCE operating procedures would address hazardous material storage and use, and specify protective measures, notifications, and clean-up requirements for accidental spills or other releases of hazardous material that could occur at existing substations and other proposed project components as applicable.
49	Chapter 4.8 Hazards and Hazardous Materials	4.8-33	**Lines 19-22 Impact HZ-1**: Please note, SCE does not maintain SWPPPs for "operational activities."	Please revise as follows: During both construction and operation activities, hazardous materials and wastes… listed in the applicant~~ and SCE~~'s SWPPPs, SPCC Plans, and Hazardous Materials Management Program~~s~~.

Comment #	Section	Page	Comment	Suggested Revision
50	Chapter 4.8 Hazards and Hazardous Materials	4.8-36	**Lines 3-8.** Please note, SCE does not maintain operational SWPPPs. Suggest revising narrative to eliminate implication that SCE would maintain an operational SWPPP for its facilities.	In addition to these plans, procedures, and measures, the applicant's ~~and SCE's~~ existing site-specific Hazardous Material Business Plans, SPCC Plans and SWPPPs address hazardous materials and waste storage, handling, and emergency procedures for proposed project activities at the storage field. SCE's existing site-specific Hazardous Material Business Plans, SPCC Plans, and standard SCE operating procedures would address hazardous material storage and use, and specify protective measures, notifications, and clean-up requirements for accidental spills or other releases of hazardous material that could occur at existing substations and other proposed project components as applicable.
51	Chapter 4.8 Hazards and Hazardous Materials	4.8-38	**Line 15-18:** Minor text revisions to clarify the location of poles at the Sunshine Canyon Landfill.	Please revise text as follows: The tubular steel poles installed as part of this component would be installed ~~at elevation~~ on the edges of the Sunshine Canyon Landfill disposal areas, and the conductor would span the facility; therefore, no earth-moving activity would occur within the disposal areas of the Sunshine Canyon Landfill itself……
52	Chapter 4-9 Hydrology and Water Quality	4.9-4	**Lines 9-15:** Minor text revisions to clarify description of TSP installation.	Please revise as follows: The net number of poles and support structures that could be installed as part of the 66-kV subtransmission line reconductoring (78) ~~would~~ could be greater than the number of existing structures (64); however, the existing structures, largely lattice steel towers, are generally supported on two or more ~~poles~~ legs and~~/or concrete pads,~~may be encased in concrete and the new, single-pole TSP structures would represent a net decrease in impervious area for this project component.

Comment #	Section	Page	Comment	Suggested Revision
53	Chapter 4-9 Hydrology and Water Quality	4.9-12	**Lines 1-9:** Please note, SCE is not required to prepare and implement all of the plans listed in the bulleted items. For example, SCE typically does not prepare nor implement a Compressor Maintenance Plan, Storm Water Pollution Prevention Plan (for operations), nor a Hydrostatic Test Water Management Plan.	Please revise as follows: Plans that have been or will be prepared by the applicant and/or SCE that-will include measures addressing hydrology and water quality in the proposed project area include the following:
54	Chapter 4-9 Hydrology and Water Quality	4.9-15	**Line 36-38:** Please note, some locations along the 66 kV subtransmission line route may require extensive grading. However, it is anticipated that all grading activities would occur within the geographic boundary of the study area utilized in the DEIR, and would not create a new significant impact.	Please revise as follows: The proposed 66-kV subtransmission line modifications could ~~would not~~ require extensive grading or surface alteration around the TSP sites or along public roads but, ~~because~~ construction would occur along ~~within~~ existing transmission routes within the geographic boundary of the study area utilized in this DEIR. ~~and easements~~.
55	Chapter 4.10 Land Use and Planning	4.10-2	**Lines 23 – 26:** Please refer to SCE's earlier comments in this table regarding Project Description Section Pages 2-26 and 2-27 for clarification about the two separate projects requiring relocation of SCE's 66 kV line within the landfill.	Please clarify as appropriate.

Comment #	Section	Page	Comment	Suggested Revision
56	Chapter 4.10 Land Use and Planning	4.10-20 – 4.10-24 -	**Lines 25- 36 (page 4.10-20), Lines 21-22 and 41-43 (page 4.10-21), Lines 11-12 (page 4-22), Lines 5-6, and 16-17 (page 4.10-23), and Line 1 (page 4-24):** Due to the preemptive authority of CPUC General Order 131-D, none of the Area Plans, General Plans, Community Plans, or Ridgeline and Hillside Ordinances "apply to" the Proposed Project.	Please revise the discussion and analysis to remove any presumption of applicability of these plans or zoning ordinances, and note they are instead being provided for information only.

ALISO CANYON

DRAFT ENVIRONMENTAL IMPACT REPORT

SCE COMMENTS & SUGGESTED REVISIONS – MAY 22, 2012

Comment #	Section	Page	Comment	Suggested Revision
57	Chapter 4.10 Land Use and Planning	4.10-20	**Significant Ecological Area Discussion:** Please note, Los Angeles County Significant Ecological Areas (SEA), which are designated by the County General Plan and which require conditional use permit review for development within an SEA unless exempt, are preempted by GO 131-D. Therefore, SCE is not subject to Los Angeles County/SEATAC permitting. Please also note that the CPUC has affirmed this in its Final EIR issued for the Tehachapi Renewable Transmission Project. For example, the CPUC's TRTP Final EIR Biological Resources Section notes as follows in the discussion about SEAs: *"The CPUC has preemptive jurisdiction over construction, maintenance, and operation of public utilities in California (CPUC's General Order Number 131-D)… Therefore, no local discretionary permits (e.g. Conditional Use Permits or Specific Plan approval) or local plan consistency evaluation is required for the proposed Project or the Project alternatives. However, SCE would be required to obtain all ministerial building and encroachment permits from local jurisdictions (counties and incorporated cities)."* In addition, the CPUC's TRTP Final EIR Appendix H (Response to Comments) states as follows: *"Thank you for your comment. The Lead Agencies recognize that this area is in a Significant Ecological Area (SEA). However, the CPUC has preemptive jurisdiction over the construction, maintenance, and operation of public utilities in California. Therefore, no local discretionary permits, such as a SEA Conditional Use Permit, are required. This area was considered generally in the analysis along with other sensitive areas…"*	Please revise the analysis throughout the Land Use Section with respect to all references to SEAs to clarify SCE is not subject to local discretionary permitting for its construction within Los Angeles County SEAs.

ALISO CANYON

DRAFT ENVIRONMENTAL IMPACT REPORT

SCE COMMENTS & SUGGESTED REVISIONS – MAY 22, 2012

Comment #	Section	Page	Comment	Suggested Revision
58	Chapter 4.11 Noise	4.11-11	**Lines 4-11:** The Chatsworth Substation and portions of Telecommunications Route #2 are located in Ventura County. Work done in these areas is therefore under the jurisdiction of the Ventura County. The County of Ventura General Plan Noise Section Policy 2.16.2 – 1. – (5) (2010) states: "Construction noise shall be evaluated and, if necessary, mitigated in accordance with the County Construction Noise Threshold Criteria and Control Plan." Contrary to the statement in the DEIR (lines 10-11), Ventura County does in fact have construction noise thresholds.	Please revise Lines 7-11 as follows: The General Plan also requires noise-sensitive projects located within the CNEL 60 or 65 contour of any roadway, railroad, airport, or industrial use to conduct an acoustical site analysis and noise control specification. The Noise Ordinance limits "loud or raucous noise" 50 feet from the property line in residential areas from 9 p.m. to 7 a.m. ~~This Noise Ordinance does not mention requirements related to construction noise or vibration.~~ In addition, please incorporate the applicable Ventura County General Plan Noise Section Policy 2.16.2 – 1. – (5) into the analysis in Chapter 4.

Comment #	Section	Page	Comment	Suggested Revision
59	Chapter 4.11 Noise	4.11-22	**Lines 26 – 29:** SCE believes that the noise analysis is flawed because the analysis failed to take into consideration the following for the Natural Substation (paragraph lines 15-34): In accordance with the National Electrical Manufacturers Association (NEMA) Standards Publication No. TR 1-1993 (R2000), the design sound level of each 66/12 kV transformer bank would not exceed 74 dBA. This 74 dBA sound level represents the transformer banks' average design sound pressure level, defined in NEMA Standards Publication No. TR 1-1993 (R2000) and ANSI/IEEE Standard C57.12.90-2010. The transformer banks will be purchased consistent with SCE Specification A1-2009, which requires the transformer banks' sound pressure level to be at least 6 decibels below the 74 dBA design sound pressure level specified in NEMA Standards Publication No. TR 1. As a result, the highest average sound pressure level for each transformer bank is expected not to exceed 68 dBA. Using the calculation methodology outlined in the ANSI/IEEE Standard C57.12.90-2010, the calculated sound power level for each new No. 1 transformer bank would be 84 dBA. Assuming a 10 dBA noise reduction at the perimeter block wall at 10 feet distance from the transformers, the calculated combined sound pressure level of the two transformer banks would be 70 dBA at the substation's perimeter. The closest residential receptor is located approximately at 3,320 feet from the proposed substation site. Using the same calculation methodology, the combined sound pressure level of the two transformer banks would be 19 dBA at this location. This 19 dBA noise level would be significantly lower than the existing background noise levels at that location.	Please revise Noise Analysis as appropriate based on the information provided in the comment.

Comment #	Section	Page	Comment	Suggested Revision
60	Chapter 4.13 Public Services and Utilities	4.13-14	Under the heading **Regional and Local**, please clarify that all references to local land use regulations are included for informational purposes only.	Please insert the following language under the heading **Regional and Local:** "CPUC General Order 131-D explains that local land use regulations would not apply to the Proposed Project. However the following are included for informational purposes only."
61	Chapter 4.14 Recreation	4.14-4	Under the heading **Regional and Local**, please clarify that all references to local land use regulations are included for informational purposes only.	Please insert the following language under the heading **Regional and Local:** "CPUC General Order 131-D explains that local land use regulations would not apply to the Proposed Project. However the following are included for informational purposes only."
62	Chapter 4.15 Transportation and Traffic	4.15-9	Under the heading **Regional and Local**, please clarify that all references to local land use regulations are included for informational purposes only.	Please insert the following language under the heading **Regional and Local:** "CPUC General Order 131-D explains that local land use regulations would not apply to the Proposed Project. However the following are included for informational purposes only."
63	Chapter 5 Comparison of Alternatives		Please refer to comments within the attached May 22, 2012 letter from SCE regarding revised telecommunications scope.	
64	Chapter 6 Cumulative Impacts	6-1	**Line 45:** Minor text revision to correct typo	Please revise as follows: This table does not include all projects that would contribute to cumulative impacts along with the proposed project; rather, it includes a number of concurrent projects in the area to demonstrate the scope and nature of development in ~~Riverside~~ Los Angeles County.

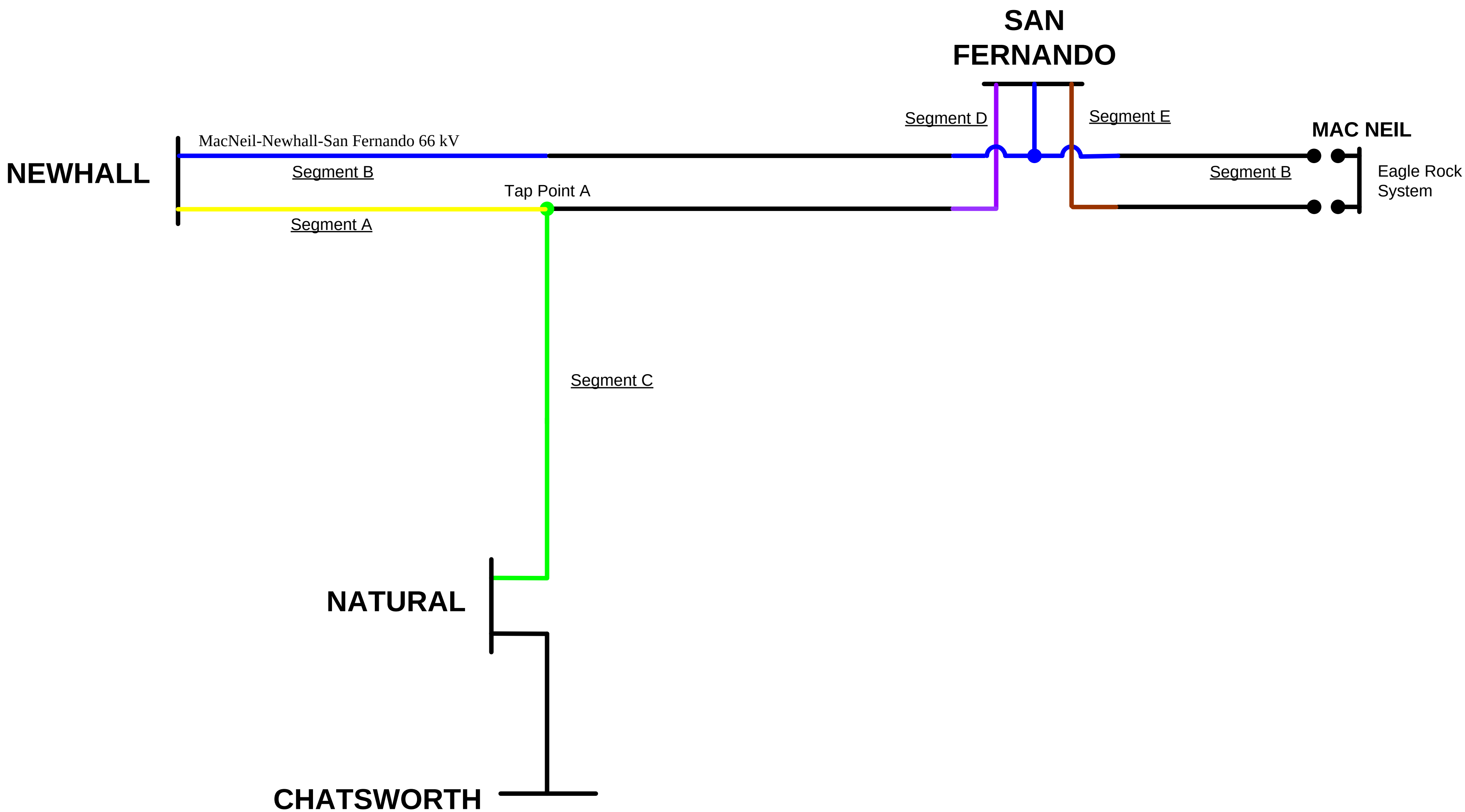
Comment #	Section	Page	Comment	Suggested Revision
65	Chapter 6 Cumulative Impacts	6-3	**Table 6-1:** Please note updated information for various projects listed in the table.	Please revise the "Environmental Review" and "Construction Schedule" columns for the following projects: Project A7 – Expansion of the landfill approved in 2009 (Cipley 2011). ~~CPUC~~ SCE Permit to Construct application for relocation of 66-kV subtransmission line ~~in progress.~~ anticipated to be filed at the CPUC by fall 2012. Project A8 – SCE would complete the Gavin Distribution Line Extension ~~prior to~~ separate from (and potentially prior to) starting construction of the proposed Natural Substation. and subject to the Gas Company granting SCE an easement pursuant to authorization under CPUC Code section 851. Project A9 – ~~Draft~~ Final Subsequent EIR issued in ~~May 2011~~ April 2012 by the South Coast Air Quality Management District. Project F3 – Draft EIR issued September 2011. Project anticipated to be under continued CPUC review through 2012. ~~Construction anticipated to start Spring 2012 and last up to 20 months (CPUC 2011).~~

Comment #	Section	Page	Comment	Suggested Revision
66	7.0 Mitigation Monitoring Plan	7-6, 7-7	**MM AQ-1**: Please note, SCE would prefer to have several options for the purchase of emission reduction credits, including the purchase of mobile source emission reduction credits (MSERCs) and Reclaim Trading Credits (RTCs). Furthermore the tracking of daily emissions based on equipment and vehicle usage is not feasible to implement in the field during construction. SCE will estimate credits based on forecasted emissions estimated at the time that the construction schedule and operating conditions are finalized.	Please revise as follows: The applicant and/or SCE will have several options for obtaining emission offset mitigation, including the purchase of Reclaim Trading Credits (RTCs) or Mobile Source Emission Reduction Credits (MSERCs). The applicant and/or SCE will purchase and submit the required RTCs or MSERCs to the SCAQMD prior to the start of project construction. ~~"The applicant will also track actual daily emissions during construction according to a monitoring plan that includes records of equipment and vehicle usage~~. The estimated credits will be based upon forecasted emissions submitted to the CPUC based on the anticipated construction schedule and operating conditions. Please revise other references to MM AQ-1 throughout document as appropriate.
67	7.0 Mitigation and Monitoring Plan	7-6	**APM AQ-7:** Please note, SCE will abide by all applicable air quality regulations, including SCAQMD Rule 403 which regulates track-out control for fugitive dust on paved roads.	SCE requests that APM AQ-7 be removed and the DEIR be updated as appropriate.

Comment #	Section	Page	Comment	Suggested Revision
68	7.0 Mitigation and Monitoring Plan	7-7	**MM AQ-2:** SCE suggests that additional language be added to MM AQ-2 to account for scenarios in which equipment meeting Tier 3 emission standards are not locally available.	Please revise as follows: All off-road diesel-powered construction equipment greater than 50 horsepower used during reconductoring of the 66-kV subtransmission line will meet Tier 3 offroad emissions standards <u>unless that such engine is not available for a particular item of equipment. In the event a Tier 3 engine is not available for any off-road engine larger than 50 hp, that engine shall have tailpipe retrofit controls that reduce exhaust emissions of NOx and PM to no more than Tier 3 emission levels. Tier 2 and Tier 1 engines will be allowed on a case-by-case basis only when the Applicant or SCE has documented that no Tier 3 equipment or emissions equivalent retrofit equipment is available for a particular equipment type that must be used to complete the Project's construction. This shall be documented with signed written correspondence by the appropriate construction contractor along with documented correspondence with at least two construction equipment rental firms. Equipment properly registered under and in compliance with CARB's Statewide Portable Equipment Registration Program is in compliance with this mitigation measure.</u> Please revise other references to MM AQ-2 throughout document as appropriate.

Comment #	Section	Page	Comment	Suggested Revision
69	7.0 Mitigation and Monitoring Plan	7-27, 7-28, 7-30	**MM CR-1, MM CR-2 and MM CR-6:** These Cultural Resources Mitigation Measures all refer to "construction permits." Please note, the CPUC will not be issuing "construction permits" nor will any other agency. If the intention is for the applicant and SCE to comply with the Mitigation Measures, as applicable, prior to construction, then SCE recommends the measures be clarified to remove the word "permit".	Please revise MM CR1, MM CR-2 and MM CR-6 as follows: "Prior to construction ~~permit issuance~~…" Please revise other references to these MMs throughout document as appropriate.
70	7.0 Mitigation and Monitoring Plan	7-44	**APM HZ-1:** Suggested revisions to clarify SCE's FAA consultation.	Please revise text as follows: **APM HZ-1: Federal Aviation Administration Consultation.** ~~SCE will consult with the Federal Aviation Administration as part of the design phase for the SCE-proposed project components to ensure that elevated structures such as TSPswill not pose a hazard for air traffic.~~ SCE would file the necessary FAA Form 7460 for structures (poles/towers/conductors) that exceed notification requirements outlined in FAA Part 77. SCE would file the form upon completion of final engineering and prior to construction per FAA Part 77. All FAA recommendations, including the marking of conductor and installation of warning lights on TSPs will be implemented into the design of the project as appropriate. Please revise other reference to APM HZ-1 throughout document as appropriate.

Comment #	Section	Page	Comment	Suggested Revision
71	7.0 Mitigation and Monitoring Plan	7-50	**MM HZ-2:** Please note, the CPUC does not have the regulatory authority to require local Fire Department review of SCE's fire management information.	Please revise as follows: **MM HZ-2: Fire Department Review and Coordination.** Prior to construction of the proposed project components, the applicant and SCE will coordinate with CAL FIRE, the City of Los Angeles Fire Department, and the Los Angeles County and Ventura County Fire Departments (Fire Departments) according to the location of the proposed project components, ~~to the satisfaction of the lead agency~~………. ~~The Fire Departments will review the applicant and SCE's fire management information prior to construction of the proposed project components.~~ Please revise other references to MM HZ-2 throughout document as appropriate.
72	Chapter 7 Mitigation Monitoring Plan	7-54	**APM NS-3:** SCE recommends referring to "property owners" rather than "sensitive receptors"; consistent with the CPUC's standard noticing procedures. Please note that SCE would implement phased noticing to coincide with the construction schedule.	Please revise as follows: At least two weeks prior to construction, the applicant and SCE will notify all ~~sensitive receptors~~ property owners within 300 feet of construction ~~activities of the potential to experience significant noise levels during construction.~~" Please revise other references to APM NS-3 throughout document as appropriate.



New 66 kV lines formed after Natural is constructed:

Natural – Newhall - San Fernando 66 kV
Chatsworth – Natural 66 kV
MacNeil – San Fernando 66 kV

No Change 66 kV line:

Mac Neil-Newhall- San Fernando

Natural Substation Single Line Diagram Proposed Line Data
SOUTHERN CALIFORNIA EDISON An EDISON INTERNATIONAL Company — Southern California Edison Field Engineering - Northern

SCE Draft Language for San Fernando to Sunshine Fiber Optic Telecommunications Route

"Telecommunications Route #4"

May 22, 2012

Three telecommunications routes are discussed in the DEIR. However, in order for SCE to effectively interconnect the Natural Substation to the SCE system and provide the required subtransmission line protection, SCE has determined that the fiber optic ring associated with the Proposed Project needs to include an additional 5.5 mile fiber optic cable segment (to be called Telecommunications Route #4) from SCE's San Fernando Substation to the entrance to the Sunshine Canyon Landfill in Sylmar. A description of the route and a map are attached.

Telecommunications Route #4 is anticipated to use existing[1] overhead SCE and Los Angeles Water & Power (LADWP) wood distribution poles and LADWP subtransmission wood poles and require short spans of underground construction. One new pole is anticipated to be required at a location near Sepulveda Boulevard and San Fernando Road.

SCE anticipates that Telecommunications Route #4 construction requirements and impacts will be generally similar to those discussed in the DEIR for Telecommunications Segment #3, including Sections 2.2.9.1 (New Structures and Rights-of-Way), 2.2.10 (Access Roads), 2.3.1 (Construction Schedule, Personnel and Equipment), 2.3.3 (General Construction Methods and Materials), 2.3.10 (Reconductoring, Fiber Optic Cable Installation, and Structure Replacement), 2.3.1.3 (Staging Areas), 2.4.3 (Natural Substation, 66-kV Subtransmission Line, and Fiber Optic Cable Operations and Maintenance), and 2.5 (Plans and Applicant Proposed Measures).

In addition, please note that the majority of the route for Telecommunications Route #4 has been evaluated by the CPUC in the DEIR due to the fact it follows a large portion of the same route as the DEIR's proposed Routing Alternative A (Sylmar Substation to San Fernando Substation), which the Draft EIR recommends as the Environmentally Superior Alternative. Because Routing Alternative A overlaps a significant portion of Telecommunications Route #4, Routing Alternative A would conflict with SCE's ability to maintain required diverse telecommunications paths.

Telecommunications Route #4 Description (please refer to enclosed map):

This route would extend approximately 5.5 miles from the San Fernando Substation to the entrance of the Sunshine Canyon Landfill as follows:

1. Within San Fernando Substation, the fiber optic cable would be installed within new underground conduit for approximately 170 feet to a pole inside of the substation, rise up and continue overhead to San Fernando Mission Boulevard.

[1] As discussed in the Draft EIR regarding Telecommunications Routes #2 and #3, while SCE anticipates that existing overhead poles would be used for Telecommunications Route #4, SCE would not be able to determine if any poles require replacement in order to attach the new fiber optic cables until final engineering and windloading tests have been completed.

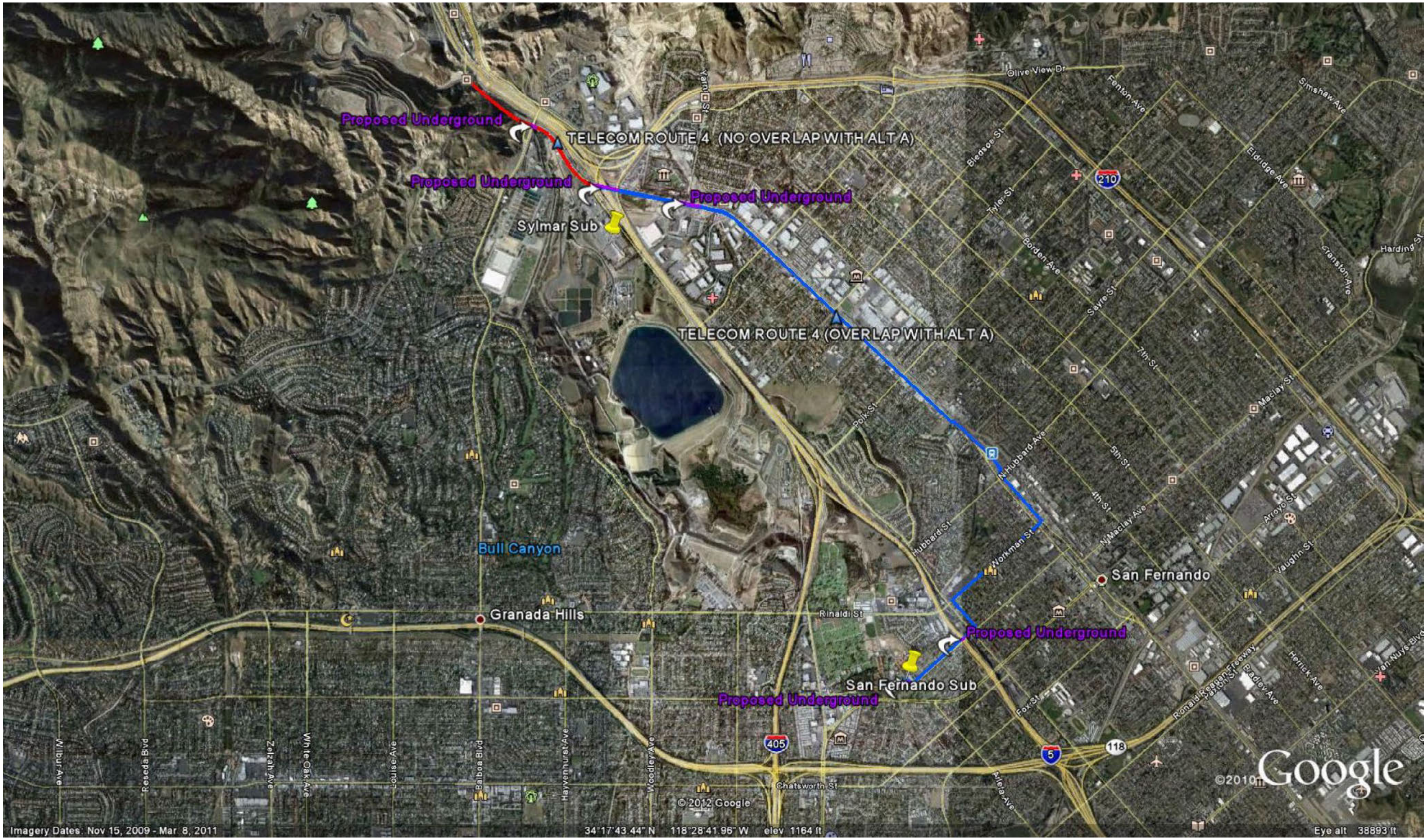
2. The cable would be installed on the north side of San Fernando Mission Boulevard heading northeast for approximately 2,000 feet to an SCE pole where it would transition down the pole and be installed in new underground conduit under the 5 Freeway for approximately 180 feet to an SCE pole on the northeast side of the 5 Freeway.

3. After transitioning to an overhead configuration on the northeast side of the 5 Freeway, the cable would be installed on existing overhead LADWP and SCE poles along the north side of San Fernando Mission Boulevard for approximately 450 feet to an alley east of and parallel to Laurel Canyon Boulevard. The route would proceed north along the west side of the alley where the fiber optic cable would be installed on existing overhead SCE wood poles for approximately 1,100 feet to Workman Street. The fiber optic cable would continue overhead on SCE wood poles east on the north side of Workman Street for approximately 3,700 feet to Truman Street.

4. At Truman Street, the route would turn north and continue northwest on the west side of Truman Street on both SCE and LADWP wood poles (note Truman Street merges into and becomes San Fernando Road) for approximately 14,500 feet to a LADWP pole where it would transition down the pole and be installed in new underground conduit proceeding northwest along San Fernando Road for approximately 750 feet to another LADWP pole. The route would transition to an overhead configuration for approximately 1,700 feet to an LADWP pole on the east side of the 5 Freeway. The cable would transition down the pole and be installed in new underground conduit along San Fernando Road under the 5 Freeway for approximately 700 feet to the southwest corner of the intersection of Sepulveda Boulevard and San Fernando Road. SCE would set a new wood riser pole to enable the fiber optic cable to transition to an overhead configuration and the route proceed northwesterly along the west side of San Fernando Road on LADWP poles for approximately 2,500 feet to the Balboa Boulevard/5 Freeway overpass.

5. At the south side of the Balboa Boulevard/5 Freeway overpass, the cable would transition down an existing LADWP pole and be installed in new underground conduit going north for approximately 260 feet to an existing LADWP pole on the north side of the Balboa Boulevard/5 Freeway overpass. The route would transition to an overhead configuration on existing LADWP subtransmission poles along the west side of San Fernando Road for approximately 2,300 feet to an LADWP pole at the entrance to the Sunshine Canyon Landfill at the northwest corner of Sunshine Canyon Road and San Fernando Road. The cable would transition to an underground configuration and connect to conduits constructed as part of the proposed Sunshine Gas Producers Renewable Energy Project within the Sunshine Canyon Landfill.[2]

[2] The Sunshine Gas Producers Renewable Energy Project was recently approved by the South Coast Air Quality Management District (SCAQMD) in April 2012 (Supplemental Environmental Impact Report (SEIR) (State Clearinghouse No. 92041053))



Proposed Underground
TELECOM ROUTE 4 (NO OVERLAP WITH ALT A)
Proposed Underground
Proposed Underground
Sylmar Sub
TELECOM ROUTE 4 (OVERLAP WITH ALT A)
Bull Canyon
Granada Hills
San Fernando
Proposed Underground
San Fernando Sub
Proposed Underground
Olive View Dr
Rinaldi St
Chatsworth St
Balboa Blvd
Reseda Blvd
Zelzah Ave
White Oak Ave
Louise Ave
Woodley Ave
Haskell Ave
Workman St
Hubbard St
N Hubbard Ave
N Maclay Ave
Maclay St
Eldridge Ave
Harding St
Ronald Reagan Freeway
Herrick Ave
Van Nuys Blvd
Arroyo St
Vaughn St
Sayre St
Borden Ave
Tyler St
Bledsoe St
Polk St
Yarnell St
Fenton Ave
Glenoaks Blvd
Wilbur Ave
Haynenhurst Ave
4th St
5th St
7th St
Fox St
Arleta Ave
210
405
5
118
© 2012 Google
©2010
Google
Imagery Dates: Nov 15, 2009 - Mar 8, 2011
34°17'43.44" N 118°28'41.96" W elev 1164 ft
Eye alt 38893 ft

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CHATSWORTH NEIGHBORHOOD COUNCIL
P.O. Box 3395, Chatsworth, CA 91313-3395
Voice: (818) 464-3511 Fax: (818) 464-3585
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LAND USE COMMITTEE

May 21, 2012

Aliso Canyon Turbine Replacement Project
505 Sansome Street, Suite 300
San Francisco, CA 94111

RECEIVED MAY 2 3 2012

Comments on Draft Environmental Impact Report
California SCH #2010101075
Application No. A.09-09-020

Gentlemen and Ladies,

The Land Use Committee of the Chatsworth Neighborhood Council hereby submits its comments on the above-referenced application. The timing of the entire Council's meetings will not permit this letter to be reviewed by the full Council prior to the comment letter deadline. However, based on past recommendations made by the Land Use Committee, it is likely this letter will be adopted by the full Neighborhood Council at its next Board meeting in the first week of June, 2012.

Our primary concerns relate to fire and to cultural resources. With respect to fire hazards, it is believed that the purpose of an EIR is significantly circumvented, and the result may be so impaired in result that it may become invalid, where a significant concern by the community about fire hazards is simply not addressed.

A disclosure as to the distance that would be seriously damaged in the event of a catastrophic fire event that ignites the storage area should be disclosed. Damage distances projected should include disclosure for catastrophic effect (requiring rebuilding of structures), significant damage (requiring repairs, but not expected to cause a home or other structure to become "red-tagged"), minor damage, and no damage. These statistics should be presented for the existing storage capacity, and also for the proposed increased storage capacity (an approximately 50% increase in phase 1). If additional storage capacity is projected in any other phase, similar data should be presented for those increases, so the cumulative effect of the project can be considered in the Draft Environmental Impact Report.

Depending on the results of the above disclosure, additional alternatives for a storage facility to be established in a low population area many be indicated, and if applicable, should be considered.

With respect to mitigation for fire hazards, we believe the City of Los Angeles Fire Department should inspect for hazardous conditions, along power lines and at the storage area, in addition to the internal sources and reliance on rules outlined in the draft EIR. If a jurisdictional issue causes this proposal to be infeasible, then the County of Los Angeles Fire Department should provide a similar inspection service.

Additionally, an internal position should be established for a fire safety officer, who is responsible for patrolling power lines and ensuring appropriate brush clearance and other appropriate fire prevention policies are implemented and followed.

Concerns about fire are valid based on the history of the area which is prone to earthquakes and also wildfires. This history was disclosed in the draft Environmental Impact report. The community has seen how a natural disaster such as the "Northridge" earthquake in 1994 caused a major roadway, Balboa Blvd., to erupt into a giant inferno; the Sesnon fire has been blamed on downed lines associated with delivery of power to this facility. Because the site is near to a major population area, and has known fire risks, extra monitoring by an outside agency, on an ongoing basis is appropriate.

Biological and cultural resources. Various members of the community have participated in review of a nearby residential project with similar topography, a Los Angeles county project called Deerlake Highlands. Based on the number of plants at this nearby site (north of the 118 freeway, between Topanga Canyon and Canoga), it seems likely the actual number of plummer mariposa lily plants is far in excess of the two plants noted. Additionally, these plants do not bloom each year. Mitigation for these plants at the other site involved moving affected plants offsite. Additional review for both of the lilies listed in the Draft Environmental Impact
Report likely is warranted. If the plants are in an area that is significantly affected by the project, additional measures to safeguard the plants may be warranted and should be investigated.

Cultural resources are important to preserve; the list of archaeological items noted is extensive and this area was known to be an area used extensively by the Native Americans. We have attached a memo by professional archaeologist Albert Knight who is quite familiar with this area, and incorporate his comments on this project as our own, as he is much more aware of issues in this area than we are. We recommend that a professional archaeologist, and/or native American monitor, be on site prior to the beginning of the project to review the cultural resources, and be present at all times to monitor activity that involves grading and soil disturbance, as the project is underway. This will provide better opportunity to protect any sites and/or resources that may be found; surface level reviews are not able to disclose what is underground and once destroyed, these items are forever lost, so monitoring activities involving soil disturbance is very important.

Thank you for this opportunity to comment on this project.

Sincerely,

Linda van der Valk

Linda van der Valk
Chair, Land Use Committee
Chatsworth Neighborhood Council

To:	California Public Utilities Commission and Whom it May Concern
From:	Albert Knight Board of Directors Santa Susana Mountains Park Association
Concerning:	Southern California Gas Company Aliso Canyon Turbine Replacement Project
Date:	May 5, 2012

Friends,

I would like to thank the California PUC for the opportunity to comment on the proposed Southern California Gas Company Aliso Canyon Turbine Replacement Project. I would first like to note that I am a professional archaeologist with approximately 30 years experience in Southern California, I am an Anthropology Department at the Santa Barbara Museum of Natural History, and I am currently employed by a private Cultural Resources Management company, which has its main office in Orange County, California.

The area where the proposed project is to take place is quite familiar to me and, as shown by the background research that has been performed for the project, the entire ROW of the project hosts numerous archaeological sites, both prehistoric and historic. There are so many known archaeological sites that I can make my comments quite brief, and simply state that the entire ROW should be considered highly sensitive. All work that requires soil to be moved, including any and all road grading, needs to be carefully monitored by qualified archaeologists, with local experience, as well as by qualified Native Americans, again with local experience.

I am especially concerned about the main facility on the north side of the San Fernando Valley, about the entire Chatsworth area (in the NW SFV), and about the Simi Hills area. In Los Angeles County, the area of the Chatsworth Academy, and Santa Susana Pass State Historic Park are especially sensitive, as are Sage Ranch and the former Santa Susana Field Lab, in Ventura County.

Known archaeological sites should be visited by the monitors PREVIOUS to work taking place in the areas where the sites are located, so that the monitors are familiar with the resource(s), and any and all sites in or adjacent to work areas should be clearly flagged for avoidance. Also, everyone that will be working on the project should receive sensitivity training, so they know what to expect in the field. Project personal need to understand that if previously known, or previously unknown archaeological resources are encountered during the project, work in that (those) areas need to be temporarily halted, so the resources can be examined and evaluated, before work resumes.

Although the project has the potential to disturb numerous archaeological sites, it also has the potential to add to the body of knowledge concerning the area where the project will take place. If all project personal receive proper training and follow the instructions that they are given, the project should be able to proceed without causing any negative impacts to the resources that exist in the project area.

Again, thank you for the opportunity to comment on the proposed project.

Albert Knight

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Southern California Gas Company

A Sempra Energy utility®

Albert J. Garcia
Senior Counsel

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RECEIVED MAY 2 3 2012

May 22, 2012

Aliso Canyon Turbine Replacement Project
505 Sansome Street, Suite 300
San Francisco, CA 94111

**Re: Aliso Canyon Turbine Replacement Project
Draft Environmental Impact Report (California SCH 2010101075)**

Dear Sir/Madam:

Southern California Gas Company ("SoCalGas") appreciates the opportunity to review and comment on the Draft Environmental Impact Report ("DEIR") for the Aliso Canyon Turbine Replacement Project ("Project"). SoCalGas supports the finding by the preparers of the DEIR that SoCalGas' replacement of its obsolete gas powered turbines with, new more efficient electric driven compressors is the Environmentally Superior Project (as defined in the DEIR). This letter, together with the tables and exhibits attached hereto contain the comments of SoCalGas to the DEIR.

While the tables and exhibits provide most of SoCalGas' comments, this letter emphasizes and elaborates on several comments SoCalGas has regarding the DEIR.

1. **The Environmentally Superior Alternative Has a Greater Degree of "Environmental Superiority" Than is Otherwise Described in the DEIR's Comparison of Alternatives Section**

Section 5 of the DEIR, Comparison of Alternatives, correctly identifies SoCalGas' proposed project, which replaces the obsolete gas turbine driven compressor system with electric driven compressors, as the "Environmentally Superior Alternative" (see, DEIR p. 5-13). In addition, the DEIR correctly points out that resource areas affected by long-term impacts should generally be given more weight in comparison to resource areas that may be impacted by short-term or temporary impacts when deciding on the environmentally superior alternative.

However, SoCalGas' review of the DEIR's analysis of alternatives contained in Section 5.2 has found that in many of the resource areas, the DEIR analysis incorrectly concluded in favor of the Design Alternative. For example, the DEIR presumes that in the event outside contractors were used for construction, those workers would need to relocate to the vicinity of

Southern California Gas Company
A Sempra Energy utility®

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May 22, 2012

Aliso Canyon Turbine Replacement Project
505 Sansome Street, Suite 300
San Francisco, CA 94111

Re: Aliso Canyon Turbine Replacement Project
Draft Environmental Impact Report (California SCH 2010101075)

Dear Sir/Madam:

Southern California Gas Company ("SoCalGas") appreciates the opportunity to review and comment on the Draft Environmental Impact Report ("DEIR") for the Aliso Canyon Turbine Replacement Project ("Project"). SoCalGas supports the finding by the preparers of the DEIR that SoCalGas' replacement of its obsolete gas powered turbines with, new more efficient electric driven compressors is the Environmentally Superior Project (as defined in the DEIR). This letter, together with the tables and exhibits attached hereto contain the comments of SoCalGas to the DEIR.

While the tables and exhibits provide most of SoCalGas' comments, this letter emphasizes and elaborates on several comments SoCalGas has regarding the DEIR.

1. **The Environmentally Superior Alternative Has a Greater Degree of "Environmental Superiority" Than is Otherwise Described in the DEIR's Comparison of Alternatives Section**

Section 5 of the DEIR, Comparison of Alternatives, correctly identifies SoCalGas' proposed project, which replaces the obsolete gas turbine driven compressor system with electric driven compressors, as the "Environmentally Superior Alternative" (see, DEIR p. 5-13). In addition, the DEIR correctly points out that resource areas affected by long-term impacts should generally be given more weight in comparison to resource areas that may be impacted by short-term or temporary impacts when deciding on the environmentally superior alternative.

However, SoCalGas' review of the DEIR's analysis of alternatives contained in Section 5.2 has found that in many of the resource areas, the DEIR analysis incorrectly concluded in favor of the Design Alternative. For example, the DEIR presumes that in the event outside contractors were used for construction, those workers would need to relocate to the vicinity of the proposed project (DEIR p. 4.14-5). If those limited number of workers moved to the vicinity, the workers would necessarily cause impacts to recreation. Nonetheless, even assuming that all the Project's construction workers had to move to the vicinity of the proposed project, the large number of parks and recreational resources within the vicinity of the Project can absorb such workers without impact. In fact, the DEIR finds almost 40 parks and other recreational areas within the vicinity of the project. These parks and recreational areas, when combined provide thousands of acres of recreational areas and currently serve hundreds of thousands of residents in Los Angeles and Ventura counties. The addition of a few dozen additional workers, who may occasionally and individually use such resources at various times and days, is literally, insignificant.

Indeed, a CEQA criterion for impacts on recreation is not simply: "would the project increase the use of existing neighborhood or regional parks for other recreational facilities" (see, CEQA Guidelines, Appendix G). Instead, the criterion includes the modifier "...such that substantial physical deterioration of the facility would occur or be accelerated." It is unfathomable that the addition of the amount of workers needed for this project could ever reach a level of impact needed to get to a level of "less than significant" (*id.*) As such, the DEIR should conclude that there is "no impact" to recreation resources. Yet, finding that proposed project has "less than significant" impact to recreation resources causes the Design Alternative to become inappropriately categorized as "Environmentally Superior" for this resource area (DEIR p. 5-3, 5-8), because the DEIR presumes all workers in this scenario will be local when constructing the Design Alternative.

A "less than significant" finding is particularly problematic because all evidence dictates that the proposed project should be considered "equal to" the Design Alternative with regards to impacts to recreation. The proposed project and the Design Alternative should be equal because under either scenario the limited number of workers needed for either the proposed project or the Design Alternative would have no discernible impact to the thousands of acres of recreation space in the vicinity of the Project. To extent the workers moved temporarily, it would be to pre-existing housing, presumably vacated by persons who have moved away from the area. The end result would be no net increase in population to the vicinity, and no resulting net potential increase in park use. As a result, both the proposed project and the Design Alternative should be categorized as "no impact."

The above example is but one of several instances where a more robust consideration of alternatives analysis results in finding that the proposed project is "equal to" or "environmentally superior" to the Design Alternative in many other resource areas beyond long term air quality impacts. In fact, our review and analysis of the materials contained in the DEIR shows that the proposed project would be environmentally superior or similar in comparison to the Design Alternative with regard to several resource areas, resulting in substantially reduced or similar impacts for the following resource areas:

- Agriculture and Forestry Resources
- Air Quality (operations)

- Geology, Soils, and Mineral Resources
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Land Use and Planning
- Population and Housing
- Recreation

The attached exhibit, together with the attached Table 5.1, describe and comment on this topic in greater detail. Accordingly, we ask that you review our findings and revise the DEIR to appropriately address the analysis in the Comparison of Alternatives section.

2. Proposal for Replacement Air Quality Mitigation Measure

The DEIR finds that construction activities associated with the Project could generate NOx emissions that exceed applicable thresholds. As a result, SoCalGas is required to mitigate emissions to a less than significant level. To do so, SoCalGas had originally proposed that it could mitigate NOx through the purchase of Regional Clean Air Incentive Market Trading Credits (RTC's) for every pound of NOx emissions in excess of the South Coast Air Quality Management District (SCAQMD) daily significance threshold of 100 pounds per day. This mitigation measure has been incorporated into the DEIR as MM AQ-1 (see, DEIR p. 4.3-13). In lieu of the mitigation measure found in AQ-1, SoCalGas respectfully requests that AQ-1 be modified to instead require that SoCalGas purchase Mobile Source Emission Reduction Credits (MSERCs) to mitigate NOx emissions during construction activities to a level of less than significant.

SoCalGas believes that the purchase of MSERCs instead of RTCs is a more appropriate option for one key reason: Almost all of the emissions generated during the construction will be coming from mobile sources such as trucks, cranes and other on-road and off-road vehicles. Furthermore, SCAQMD and California Air Resources Board (CARB) encourage the acquisition of MSERCs as an appropriate way to mitigate mobile source emissions.[1] These credits are created by purchasing and deploying lower-emitting vehicles, thereby reducing mobile source emissions. Therefore, SoCalGas recommends that MSERCs, instead of RTC's, be acquired to mitigate these mobile source emissions. In all cases where mitigation measures were required, SoCalGas has always used mitigation measures which are localized and contemporaneous. For these reasons, SoCalGas requests a modification of MM-AQ1 in accordance with its recommendations above and those contained in comment 11 of the attached table.

3. Some Applicant Proposed Measures (APM's) Have Been Modified in a Manner Not Proposed by the Applicant.

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[1] See, e.g., SCAQMD Regulation XVI, SCAQMD Rule 2202.

The Proponent's Environmental Assessment ("PEA") that was submitted as part of the application to amend the Certificate of Public Convenience and Necessity ("CPCN") for the Project proposed "various design features or APM's… to be incorporated into the project design to avoid and minimize impacts to various environmental resource areas" (see PEA p. 5-3).[2] After SoCalGas submitted the CPCN, several of these APM's were later modified and revised by SoCalGas as a result of various data requests propounded on SoCalGas by the preparers of the DEIR. However many of APM's in the DEIR were not revised in accordance with the data request revisions provided by SoCalGas (the "Applicant").[3] Instead, the APM's have been revised in the DEIR independent of SoCalGas' comments. As such, they are no longer "Applicant Proposed Measures." In those instances where the Commission has chosen to re-write SoCalGas' APM's in a manner not in accordance with SoCalGas' APM's (as identified in the attached table), SoCalGas respectfully asks that those APM's instead be revised to become mitigation measures under the Mitigation and Monitoring Program.

4. DEIR Indicates that the SoCalGas Should Potentially Secure Discretionary Approvals in Contravention of the Commission's Preemptive Jurisdiction.

As noted in the DEIR, the Commission is vested with jurisdiction over the project (see, DEIR p. 1-4). To this end, local agencies are pre-empted from exercising discretionary permitting authority over the Proposed Project. Because of this, SoCalGas should not be required to secure separate discretionary permits from local city or county agencies prior to construction. Such permits contravene the authority that has been placed in the Commission's hands pursuant to Article XII of the California Constitution. Further, such permits could have the effect of potentially modifying or precluding construction of the Project after it has been approved by the CPUC. Yet, the DEIR, in Applicant Proposed Measure BR-8 (which is another APM that was revised in the DEIR in a manner inconsistent with SoCalGas' comments), requires SoCalGas to submit an Oak Tree Application to Los Angeles County, and thereafter obtain an Oak Tree Permit prior to construction (see, DEIR p. ES-21). Los Angeles County's Oak Tree Permit, while containing some non-discretionary procedures to securing a permit, also contains discretionary permitting elements to it. As a consequence, the APM, as written could inadvertently require SoCalGas to proceed with a discretionary permitting that contravenes the Commission's authority.

As an alternative to requiring that SoCalGas "submit an Oak Tree Permit Application (including an Oak Tree Report) to Los Angeles County and obtain an Oak Tree Permit prior to construction," the specific requirements that would otherwise be included in the discretionary permit should instead be incorporated into the Final EIR as a mitigation measure. And at the very minimum, the APM should be revised to address that SoCalGas would be responsible for securing non-discretionary permits related to oak tree removal or modifications. It should be

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[2] Commission Application (A.) 09-09-020

[3] See SoCalGas December 1, 2011 response to Commission regarding Applicant Proposed Measures.

noted that APM BR-8 already requires that the SoCalGas follow any specific measures and/or agency guidance. It should also be noted that SoCalGas is not in any way opposed to undertaking such measures. SoCalGas are only commenting on this APM to the extent it requires SoCalGas to secure discretionary permits from the County of Los Angeles, or any other local agency.

5. Clarification Regarding Commission Approved Items in DEIR

SoCalGas notes that in numerous sections of the DEIR, and in particular the mitigation measures, the term "Commission-approved" or "CPUC-approved" is used when referring to consultants that must be approved by the Commission to monitor the project, and subsequent reports required by various mitigation measures. SoCalGas respectfully asks that the Final EIR make clear that the use of the terms "Commission-approved" or "CPUC-approved" in the contexts described above do not intend to indicate that CPUC authority must be granted by the approval of a Commissioner or by the full Commission, but rather by CPUC staff entrusted with monitoring compliance with the requirements imposed in the DEIR. As reflected on page ES-3 of the DEIR, "if the CPUC approves the project, the CPUC staff would closely monitor the applicant's compliance with requirements imposed by the mitigation measures." (See DEIR p. ES-3, and p. 7-1).

If you have any questions regarding these comments, please feel free to contact me.

Sincerely,

Albert J. Garcia
Senior Counsel

AJG:dnz
Enclosures (See list on following page)

List of Enclosures:

1. Appendix A – Master Comment Table

   i. Exhibit A-1: Revised Tables ES-1 and 7-1

   ii. Exhibit A-2: Habitat Evaluation for Breeding Least Bell's Vireo and Southwestern Willow Flycatcher

   iii. Exhibit A-3: Revised Figures 2-3 and 2-4

   iv. Exhibit A-4: Revised Table 2-7 Land Disturbance

   v. Exhibit A-5: Revised Noise Assessment for Fiber Optic Installation/Telecom Construction Activities

   vi. Exhibit A-6: Revised Table 5.1 Comparison of Alternatives to the Proposed Project (Adverse Environmental Impacts by Resource Area)

APPENDIX A

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APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
1	Executive Summary	ES-1	5-6	"Southern California Gas Company (the applicant) provides natural gas services to approximately six million customers in Southern California, and operates four storage fields to meet customer demand."	Revise as follows: "Southern California Gas Company (the applicant) provides natural gas services to approximately ~~six~~ 21 million customers in Southern California,…"	Under the heading **Introduction and Project Overview**, the number of customers receiving service from Southern California Gas Company is inaccurate and should be updated to reflect service area.
2	Executive Summary	ES-1	37	"The proposed compressors would be capable of increasing the storage field's natural-gas injection capacity"	Revise as follows: "The proposed ~~compressors~~ project would be capable of increasing the storage field's natural-gas injection capacity"	Under the heading **Settlement Agreement,** the 2nd paragraph should be revised for accuracy.
3	Executive Summary	ES-1	42	"The proposed compressors would also improve natural gas service reliability and efficiency"	Revise as follows: "The proposed project ~~compressors~~ would also improve natural gas service reliability and efficiency"	Under the heading **Settlement Agreement,** the 3rd paragraph should be revised for accuracy. The combined project would improve reliability and efficiency, not just the compressors. This is a **GLOBAL COMMENT**
4	Executive Summary	ES-1	43-45	"Gas turbines alter compressor speed by varying fuel input. The new variable-speed motors that would be installed as part of the proposed project have the ability to alter compressor speed as gas pressure ratios and flow rates change more precisely than the existing gas turbines. Hence, the new motors would be capable of.."	Revise as follows: "Gas turbines alter compressor speed by varying fuel input. The new motor-driven variable-speed ~~motors~~ compressors that would be installed as part of the proposed project have the ability to alter compressor speed as gas pressure ratios and flow rates change more precisely than the existing gas turbines. Hence, the new motors would be capable of.."	Under the heading **Settlement Agreement,** the 3rd paragraph should be revised for accuracy. The combined project would improve reliability and efficiency, not just the compressors. This is a **GLOBAL COMMENT**
5	Executive Summary	Figure E-1	n/a		Revise Figure E-1 per comments provided.	On **Figure E-1 Vicinity Map and Overview of the Proposed Project**, the legend indicates that Natural Substation (Proposed) is shown as a yellow triangle on the map. However, the San Fernando Substation is also presented as a yellow triangle. The legend should be updated to accurately present different SCE substations.

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
6	Executive Summary	ES-3	18	"The construction of the proposed project would expand the storage field's natural-gas injection capacity from approximately 300 million cubic feet (cf) per day to approximately 450 million cf per day."	Revise as follows: "The construction of the proposed project would expand the storage field's natural-gas injection capacity from approximately 300 million standard cubic feet (scf) per day to approximately 450 million scf per day."	Under the heading **Description of the Proposed Project**, the units used to describe the natural-gas injection capacity, cubic feet, are inaccurate and should be revised to standard cubic feet. This is a **GLOBAL COMMENT**
7	Executive Summary	ES-3	36 – Footnote 2	"The initial build of the Natural Substation would include the installation of two 28 MVA, 66/12-kV transformers. Space would be available for the installation of up to two additional 28 MVA transformers (for a total of 112 MVA) if needed in the future. SCE estimates that 50 megawatts of electricity would be required to meet the increase in electrical demand from operation of the proposed electric–driven compressors."	Revise as follows: "The initial build of the Natural Substation would include the installation of two 28 MVA, 66/12-kV transformers. Space would be available for the installation of up to two additional 28 MVA transformers as spares in the event of long term transformer delivery delays ~~(for a total of 112 56 MVA) if needed in the future~~. SCE estimates that 50 megawatts of electricity would be required to meet the increase in electrical demand from operation of the proposed electric–driven compressors."	Footnote 2 - Modify per latest information provided to CPUC.
8	Executive Summary	ES-4	3-4	• "Install equipment at SCE's Newhall, Chatsworth, and San Fernando Substations in the proposed project area;…"	Revise as follows: "**Description of the Proposed Project** • Install equipment at SCE's Newhall Substation, in the City of Santa Clarita, Chatsworth Substation, in the County of Ventura, and San Fernando Substation~~s~~ in the City of Los Angeles ~~proposed project area~~; and,"	Under the heading **Description of the Proposed Project**, the term "project area" as used in this context, is undefined and ambiguous. This is **GLOBAL COMMENT** throughout the document. Ensure that the terms "proposed project area" or "project site' are being used consistently and appropriately.
9	Executive Summary	ES-4	23-38	"Areas of Potential Controversy"	Revise as follows: "Areas of Potential ~~Controversy~~ Concern"	Under the heading **Areas of Potential Controversy** should be revised to Areas of Potential Concern. The scoping comments do not warrant calling out most of the resources areas as

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						areas of "controversy"; a term that implies disputes, arguments or debates.
10	Executive Summary	ES-4	44-45	"The evaluation of potential project impacts resulted in the determination that the following environmental impacts would be less than significant with or without mitigation:"	Revise as follows: "The evaluation of potential project impacts resulted in the determination that <u>there would be no impacts for </u>the following ~~environmental impacts~~ <u>resource areas:</u> • <u>Agriculture and Forestry Resources</u> • <u>Land Use and Planning</u> • <u>Population and Housing</u> • <u>Recreation</u> <u>The evaluation of potential project impacts resulted in the determination that impacts would be less than significant without mitigation for the following resource areas</u>:" • <u>Aesthetics</u> • <u>Geology, Soils, and Mineral Resources</u> • <u>Greenhouse Gas Emissions</u> • <u>Hydrology and Water Quality</u> • <u>Public Services and Utilities</u> • <u>Transportation and Traffic</u> <u>The evaluation of potential project impacts resulted in the determination that impacts </u>would be less than significant <u>with mitigation for the following resource areas:</u> • <u>Air Quality</u> • <u>Biological Resources</u> • <u>Cultural Resources</u> • <u>Hazards and Hazardous Materials</u> • <u>Noise</u>	Under the heading **Less than Significant Impacts (Including Significant Impacts that Can Be Mitigated),** the text should be revised to distinguish between the following impact determinations for construction and operation: no impact, less than significant, and less than significant with mitigation.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
11	Executive Summary	ES-9	Table ES-1, MM AQ-1	**"MM AQ-1: Oxides of Nitrogen (NOx) Credits.** The emissions of NOx due to construction of the proposed project will be mitigated through the purchase of Regional Clean Air Incentive Market Trading Credits (RTCs) for every pound of NOx emissions in excess of the SCAQMD daily significance threshold of 100 pounds per day. The total amount of NOx RTCs to be purchased will be calculated when the construction schedule and operating conditions are finalized. The applicant will purchase and submit the required RTCs to the SCAQMD prior to the start of project construction. The applicant will also track actual daily emissions during construction according to a monitoring plan that includes records of equipment and vehicle usage."	Revise as follows: **"MM AQ-1: Oxides of Nitrogen (NOx) Credits.** The emissions of NOx due to construction of the proposed project will be mitigated through the purchase of ~~Regional Clean Air Incentive Market Trading~~ Mobile Source Emission Reduction Credits (~~RT~~MSERCs) for every pound of NOx emissions in excess of the SCAQMD daily significance threshold of 100 pounds per day. The total amount of NOx ~~RTCs~~MSERCs to be purchased will be calculated when the construction schedule and operating conditions are finalized. The applicant will purchase ~~and submit~~ the required ~~RTCs~~ MSERCs ~~to the SCAQMD~~ prior to the start of project construction. The applicant will also track actual daily emissions during construction according to a monitoring plan that includes records of equipment and vehicle usage."	In **Table ES-1**, MM AQ-1 should be revised, as described in the accompanying cover letter: MSERCs are more appropriate because construction emissions will primarily be generated from mobile sources such as trucks, cranes and other on-road and off-road vehicles. These credits are created by purchasing and deploying lower-emitting vehicles, thereby reducing mobile source emissions. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
12	Executive Summary	ES-21	n/a	"….surveys for least Bell's vireo and southwestern willow flycatcher in areas of suitable or potentially suitable habitat…"	Revise as follows: "….surveys for least Bell's vireo and southwestern willow flycatcher in areas of suitable ~~or potentially suitable~~ habitat…"	Under the heading **MM BR-8 Pre-Construction Surveys for Least Bell's Vireo and Southwestern Willow Flycatcher**, suitable breeding habitat is well defined in the survey protocol literature and it is inappropriate to include "potentially suitable" for the purpose of identifying presence/absence protocol survey locations. See revised Table ES-1 as provided in Exhibit A-1, and supporting analysis as provide in Exhibit A-2 of the accompanying cover letter.
13	Executive Summary	ES-25	n/a	"Details of the restoration plan will be pending between SCE, USFWS and CDFG."	Revise as follows: "Details of the restoration plan will be pending between SCE~~, USFWS~~ and CDFG."	Under the heading **MM BR-10 Restoration of Plummer's Mariposa Lily and Slender Mariposa Lily**, it is not appropriate to include USFWS in consultation since they do not have any jurisdiction

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						over non-listed plants. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
14	Executive Summary	ES-26	n/a	"5. All temporary disturbance areas……would be monitored on a quarterly basis for one year…."	Revise as follows: "5. All temporary disturbance areas <ins>not subject to existing infestations of invasive plants</ins>……would be monitored on a quarterly basis for one year…."	Under the heading **MM BR-11 Non-Native and Invasive Plant Species**, number 5, there is no resource benefit to monitoring temporary disturbance areas already subject to widespread infestations of non-native grasses and invasive plants. Please see revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
15	Executive Summary	ES-27	n/a	"1. A qualified ecologist will survey and determine the spatial extent of riparian zones….and Telecommunications Route #2."	Revise as follows: "1. A qualified ecologist will survey and determine the spatial extent of riparian zones….and Telecommunications Route #2 <ins>that could be adversely affected by project activities</ins>."	Under the heading **MM BR-12: Minimize Impact on Riparian Habitat**, there is no need to survey the riparian areas within the 3,600 acre storage field that will not be affected by project activities. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
16	Executive Summary	ES-46	n/a	**"MM HZ-1: Soil Sampling and Contaminated Soils Contingency Plan.** The applicant will prepare a Soil Sampling and Contaminated Soils Contingency Plan that would outline procedures for testing soils in locations where contaminated soils are suspected to be present including the office building and Central Compressor Station site locations. The Soil Sampling and Contaminated Soils Contingency Plan will also outline the steps that would be implemented if contaminated soils are encountered during preconstruction soil sampling and testing or if they are encountered at any point during construction. Provisions outlined in this plan	Revise as follows: "**MM HZ-1: ~~Soil Sampling and~~ Contaminated Soils Contingency Plan.** The applicant will prepare a ~~Soil Sampling and~~ Contaminated Soils Contingency Plan that would outline procedures for testing soils in locations where contaminated soils are suspected to be present including the office building and Central Compressor Station site locations. The ~~Soil Sampling and~~ Contaminated Soils Contingency Plan will also outline the steps that would be implemented if contaminated soils are encountered during preconstruction soil sampling and testing or if they are encountered at any point during construction. Provisions outlined in this plan would include phone numbers of city, county, state, and federal agencies and primary, secondary, and final cleanup procedures. In	Assessment of soil in ***MM HZ-1: Soil Sampling and Contaminated Soils Contingency Plan*** should be limited to areas that will be disturbed during construction. Soil Sampling Plan should be removed from the MM based on existing geotechnical analysis and report. Since environmental soil sampling and testing were completed as part of the geotechnical investigation, the analysis and report supersede the need for a soil sampling plan. Applicant will prepare a Contaminated Soils Contingency Plan. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				would include phone numbers of city, county, state, and federal agencies and primary, secondary, and final cleanup procedures. In addition, the plan would address health and safety procedures to minimize environmental impacts in the event that hazardous soils or other materials are encountered during construction of the project, including measures such as worker training, containerization and storage, and monitoring…"	addition, the plan would address health and safety procedures to minimize environmental impacts in the event that hazardous soils or other materials are encountered during construction of the project, including measures such as worker training, containerization and storage, and monitoring…."	
17	Executive Summary	ES-49	n/a	"2. Equipment shall include: …. b) One shovel and one pressurized chemical fire extinguisher for each gasoline-powered tools, including but not restricted to compressors, hydraulic accumulators, gardening tools (such as chain saws and weed trimmers), soil augers, rock drills, etc."	Revise as follows: "2. ~~Equipment shall include: …. b) One shovel and one pressurized chemical fire extinguisher for each work crew using gasoline-powered tools, including but not restricted to compressors, hydraulic accumulators, gardening tools (such as chain saws and weed trimmers), soil augers, rock drills, etc."~~	***APM HZ-8: Construction Fire Control and Emergency Response Measures*** requiring one shovel and one pressurized chemical fire extinguisher for each gasoline-powered tool, including but not restricted to compressors, hydraulic accumulators, gardening tools (such as chain saws and weed trimmers), soil augers, rock drills, etc., is infeasible and should be deleted**. In addition, this is not an APM as the applicant did not propose this measure; therefore this should be a mitigation measure.** The applicant provided comments to APM HZ-8 on 12/8/11, as presented below, which are not consistent with the APM as presented in the DEIR. "To address the risk of fire during construction of the proposed project components, the applicant and SCE will develop fire management measures as part of Construction Safety and Emergency Response Plans developed in consultation with their

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						contractors for use during construction and operation of the proposed project components. The Plans will include notification procedures and emergency fire precautions, such as the following: • The assignment of Fire Risk Manager who would be present at each proposed project component area during construction activities and whose sole responsibility would be to monitor the contractor's fire-prevention activities; • The equipping of all internal combustion engines, stationary and mobile, with spark arresters meeting applicable regulatory standards; • The prohibition of smoking at each construction job site, and the posting of no smoking signs and fire rules on the project bulletin board at all contractor field offices and areas visible to employees during fire season; • The clearing of all extraneous flammable materials from equipment staging areas; • The installation of fire extinguishers at the proposed Central Compressor Station site; and • The provision of fire-fighting equipment such as extinguishers and shovels, and the training of construction employees on the use of this equipment and on how to communicate with local fire departments; • The provision of portable communication devices (i.e., radio or mobile telephones) to construction personnel; and • Any additional measures as needed during

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						construction to address fire prevention and detection, to lower the risk of wildland fires. The Construction Safety and Emergency Response Plans will include additional, special provisions for days when the National Weather Service issues a Red Flag Warning. Standard protocols implemented during these periods will include: • Measures to address storage and parking areas; • Measures to address the use of gasoline-powered tools; • Procedures for road closures as necessary; • Procedures for use of a fire guard as necessary; • Additional fire suppression tools and fire suppression equipment, and training requirements." See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
18	Introduction	1-1	17-18	"The proposed project is located in an unincorporated area of Los Angeles County and northern Los Angeles, California."	Revise as follows: "~~The proposed project is located in an unincorporated area of Los Angeles County and northern Los Angeles, California~~ These components of the proposed project are mostly located in an unincorporated area of Los Angeles County. A small portion of the guard shack component is located in the northern area of the City of Los Angeles."	Under the heading **1.0 Introduction**, the text should be revised to accurately describe the location of project components.
19	Introduction	1-1	41	"Southern California Gas Company (the applicant) provides natural gas services to approximately six million customers in Southern California, and operates four storage fields to meet customer demand."	Revise as follows: "Southern California Gas Company (the applicant) provides natural gas services to approximately ~~six~~ 21 million customers in Southern California,…"	Under the heading **Introduction and Project Overview**, the number of customers receiving service from Southern California Gas Company is inaccurate and should be updated to reflect service area.

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
20	Introduction	1-2	12-17	"The proposed compressors would also improve natural gas service reliability and efficiency. The existing gas turbine–driven compressors at the storage field were installed in 1971. Gas turbines alter compressor speed by varying fuel input. The new variable-speed motors that would be installed as part of the proposed project have the ability to alter compressor speed as gas pressure ratios and flow rates change more precisely than the existing gas turbines. Hence, the new motors would be capable of better matching operating pressures at the storage field and would be more energy efficient."	Revise as follows: "The proposed ~~compressors~~ project would also improve natural gas service reliability and efficiency. The existing gas turbine–driven compressors at the storage field were installed in 1971. Gas turbines alter compressor speed by varying fuel input. The new electric-driven, variable-speed ~~motors~~ compressors that would be installed as part of the proposed project have the ability to alter compressor speed as gas pressure ratios and flow rates change more precisely than the existing gas turbines. Hence, the new ~~motors~~ compressors would be capable of better matching operating pressures at the storage field and would be more energy efficient."	Under the heading **1.1.1. Settlement Agreement**, the text inaccurately describes the project versus the compressors. The combined project would improve reliability and efficiency, not just the compressors. This is a **GLOBAL COMMENT**
21	Introduction	1-3	20	"The CPUC conducts two parallel processes when considering any application for approval of a CPCN: an application process similar to a court proceeding, in which the CPUC considers whether the expansion is needed and is in the public interest; and an environmental review process under the California Environmental Quality Act (CEQA)."	Revise as follows: "The CPUC conducts two parallel processes when considering any application for approval of a CPCN: an application process similar to a court proceeding, in which the CPUC considers whether the ~~expansion~~ proposed project is needed and is in the public interest; and an environmental review process under the California Environmental Quality Act (CEQA).	Under the heading **1.3 CPUC Processes and Intended Uses of the EIR**, the text inconsistency references the project as an expansion; the project should be referred to as a "proposed project."
22	Introduction	1-3	2nd paragraph, line 36	"…Additional environmental analysis may be required in instances where, as a result of refined engineering design, anticipated construction activities vary significantly from those described in the EIR…"	Add text as follows (following line 36): "The CPUC would review any design changes to the project that occurred between the preliminary and final designs. These changes would be evaluated for potential environmental impacts. SCE would conduct environmental	Under the heading **1.3 CPUC Process and Intended Use of EIR**, text following the 2nd paragraph should be included to accurately describe the process associated with changes in the project description.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
					surveys, as appropriate, for any new disturbance areas. If necessary, SCE would also implement the relevant APMs or MMs to ensure that potential impacts are less than significant."	
23	Project Description	2-1	13	"The construction of the proposed project would expand the Aliso Canyon Natural Gas Storage Field's (storage field's) natural-gas injection capacity from approximately 300 million cubic feet (cf) per day to approximately 450 million cf per day."	Revise as follows: "The construction of the proposed project would expand the Aliso Canyon Natural Gas Storage Field's (storage field's) natural-gas injection capacity from approximately 300 million standard cubic feet (scf) per day to approximately 450 million scf per day."	Under the heading **Project Description,** the units cubic feet should be presented as standard cubic feet. This is a **GLOBAL COMMENT**
24	Project Description	2-1	Footnote 2	*Footnote 2* "The initial build of the Natural Substation would include installation of two 28 MVA,66/12-kV transformers. Space would be available on for the installation of two additional 28 MVA transformers (for a total of 112 MVA) if needed in the future."	Revise as follows: "The initial build of the Natural Substation would include installation of two 28 MVA,66/12-kV transformers. Space would be available on for the installation of two ~~additional~~ spare 28 MVA transformers ~~(for a total of 112 MVA)~~, if needed in the future."	In footnote 2, the text inaccurately describes the design of the Natural Substation. Text should be revised accordingly. This is a **GLOBAL COMMENT.**
25	Project Description	2-2	2	"In addition, the applicant would apply…"	Revise as follows: "In addition, the applicant ~~would apply~~ has applied…"	Under the heading **2.0 Project Description,** the text is out of date related to the easement application for SCE; the text should be revised for accuracy.
26	Project Description	2-3	Figure 2-3		Revise Figure 2-3 – see comments	On **Figure 2-3**, the orange line labeled as the "existing pipeline" should be presented as the "existing blowdown line". See revised Figure 2-3 as provided in Exhibit A-3 of the accompanying cover letter.
27	Project Description	2-4	n/a		Revise Figure 2-4 – see comments.	On **Figure 2-4**, the location of the guard shack is incorrect. The correct location can be found in the building permit application site plans.

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						Please see revised Figure 2-4 as provided in Exhibit A-3 of the accompanying cover letter.
28	Project Description	2-10	12	"Water, sediment, liquid hydrocarbons, and other chemicals…"	Revise as follows: "Water, sediment, oil and liquid hydrocarbon condensates~~, and other chemicals~~…"	Under the heading **2.1.1 Storage Field Operations and Technical Details**, the phrase "other chemicals" does not accurately characterize withdrawn materials and should be deleted. Hydrocarbon condensate more accurately describes withdrawn materials.
29	Project Description	2-10	28	"Each compressor generates 15,000 horsepower"	Revise as follows: "Each compressor is ISO rated at ~~generates~~ 15,000 horsepower.."	Under the heading **2.1.1.1 Natural Gas Injection and Withdrawal**, the current description of compressor horsepower is not accurately described and should reference the ISO rating.
30	Project Description	2-10	36	"Water, sediment, and other chemicals, including oil and other hydrocarbons.."	Revise as follows: "Water, sediment, oil, and ~~other chemicals, including oil and other~~ liquid hydrocarbon condensates.."	Under the heading **2.1.1.1 Natural Gas Injection and Withdrawal**, the phrase "other chemicals" does not accurately characterize withdrawn materials and should be deleted. Hydrocarbon condensate more accurately describes withdrawn materials.
31	Project Description	2-10	48-50	"Four 500-kilowatt, 16-kV gas-driven generators are available to provide electricity if electrical power is lost at the storage field The generators provide enough electricity to run operational controls, natural gas processing (dehydration), and other support activities prior to discharging natural gas into delivery pipelines. With the gas-driven generators and gas-turbine driven compressors, injection and withdrawal activities are able to continue operating at full capacity during a loss of electrical power to the storage field."	Revise as follows: "Four 500-kilowatt, 16-kV gas-driven generators are available to provide electricity if electrical power is lost at the storage field. ~~The generators provide enough electricity to run operational controls, natural gas processing (dehydration), and other support activities prior to discharging natural gas into delivery pipelines. With the gas-driven generators and gas-turbine driven compressors, injection and withdrawal activities are able to continue operating at full capacity during a loss of electrical power to the storage field.~~ The number of generators continuously operating is dependent upon power requirements needed to provide	Under the heading **2.1.1.2 Electrical Power and Backup Generators**, the text should be revised to accurately describe existing power generating conditions.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
					electricity to the office, controls, and blackstart capacity for dehydration upon withdrawal and for the existing TDC driven compressors for compression. "	
32	Project Description	2-11	8-17	"The proposed project area includes the 3,600-acre storage field in unincorporated Los Angeles County and the City of Los Angeles…."	Revise as follows: "The proposed project area is located within ~~includes~~ the 3,600-acre storage field in unincorporated Los Angeles County and the City of Los Angeles.."	Under the heading **2.1.2 Proposed Project Area**, the description should be revised to accurately describe components within the storage field.
33	Project Description	2-11	25	"Segment A, from Tap Point A to the proposed Natural Substation, is a single-circuit line that would be reconductored. New fiber optic cable would also be installed on Segments A, B, and C"	Revise as follows: "Segment A, from Tap Point ~~A~~ C to the proposed Natural Substation, is a single-circuit line that would be reconductored. New fiber optic cable would also be installed on Segments A~~,~~ and B~~, and C~~"	Under the heading **2.1.3 Reconductoring and Telecommunications Route Locations**, the Tap Points referenced are inaccurate. Revise to be consistent with the project description.
34	Project Description	2-11	Footnote 4	"Footnote 4, "Segments A and C form a double-circuit, alternating-current subtransmission line with six conductors (three conductors on each side of each structure supporting the line). Each set of three conductors forms one *circuit*."	Revise as follows: "4 Segments A and ~~C~~ B form a double-circuit, alternating-current subtransmission line with six conductors (three conductors on each side of each structure supporting the line). Each set of three conductors forms one *circuit*."	Under the heading **2.1.3 Reconductoring and Telecommunications Route Locations**, in footnote 4, the Tap Points referenced are inaccurate. Revise to be consistent with the project description.
35	Project Description	2-14	31	"The three electric-driven, variable-speed compressors installed in the proposed Central Compressor Station would each have 22,000 horsepower.."	Revise as follows: "The three electric-driven, variable-speed compressors installed in the proposed Central Compressor Station would each have approximately 22,000 horsepower…"	Under the heading **2.2.1.1. Electric-driven, Variable-speed Compressors**, the horsepower rating for the compressors is an approximate value and should be stated to allow flexibility during final engineering.
36	Project Description	2-14	32-33	"Combined, the compressors would be capable of compressing a total of approximately 450 million standard cf of	Revise as follows: "Combined, the compressors would be capable of compressing a total of approximately 450 to 600	Under the heading **2.2.1.1. Electric-driven, Variable-speed Compressors,** the compressor capacity should be presented as a range for

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				natural gas per day."	million standard cf of natural gas per day."	accuracy of existing conditions.
37	Project Description	2-14	44-46	"Metering refers to monitoring the flow rate of natural gas withdrawal and injection. Metering and control of the three new electric-driven, variable-speed compressors would be conducted from the existing, onsite operations facility at the Plant Station site."	Revise as follows: "Metering refers to ~~monitoring~~ the measurement of the flow rate of natural gas withdrawal and injection. Metering and control of the three new electric-driven, variable-speed compressors would be conducted from the new ~~existing,~~ onsite operations facility at the Plant Station site."	Under the heading **2.2.1.2 Metering, Control, Safety, and Pressure Relief**, the text should be revised to accurately describe the process of metering, which includes measurements. Metering will take place at the New Compressor Station, as provided in the August 24 SoCalGas Memo to CPUC.
38	Project Description	2-17	35-36	"The pipelines would be installed above grade on pipe supports or below grade in existing trenches (Figure 2-3)."	Revise as follows: "The pipelines would be installed above grade on pipe supports or buried below grade ~~in existing trenches~~ (Figure 2-3)."	Under the heading **2.2.1.3 New Pipelines**, revise text to clarify that pipelines would be above grade or buried.
39	Project Description	2-18	23-25	"Several new office buildings are proposed for construction within the northern part of the Plant Station site: a 4,500-square-foot office building, two archive storage sheds totaling approximately 1,500 square feet, and a 1,600-square-foot crew-shift building (for a total of 7,600 square feet of new office facilities)."	Revise as follows: "~~Several new office buildings are proposed for construction within the northern part of the Plant Station site: a footprint of 4,500-square-foot office building, two archive storage sheds with a footprint totaling approximately 1,500 square feet, and a 1,600-square-foot crew-shift building (for a total footprint of 7,600 square feet of new office facilities).~~ Two main buildings are proposed for construction within the northern part of the Plant Station site. The existing 4,500 square foot modular office and the two archive storage sheds, totaling 1,500 square feet will be replaced by one new steel office building with a 6,000 square foot footprint. The existing 1,600 square foot modular crew shift building will be replaced with a new steel crew shift building with a 1,600 square foot footprint."	Under the heading **2.2.3 Office and Crew-shift Buildings**, the text should be revised to accurately describe the size and footprint of the applicable facilities.

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table

Comment No.	Section	Page	Lines	Original Text	Suggested Revision	Comment
40	Project Description	2-18	41	"A new, 164-square-foot guardhouse and access gate would be constructed within the storage field property boundary approximately 500 feet north…"	Revise as follows: "A new, 164-square-foot guardhouse and access gate would be constructed within the storage field property boundary approximately ~~500~~ 200 feet north.."	Under the heading **2.2.4 Guardhouse and Entry Road Widening**, the distance presented for the relocation of the guard house is inaccurate and should be revised.
41	Project Description	2-19	12	"Avenue/Limekiln Canyon Road) would be widened by 12 feet for approximately 500 feet leading up…"	Revise as follows: "Avenue/Limekiln Canyon Road) would be widened by 12 feet for approximately ~~500~~ 200 feet leading up…"	Under the heading **2.2.4 Guardhouse and Entry Road Widening,** the distance presented for total road widening is inaccurate and should be revised.
42	Project Description	2-19	25	"The Plant Power Line would be approximately 1,200-feet.."	Revise as follows: "The Plant Power Line would be approximately 1,800 ~~1,200~~ feet…"	Under the heading **2.2.5 12-kV Plant Power Line,** the length of the line is inaccurate and should be revised.
43	Project Description	2-19	39	"…the substation site for the installation of two additional 28 MVA transformers (for a total of 112 MVA),	Revise as follows: "…the substation site capable of carrying ~~for the installation of~~ two spare ~~additional~~ 28 MVA transformers ~~(for a total of 112~~ 56 ~~MVA)~~,…"	Under the heading **2.2.6 Natural Substation**, the transformer capacity (MVA) is inaccurate and should be revised. This is a **GLOBAL COMMENT**.
44	Project Description	2-19	43	"…reducing any downtime that might be experienced by the Plant Station in the event of a substation failure."	Revise as follows: "…reducing any downtime that might be experienced by the Plant Station in the event of a ~~substation~~ transformer failure."	Under the heading **2.2.6 Natural Substation**, the discussion of power failure is incorrectly described and should be revised.
45	Project Description	2-20	Table 2-1	"The initial build of the Natural Substation would include the installation of two 28 MVA, 66/12-kV transformers. Space would be available for the installation of up to two additional 28 MVA transformers (for a total of 112 MVA)	Revise as follows: "The initial build of the Natural Substation would include the installation of two 28 MVA,66/12-kV transformers. Space would be available on for the installation of two ~~additional~~ spare 28 MVA transformers ~~(for a total of 112 MVA)~~, if needed in the future.	In **Table 2-1**, in the "Description" column for the row titled "28 MVA Transformers," the transformer capacity (MVA) is inaccurate and should be revised. This is a **GLOBAL COMMENT**.
46	Project	2-31	41	"..project is anticipated to take 22 months	Revise as follows:	Under the heading **2.3.1 Construction Schedule.**

Master Comment Table

Comment No.	Section	Page	Lines	Original Text	Suggested Revision	Comment
	Description			(Table 2-5), starting August 2012.."	"…project is anticipated to take approximately 22 months (Table 2-5).~~ starting August 2012~~.."	**Personnel, and Equipment**, revise description of construction schedule to accurately reflect the comments provided in Comment 52; the start date of August 2012 is infeasible.
47	Project Description	2-32	Table 2-5 and Table 2-6	"Construction is anticipated to start in August 2012. Conceptual construction phasing is provided in Table 2-6. A list of equipment required for construction of the proposed project is provided in Appendix G."	Revise as follows: "Construction is anticipated to start in ~~August~~ late 2012 or early 2013. The project schedule for the ACTR project is planned for commissioning 36 months after the CPUC final decision. The Central Compressor Station has a scheduled timeline of 30 months. After detailed engineering and equipment selection, there will be a 22-24 month of actual on-the-ground construction at the Central Compressor Station. Office crew shift buildings and guard house relocation would start construction as soon as possible after the CPUC decision so as to be completed prior to Central Compressor Station onsite construction. The buildings and the guard house construction are estimated to take 3-4 months, but would not be concurrent with the Central Compressor Station construction schedule. Conceptual construction phasing is provided in Table 2-6. A list of equipment required for construction of the proposed project is provided in Appendix G.""	Under the heading **2.3.1 Construction Schedule, Personnel, and Equipment**, Tables 2-4 and 2-6 along with the text present an infeasible implementation schedule. Revise Table 2-5 and 2-6 to be consistent with recommended text revision.
48	Project Description	2-32	21-22	"Construction of the proposed project would result in the permanent disturbance of approximately 26 acres of land (Table 2-7). Approximately 90 percent of this land has been previously disturbed."	Revise as follows: "Construction of the proposed project will take place over approximately 26 acres, 90 percent of which is previously disturbed. The proposed project would result in new ~~would result in the~~ permanent disturbance of approximately ~~26~~ 2.6 acres of land (Table 2-7). ~~Approximately 90~~	Under the heading **2.3.2 Land Disturbance.** revise Table 2-7 and information to reflect what should be studied under CEQA, which are potential impacts caused to new permanently disturbed areas. As written, the text implies we are creating much more new disturbance than we actually are. Revised Table 2-7 is provided in Exhibit A-4 of the

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
					~~percent of this land has been previously disturbed~~"	accompanying cover letter.
49	Project Description	2-36	8	"If additional areas are required for the proposed project that may result in land disturbance other than that identified in Table 2-7, additional environmental analysis may be required."	Revise as follows: "If additional areas are required for the proposed project that may result in land disturbance other than that identified in Table 2-7, additional environmental analysis may be required. <u>"The CPUC would review any design changes to the project that occurred between the preliminary and final designs. These changes would be evaluated for potential environmental impacts. SCE would conduct environmental surveys, as appropriate, for any new disturbance areas. If necessary, SCE would also implement the relevant APMs or MMs to ensure that potential impacts are less than significant."</u>	Under the heading **2.3.2.1 Additional Environmental Analysis**, additional text should be added to provide clarification on the project resulting from changes in the project description, as presented in the DEIR.
50	Project Description	2-39	40-41	"Approximately 1,600 linear feet of trenches would be excavated for fiber optic cable installation and up to 210 cubic yards of soil and other material would be excavated as part of this trenching."	Revise as follows: "~~Approximately 1,600 linear feet of trenches would be excavated for fiber optic cable installation and up to 210 cubic yards of soil and other material would be excavated as part of this trenching."~~	Under the heading **2.3.3.7 Hazardous Waste**, excavated soil should not be characterized as non-hazardous waste as it can be reused onsite for other purposes. The referenced text should be deleted.
51	Project Description	2-41	41	"The existing entry road to the storage field road would be widened by approximately 12 feet for 42 approximately 500 feet between…"	Revise as follows: "The existing entry road to the storage field road would be widened by approximately 12 feet for approximately ~~500~~ <u>200</u> feet between…"	Under the heading **2.3.7 Guardhouse Construction and Entry Road Widening**, revise text to accurately reflect length of road widening consistent with the building permit application.
52	Project Description	2-42	11	"The 12-kV Plant Power Line (1,200 feet long) would be constructed pursuant to	Revise as follows: "The 12-kV Plant Power Line (~~1,200~~ <u>1,800</u> feet	Under the heading **2.3.8 12-kV Plant Power Line Construction**, the length of the PPL is inaccurate and should be updated consistent with the project

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				applicable CPUC requirements including…"	long) would be constructed pursuant to applicable CPUC requirements including…"	description.
53	Project Description	2-52	15-16	• Oil recovery from natural gas processing: 200 barrels per day (2006 estimate); • Water recovery from natural gas processing: 300 barrels per day (2006 estimate);	Remove the following bullet items from the list: ~~Oil recovery from natural gas processing: 200 barrels per day (2006 estimate);~~ • ~~Water recovery from natural gas processing: 300 barrels per day (2006 estimate);~~	Under the heading **2.4.2 Nonhazardous and Hazardous Waste**, as described in lines 8-11, oil and water recovered are not disposed as hazardous waste; remove from the bulleted list for clarification
54	Project Description	2-52	26-42	"Average quantities of hazardous waste from storage field operations are as follows: • Oil recovery from natural gas processing: 200 barrels per day (2006 estimate); • Water recovery from natural gas processing: 300 barrels per day (2006 estimate);….. The following types and quantities of hazardous waste are estimated for operation of the proposed Natural Substation: • Transformer oil: 6,740 gallons per year; • Sulfur hexafluoride: 328 cf per year;"	Revise as follows: "Average quantities of hazardous waste from storage field operations are as follows: ~~• Oil recovery from natural gas processing: 200 barrels per day (2006 estimate);~~ ~~• Water recovery from natural gas processing: 300 barrels per day (2006 estimate);~~….. The following types and quantities of hazardous waste are estimated for operation of the proposed Natural Substation: ~~• Transformer oil: 6,740 gallons per year;~~ ~~• Sulfur hexafluoride: 328 cf per year;"~~	Under the heading **2.4.2 Nonhazardous and Hazardous Waste**, the text incorrectly lists some materials as hazardous waste verses hazardous materials that are on-site. And some wastes are not or may not be classified as hazardous. Revise accordingly.
55	Project Description	2-53	19-28	"The storage field's backup generators, which are described in Section 2.1.1.2, would also provide emergency power for the new compressor station…. Withdrawal from the storage field, however, would not be affected because energy for the withdrawal of natural gas is provided by the pressure and expansion of gas within the storage reservoir and no additional	Revise as follows: " ~~"The storage field's backup generators, which are described in Section 2.1.1.2, would also provide emergency power for the new compressor station~~…... Withdrawal from the storage field, however, would not be affected because energy for the withdrawal of natural gas is provided by the pressure and expansion of gas within the storage reservoir and	Under the heading **2.4.4 Loss of Electrical Power: Effects on Injection and Withdrawal,** the text inaccurately describes existing conditions and should be revised.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				energy is needed to withdraw the gas."	electricity produced from the current generators are used during withdrawal, and no additional energy is needed to withdraw the gas."	
56	Project Description	2-53	43	• Hydrostatic Test Water Management Plan (construction);	Revise as follows: " ~~• Hydrostatic Test Water Management Plan (construction);"~~	Under the heading **2.5 Plans and Applicant Proposed Measures**, the project will comply with a general discharge permit for discharges; therefore, a Hydrostatic Test Water Management Plan is not necessary and should be deleted.
57	Project Description	2-54	Table 2-9	"Air Quality Management District's Rule 43 (Fugitive Dust Regulations)."	Revise as follows: "Air Quality Management District's Rule ~~43~~ 403 (Fugitive Dust Regulations)."	In **Table 2-9, APM AQ-3**, the regulatory reference presented is inaccurate; SCAQMD's Fugitive Dust Rule is 403, not 43. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
58	Project Description	2-54	Table 2-9	"The applicant will post signs in the storage field along designated travel routes and limiting traffic to 15 miles per hour or less"	Revise as follows: "The applicant will post signs in the storage field along designated travel routes and limiting traffic to 15 miles per hour or less on unpaved roads."	In **Table 2-9, APM AQ-5** should be revised to accurately describe the area, unpaved roads, where the 15 mile limit will be imposed. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
59	Project Description	2-54	Table 2-9	"During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), the applicant and SCE will ensure that all clearing, grading, earth moving, and excavation operations will be curtailed to the degree necessary to prevent fugitive dust created by onsite activities and operations from being a nuisance or hazard, either offsite or onsite."	Revise as follows: "During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), the applicant and SCE will ensure that all clearing, grading, earth moving, and excavation operations during project construction will be curtailed to the degree necessary to prevent fugitive dust created by onsite activities and operations from being a nuisance or hazard, either offsite or onsite."	In **Table 2-9, APM AQ-6**, clarifying text should be added to describe construction activities warranting implementation of the APM. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
60	Project Description	2-54	Table 2-9	"Biological monitoring will be conducted during construction work in areas in close	Revise to reflect biological resource related APMs (APM-BR-01, APM-BR-03, APM BR-04, APM BR-	In **Table 2-9, APM BR-1**, this proposed APM combines the PEA's APMs for pre-con surveys,

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				proximity to native habitat to assure project compliance with all APMs and Mitigation Measures."	05) described in the Proponent's Environmental Assessment	exclusionary fencing, construction monitoring and nesting bird surveys into one APM. Combining multiple APMs into one can result in confusion, misinterpretation and negatively affect implementation feasibility. Revised Table ES-1 is provided in Exhibit A-1 of the accompanying cover letter.
61	Project Description	2-55	Table 2-9, APM BR-4	"The applicant and SCE will ensure that protocol-level pre-construction surveys will be conducted for coastal California gnatcatcher, in project component areas where suitable habitat exists and for all project activities proposed within U.S> Fish and Wildlife Service designated critical habitat in accordance….. Areas of 2 or more contiguous acres of suitable coastal California gnatcatcher habitat will be identified at the time of pre-construction surveys and work within or near these areas will be performed outside of the breeding and nesting season….”"	Revise as follows: " The applicant and SCE will ensure that protocol-level pre-construction surveys will be conducted for coastal California gnatcatcher, in project component areas where suitable habitat exists ~~and for all project activities proposed within U.S> Fish and Wildlife Service designated critical habitat~~ in accordance….. Areas of 2 or more contiguous acres of suitable coastal California gnatcatcher habitat will be identified at the time of pre-construction surveys. <u>If infeasible to maintain a buffer of 500 feet from an active gnatcatcher nest</u> work within or near these areas will be performed outside of the breeding and nesting season."	In **Table 2-9, APM BR-4**, protocol surveys "for all project activities proposed within USFWS designated critical habitat" is not justified because many of these areas are disturbed or are otherwise unsuitable to support presence of gnatcatcher. This APM should only apply to suitable gnatcatcher habitat. In addition, construction should be allowed in gnatcatcher habitat during breeding season if surveys confirm the absence of breeding gnatcatchers or if adequate protective buffers can be maintained. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter
62	Project Description	2-55	Table 2-9, APM BR-7	**Wildlife Relocation and Protection.** During construction activities, wildlife resources that are not considered to have special status and are determined to be in harm's way may be relocated by the applicant and SCE and/or their construction contractors to native habitat near the work area but outside the construction impact zone in order to avoid injury or mortality.	Revise as follows: "During construction activities….in order to avoid injury or mortality. <u>Only agency authorized biologists may relocate special status species</u>. For the trench to be excavated….the applicant will ensure that ~~backfilling of the trench would occur within 72 hours of pipeline installation to preclude potential impacts to wildlife that may fall into the trench~~ <u>open trenches are inspected twice daily, once in the morning before activities commence</u>	In **Table 2-9, APM BR-7,** this APM should be divided into two APMs. One to address wildlife relocations and one to address open trenches. In addition, backfilling within 72 hours of pipeline installation is an infeasible timeframe and should be deleted. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				For the trench to be excavated in the area of the Central Compressor Station during construction for the purposes of pipeline installation, the applicant will ensure that backfilling of the trench would occur within 72 hours of pipeline installation to preclude potential impacts to wildlife that may fall into the trench. At the conclusion of each day's trenching activity, the end of the trench would be left ramped at an approximate 2- to-1 slope to allow any wildlife falling into the trench to escape.	and once at the end of the day or before backfilling to preclude potential impacts to wildlife that may fall into the trench…".	
63	Project Description	2-56	Table 2-9, APM BR-8	**"Oak Tree Impact Avoidance.** In accordance with City of Santa Clarita/Los Angeles County ordinance and policy guidelines, the applicant and SCE will ensure that loss or impacts to all native oak trees via trimming or ground disturbance within the dripline (i.e., the outermost extent of the canopy) will be avoided using specific measures and/or agency guidance. If impacts cannot be avoided, the applicant or SCE will submit an Oak Tree Permit Application (including an Oak Tree Report) to Los Angeles County and obtain an Oak Tree Permit prior to construction."	Revise as follows: "**Oak Tree Impact Avoidance.** ~~In accordance with City of Santa Clarita/Los Angeles County ordinance and policy guidelines, the applicant and SCE will ensure that loss or impacts to all native oak trees via trimming or ground disturbance within the dripline (i.e., the outermost extent of the canopy) will be avoided using specific measures and/or agency guidance.~~ ~~t~~The applicant and SCE will ensure that loss or impacts to all native oak trees via trimming or ground disturbance within the dripline (i.e., the outermost extent of the canopy) will be avoided using specific measures and/or agency guidance. All activities that have the potential to adversely affect oak trees (i.e. trimming, excavation, paving, removal) will be monitored by a qualified arborist. If impacts cannot be avoided, the applicant or SCE will replace damaged or removed oak trees at a 2:1 ratio. Plantings will be 15 gallon containers in areas deemed suitable by the arborist. ~~If impacts cannot~~	Under the heading **Oak tree Impact Avoidance,** the text describes measures to be implemented by SCE and the applicant. However, the CPUC is vested with jurisdiction over the project. As such, local agencies are pre-empted from exercising discretionary land use permitting authority over the proposed project. Because of this, the applicant should not be required to secure separate discretionary permits from local city or county agencies prior to construction. This APM was also revised in a manner inconsistent with SoCalGas's comments. Los Angeles County's Oak Tree Permit, while containing some non-discretionary procedures to securing a permit, also contains discretionary permitting elements to it. As a consequence, the APM, as written could inadvertently require SoCalGas to proceed with a discretionary permitting that contravenes the CPUC's authority. See revised Table ES-1 as provided in Exhibit A-1

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
					~~be avoided, the applicant or SCE will submit an Oak Tree Permit Application (including an Oak Tree Report) to Los Angeles County and obtain an Oak Tree Permit prior to construction"~~	of the accompanying cover letter
64	Project Description 2.6	2-63	Table 2-10	"Table 2-10, Permit to Construct, Permit to Operate, Permit for Alteration/Modification, Emission Reduction Credits, Rule 403 Permit (Fugitive Dust)"	Revise as follows: ~~"Permit to Construct, Permit to Operate, Permit for Alteration/Modification, Emission Reduction Credits, Rule 403 Permit (Fugitive Dust)"~~	In **Table 2-10**, the presented air permits do not apply to any of the proposed project components and should be deleted.
65	Project Description	2-63	Table 2-10		Revise Table 2-10 per the comment provided	In **Table 2-10**, the Los Angeles Regional Water Quality Control Board is a state agency and therefore should be moved under the State Agency category
66	Alternatives 3.3.3.2	3-9	Figure 3-1		Revise Figure 3-1, see comments	In **Figure 3-1**, the label for the line representing the underground segment is inaccurate; the line is significantly longer than 1,000 ft. Revise figure to scale.
67	Aesthetic Resources 4.1.1.3	4.1-3	Table 4.1-1		Revise Table 4.1-1 per comments provided	In the **Table 4.1-1, Sensitive Viewer Groups in the Vicinity of the Proposed Project Components**, the column titled "Viewer Sensitivity" should be moved adjacent to the column titled "Viewer Groups" to provide clarification on sensitivity from the group.
68	Aesthetic Resources 4.1.1.3	4.1-5	Figure 4.1-1		Revise Figure 4.1-1 per comments provided	In **Figure 4.1.1**, O'Melveny Park is not presented; however, there is a visual simulation provided from this park. In addition, Sesnon Blvd is not a state designated scenic highway but is presented as such in the figure. Revise accordingly with accurate designation.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
69	Aesthetic Resources 4.1.2.3	4.1-7	26-48			The **Regional and Local** section of the **Regulatory Setting** does not include any aesthetic-related discussion or policies for the additional jurisdictions potentially impacted by Telecommunication Routes #2 and #3. Add discussion/policies related to Ventura County, City of Simi Valley, and City of San Fernando. NOTE: Designated scenic vistas, resources, or highways, and associated policies from these additional jurisdictions may require further discussion in the impacts section. Identification of such additional resources should also be included on Figure 4.1-1.
70	Aesthetic Resources 4.1.2.3	4.1-8	1-2	"The Scenic Highway Element of the existing adopted General Plan identifies the portion of I-5 in the vicinity of the proposed project as proposed for further first priority"	Revise as follows: "The Scenic Highway Element of the existing adopted General Plan identifies the portion of I-5 in the vicinity of the proposed project as proposed for further <u>evaluation for, with </u>first priority"	Under the heading **County of Los Angeles General Plan**, specific words are missing from the sentence, which should be added for clarification.
71	Aesthetic Resources 4.1.3.1	4.1-9	26	"[visual] simulations were prepared for five of the viewpoints . . ."	Revise as follows: "[visual] simulations were prepared for ~~five~~ <u>six</u> of the viewpoints . . ."	Under the heading **4.1.3.1 Methodology**, the text inaccurately references five viewpoints; there are six viewpoints. The text should be revised for accuracy. NOTE: This change needs to be made throughout the section (and throughout the document, if referenced elsewhere).
72	Aesthetic Resources	4.1-11	Figure 4.1-2	"Aliso Canyon Plant Power Station~~"~~	Revise as follows: ~~"Aliso Canyon Plant Power Station~~ <u>Existing Aliso Canyon Plant Station"</u>	In **Figure 4.1-2**, the label for the existing injection and withdrawal facilities currently states "Aliso Canyon Plant Power Station"; this is inaccurate and should be revised. In addition, Sesnon Blvd is not a state designated scenic highway and should be revised on the figure

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						and legend.
73	Aesthetic Resources 4.1.4	4.1-24	15	"Figure 4.1-9"	Revise as follows: "Figure 4.1-~~9~~10"	Under the heading **Operation**, the text incorrectly references Figure 4.1-9; the correct reference is Figure 4.1-10.
74	Aesthetic Resources 4.1.4	4.1-25	24-26	"Figures 4.1-3 through 4.1-11 depict photographs of the 10 selected existing views as well as simulated views of the proposed project for five of the viewpoint locations."	Revise as follows: "Figures 4.1-3 through 4.1-11 depict photographs of the 10 selected existing views as well as simulated views of the proposed project for ~~five~~ six of the viewpoint locations."	**Figures 4.1-3 through 4.1-11** the text inaccurately references five viewpoints; there are six viewpoints. The text should be revised for accuracy.
75	Aesthetic Resources 4.1.4	4.1-25	37	"An existing 1,500-foot dirt road to the proposed Natural Substation site would be graded, paved, and widened from 12 to 18 feet, and a new 18-inch access road would be constructed from the Aliso Canyon Plant Station to the mid-point of the Plant Power Line."	Revise as follows: "An existing 1,500-foot dirt road to the proposed Natural Substation site would be graded, paved, and widened from 12 to 18 feet, and a new 18-~~inch~~foot access road would be constructed from the Aliso Canyon Plant Station to the mid-point of the Plant Power Line."	Under the heading **Operation**, reference to the 18-inch access road should be changed to 18-foot-wide access road.
76	Aesthetic Resources 4.1.4	4.1-27	Figure 4.1-4		Revise the impact discussion related to the fiber optic line as part of Viewpoint 2.	The discussion for **Figure 4.1-4, Viewpoint 2** inaccurately describes that the fiber optic line would be underbuilt; this is not consistent with the project description and should be revised for accuracy. Also, the telecommunications line is shown as underbuilt in Figure 4.1-4. This matches the text in the section but conflicts with Figure 2-11 in Section 2.0, Project Description.
77	Aesthetic Resources 4.1.4	4.1-27	Figure 4.1-5		Revise the impact discussion related to the fiber optic line as part of Viewpoint 3.	The discussion for **Figure 4.1-5, Viewpoint 3** inaccurately describes that the fiber optic line would be underbuilt; this is not consistent with the project description and should be revised for accuracy. Also, the telecommunications line is shown as underbuilt in Figure 4.1-5. This matches the text in

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						the section but conflicts with Figure 2-11 in Section 2.0, Project Description.
78	Aesthetic Resources 4.1.4	4.1-28	Figure 4.1-6		Revise the impact discussion related to the fiber optic line as part of Viewpoint 4.	The discussion for **Figure 4.1-6, Viewpoint 4** inaccurately describes that the fiber optic line would be underbuilt; this is not consistent with the project description and should be revised for accuracy. Also, the telecommunications line is shown as underbuilt in Figure 4.1-6. This matches the text in the section but conflicts with Figure 2-11 in Section 2.0, Project Description.
79	Aesthetic Resources 4.1.4	4.1-29	29	"Viewpoint 6 shows existing conditions and a simulation of the project . . ."	Revise as follows: "Viewpoint ~~6~~ 7 shows existing conditions and a simulation of the project . . ."	Under the discussion for **Figure 4.1-9, Viewpoint 7**, the Viewpoint numbering is inaccurate and should be revised.
80	Aesthetic Resources 4.1.4	4.1-31	13-19	"The fiber optic line that would be underbuilt on the towers at this location would not be distinguishable from the transmission conductor due to distance and the fact that the telecommunications line would be smaller than the transmission conductor it would be attached to. Overall, the general visual character of the view would not change, as the appearance of electrical infrastructure within an urban environment would continue to dominate the view. Therefore, from this view location, the change in visual character and quality resulting from implementation of the proposed project is less than significant under this criterion."	Revise as follows: "Implementation of the proposed project would require electrical upgrades, new fiber optic cable, and one LST to be replaced with two TSPs within the San Fernando Substation. ~~The fiber optic line that would be underbuilt on the towers at this location would not be distinguishable from the transmission conductor due to distance and the fact that the telecommunications line would be smaller than the transmission conductor it would be attached to.~~ Overall, the general visual character of the view would not change, as the appearance of electrical infrastructure within an urban environment would continue to dominate the view. Therefore, from this view location, the change in visual character and quality resulting from implementation of the proposed project is less than significant under this criterion."	Under the heading **Figure 4.1-11, Viewpoint 10,** the text does not address all project components that may be visible in the view. Additional project components should be described.

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
81	Agricultural and Forestry 4.2	4.2-2	10	"Under the A-2 district, "electric distribution substations, electric transmission substations and generating plants" are considered permitted uses, provided a conditional use permit has been obtained."	Revise as follows: "Under the A-2 district, "electric distribution substations, electric transmission substations and generating plants" are considered uses subject to permits (Section 22.24.150 LACo Code). ~~permitted uses, provided a conditional use permit has been obtained~~	Under the subsection **4.2.1 – Environmental Setting,** there is a discussion about the Los Angeles County zoning designation (i.e., A-2 (Heavy Agriculture)) for the Aliso Canyon Storage Field and the permitted uses for this zoning. Further, the CPUC is vested with jurisdiction over the project To this end, local agencies are pre-empted from exercising discretionary land use permitting authority over the Proposed Project. Such permits contravene the authority that has been placed in the CPUC's hands pursuant to Article XII of the California Constitution. Further, such permits could have the effect of potentially modifying or precluding construction of the proposed project after it has been approved by the CPUC.
82	Agricultural and Forestry 4.2	4.2-5	10-11	"The proposed project would temporarily disturb up to 174.66 acres of land zoned Agriculture and up to 50.18 acres of land zoned Open Space in Los Angeles and Ventura counties; however, the proposed project components would not disturb land used for active agricultural purposes. Further, land would revert back to previous use after construction. In addition, the proposed project does not traverse land zoned as forest land or timberland. Therefore, this impact would be less than significant without mitigation under this criterion."	Revise as follows: "~~The proposed project would temporarily disturb up to 174.66 acres of land zoned Agriculture and up to 50.18 acres of land zoned Open Space in Los Angeles and Ventura counties; however, the~~ The proposed project components would not disturb land used for active agricultural purposes. Further, land would revert back to previous use after construction. In addition, the proposed project does not traverse land zoned as forest land or timberland. Therefore, there would be no impact under this criterion ~~this impact would be less than significant without mitigation under this criterion~~."	Under the heading **Impact AG-2**, **Conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use,** the estimates or disturbed acres are not supported. There is no justification for the estimate of 174.66 acres of temporary disturbance to land zones agriculture and 50.18 acres of land zones open space. The acreages presented should be deleted.
83	Air Quality 4.3	4.3-6			Revise regulatory setting section per comments provided	Under the heading **4.3.2.3 Regional and Local,** the section does not describe Ventura County Air Pollution Control District or the applicable

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						thresholds for NOx and VOC. Text should be added to reflect the 3.5 miles of Telecom Route 2 that would result in activities within the VCAPCD.
84	Air Quality 4.3.4	4.3-9	8-9	"The applicant proposes to pave all access roads within the construction zones; thus, unpaved road fugitive dust emissions would not be generated during construction."	Revise as follows: "~~The applicant proposes to pave all access roads within the construction zones; thus, unpaved road fugitive dust emissions would not be generated during construction~~."	Under the heading **Overview of Construction Impact**s, the text incorrectly describes that all roads within construction zones will be paved. Fugitive dust emissions were removed from the analysis and should be included.
85	Air Quality 4.3.4	4.3-11	Table 4.3-6		Make the correction in Table 4.3-6	In **Table 4.3-6 Net Changes in Operational Emissions**, negative values are presented in parenthesis and include a "minus" sign; this is confusing as only one symbol is needed to indicate a net reduction or negative value.
86	Air Quality 4.3.4.2	4.3-13	9-16	**"MM AQ-1: Oxides of Nitrogen (NOx) Credits.** The emissions of NOx due to construction of the proposed project will be mitigated through the purchase of Regional Clean Air Incentive Market Trading Credits (RTCs) for every pound of NOx emissions in excess of the SCAQMD daily significance threshold of 100 pounds per day. The total amount of NOx RTCs to be purchased will be calculated when the construction schedule and operating conditions are finalized. The applicant will purchase and submit the required RTCs to the SCAQMD prior to the start of project construction. The applicant will also track actual daily emissions during construction according to a monitoring plan that includes records of equipment and vehicle usage."	Revise as follows: **"MM AQ-1: Oxides of Nitrogen (NOx) Credits.** The emissions of NOx due to construction of the proposed project will be mitigated through the purchase of ~~Regional Clean Air Incentive Market Trading~~ <u>Mobile Source Emission Reduction</u> Credits (~~RT~~<u>MSERCs</u>) for every pound of NOx emissions in excess of the SCAQMD daily significance threshold of 100 pounds per day. The total amount of NOx ~~RTCs~~<u>MSERCs</u> to be purchased will be calculated when the construction schedule and operating conditions are finalized. The applicant will purchase ~~and submit the required RTCs~~ <u>MSERCs</u> ~~to the SCAQMD~~ prior to the start of project construction. The applicant will also track actual daily emissions during construction according to a monitoring plan that includes records of equipment and vehicle usage."	In **Table ES-1**, MM AQ-1 should be revised as described in the accompanying cover letter: MSERCs are more appropriate because construction emissions will primarily be generated from mobile sources such as trucks, cranes and other on-road and off-road vehicles. Furthermore, SCAQMD and CARB have stated that the acquisition of MSERCs is an appropriate way to mitigate mobile source emissions (SCAQMD Regulation XVI and Rule 2202). These credits are created by purchasing and deploying lower-emitting vehicles, thereby reducing mobile source emissions. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
87	Air Quality 4.3.4.2	4.3-15	9	"however, emissions at this level would not likely cause a perceptible odor to a substantial number of people due to the distance between paving activities and the nearest sensitive receiver~~.~~"	Revise as follows: "however, emissions at this level would not likely cause a perceptible odor to a substantial number of people due to the distance between paving activities and the nearest sensitive ~~receiver~~ receptor."	Under the heading **Impact AQ-5**, sensitive receptors are referred to as "sensitive receivers"; this should be corrected for clarification.
88	Biological Resources 4.4.1.2	4.4-6	41	"This community occurs within the 66-kV subtransmission line and storage field portion~~s~~ of the proposed project site."	Revise as follows: "This community occurs within the 66-kV subtransmission line ~~and storage field~~ portion~~s~~ of the proposed project site."	Under the heading **Southern Willow Scrub**, the section describes that the Southern Willow Scrub plant community is present within the SCG storage field portion of the proposed project site. However, this community was not mapped within the storage field during the PEA evaluation or DEIR evaluation.
89	Biological Resources 4.4.1.2	4.4-7	3-4	"…no perennial waters occur in the immediate project area."	Revise as follows: "…no perennial waters occur in the immediate project area. However, there are two existing detention basins in Limekiln Creek, located west of the Central Compressor Station site, which are small perennial water bodies."	Under the heading **Streams and Riparian Area**s, the text inaccurately describes the presence of riparian areas in Limekiln Creek. The text should be revised for accuracy.
90	Biological Resources	4.4-7	21-23	"Surveyors observed one occupied red-tailed hawk (*Buteo jamaicensis*) nest in the lattice of structure, 18 during the habitat assessment in 2009, and one unoccupied nest in the proposed project area. Regionally abundant birds that may nest in these stick nests would be protected under the Migratory Bird Treaty Act (MBTA)."	Revise as follows: "Surveyors observed one occupied red-tailed hawk (*Buteo jamaicensis*) nest in the lattice of structure~~,~~ 18 during the habitat assessment in 2009, and one unoccupied nest in the proposed project area. Most nesting birds are protected under the Migratory Bird Treaty Act (MBTA)."	Under the heading **4.4.1.3 Common Wildlife,** the comma after "structure", before "18", is confusing. Remove the comma for clarification.
91	Biological Resources 4.4.1.4	4.4-11	Table 4.4-3	"Likely present in the project component areas. Closest CNDDB…. "	Revise as follows: "~~Likely~~Unlikely. Suitable habitat ~~present in the project component areas~~ for this species does not exist within the proposed project site. Closest	Under the heading **Species**, in the Potential to Occur in Project Area column for **California Orcutt grass**, the text indicates the species is "likely" to occur in the project component areas. However,

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
					CNDDB…. "	this species almost always occurs in vernal pools and seasonal wetlands, which are absent from project areas. Therefore, suitable habitat for this species does not exist within the proposed project site.
92	Biological Resources 4.4.4.4	4.4-41	13-16	"Prior to construction of the proposed project, and with the coordination and review of USFWS and CDFG, SCE will prepare a habitat restoration plan for Venturan Coastal Sage Scrub associations for the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas."	Revise as follows: "Prior to construction of the proposed project, and with the coordination and review of USFWS ~~and CDFG~~, SCE will prepare a habitat restoration plan for Venturan Coastal Sage Scrub associations for the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas."	Under the heading **MM BR-3: Habitat Restoration Plan for Venturan Coastal Sage Scrub,** only USFWS review is needed because Gnatcatcher is not a state listed species. Also, see revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
93	4.4-11 to 4.4-16	4.4-16	Table 4.4-3		Revise as follows: "<u>Definitions</u> <u>Unlikely = Species has been identified in the CNDDB records, but either the recorded observations are extremely old; key habitat requirements are absent; or the habitat in the proposed project study area is so degraded, small, or isolated that it would be very unlikely for the species to utilize the area.</u> <u>Likely = Species is known to occur within 5 miles of the proposed project study area (based on CNDDB records and /or professional expertise specific to the proposed project study area or species) and there is ideal habitat within the proposed project study area."</u>	In **Table 4.4-3 Special Status Plants**, the "potential to occur" determinations often appear arbitrary and therefore the terms "likely" and "unlikely" should be defined and the criteria for selecting each term should be identified. This is **a GLOBAL COMMENT**
94	Biological Resources 4.4.1.4	4.4-17	40-41	"The coast horned lizard (*Phrynosoma coronatum blainvili*; SSC) was incidentally observed in the project area during coastal California gnatcatcher surveys (Appendix	Revise as follows: "The coast horned lizard (*Phrynosoma coronatum blainvili*; SSC) was incidentally observed in the project area during coastal California gnatcatcher	Under the heading **Coast horned lizard**, the text describes observation occurrence of the coast horned lizard during gnatcatcher surveys. However, an additional observation occurred during

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				E-1)."	surveys and reconnaissance-level habitat surveys (Appendix E-1)."	reconnaissance-level habitat surveys and therefore should be stated in this section.
95	Biological Resources 4.4.1.4	4.4-18	Table 4.4-4	"Unlikely. No suitable…"	Revise as follows: "~~Unlikely~~ Absent. No suitable…"	In **Table 4.4-4**, under the column heading **Potential to Occur** for the Sierra Madre yellow legged frog, the status should be changed from "Unlikely" to "Absent" to reflect the absence of suitable habitat within the project area. Neither the habitat nor the elevation is suitable for the species.
96	Biological Resources 4.4.1.4	4.4-19	Table 4.4-4	"Likely. Known to occur in Los Angeles…"	Revise as follows: "~~Likely~~ Unlikely. Known to occur in Los Angeles…"	In **Table 4.4-4,** under the column heading **Potential to Occur** for the California Condor (*Gymnogyps californianus*), the status should be changed from "Likely" to "Unlikely" to reflect the habitat within the project area. The California Condor is a highly endangered species typically found to the north-northeast in remote habitats. There are limited large mammals for a carcass base within the project area and limited foraging habitat. In addition, all birds within the wild population are monitored on a daily basis and can have predictable movement patterns in the breeding and post breeding season.
97	Biological Resources 4.4.1.4	4.4-20	Table 4.4-4	"Least Bell's vireo Likely. Closest CNDDB occurrence 5 miles northwest of 66-kV subtransmission line structure1 in 1988, and 4 miles southeast of San Fernando Substation in 2003. Suitable habitat present throughout project component areas. Project component areas lie within known breeding range for this species."	Revise as follows: "Least Bell's vireo ~~Likely~~. Unlikely. Closest CNDDB occurrence 5 miles northwest of 66-kV subtransmission line structure1 in 1988, and 4 miles southeast of San Fernando Substation in 2003. Only patches of marginal ~~Suitable~~ habitat present throughout project component areas. Project component areas lie within known breeding range for this species."	In **Table 4.4-4,** the determination for Least Bell's vireo should be changed from "likely" to "unlikely"; the riparian habitat within the project area is not suitable for LBV breeding, as supported in Exhibit A-2 of the accompanying Cover Letter.
98	Biological Resources	4.4-20	Table 4.4-4	"Southwestern willow flycatcher Likely. No CNDDB occurrences recorded	Revise as follows:	In **Table 4.4-4,** the determination for SWWF should be changed from "Likely" to "Absent. The riparian

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
	4.4.1.4			within 10 miles of the project component areas. Suitable habitat present. Known or believed to occur in Los Angeles and Ventura Counties (USFWS 2010a; DOI 2011)."	"Southwestern willow flycatcher ~~Likely~~. <u>Absent.</u> No CNDDB occurrences recorded within 10 miles of the project component areas. Suitable habitat <u>is not</u> present. Known or believed to occur in Los Angeles and Ventura Counties (USFWS 2010a; DOI 2011)."	habitat within the project area is not suitable for SWWF. SWWF requires wide willow riparian forest corridors with areas of standing water under the forest canopy. This type of habitat is not present in the project area, as supported in Exhibit A-2 of the accompanying Cover Letter
99	Biological Resources 4.4.1.4	4.4-25	39-41	"Negative survey results for coastal California gnatcatchers in the proposed project area are likely due to the fact that the coastal sage scrub is of marginal quality and fragmented, as well as the steepness of slopes within the proposed project site."	Revise as follows: "~~Negative survey results for coastal California gnatcatchers in the proposed project area are likely due to the fact that the coastal sage scrub is of marginal quality and fragmented, as well as the steepness of slopes within the proposed project site~~."	Under the heading **Coastal California gnatcatcher**, the presence determination statement contradicts the "Likely" determination in Table 4.4-4. Recommend deleting text for clarification.
100	Biological Resources 4.4.2.4	4.4-35	45			Under the heading **4.4.2.4 Regional and Local**, a description of the Ventura County Oak Tree Ordinance is missing. Include a summary and revise accordingly.
101	Biological Resources 4.4.4.4	4.4-40	**29-35**	**"MM BR-1: Trimming of Vegetation.** In order to minimize the removal of vegetation in areas of habitat for the coastal California gnatcatcher, for the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas, SCE will ensure that trimming of all native vegetation, riparian vegetation, and vegetation that provides potential habitat for coastal California gnatcatcher will be performed by a certified arborist or a person with a minimum of 6 years' regional expertise in trimming trees/shrubs in this area and who has worked under a certified	Revise as follows: **"MM BR-1: Trimming of Vegetation.** In order to minimize the removal of vegetation in areas of habitat for the coastal California gnatcatcher, for the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas, SCE will ensure that trimming of all native vegetation, riparian vegetation, and vegetation that provides potential habitat for coastal California gnatcatcher will be <u>monitored by a qualified biologist. Trimming of native trees and native arborescent shrubs will be monitored by a qualified arborist.</u> ~~performed by a certified arborist or a person with a minimum of 6~~	Under the heading **MM BR-1: Trimming of Vegetation**, monitoring of all vegetation trimming by a certified arborist is not justified. An arborist specializes in the care of trees and woody shrubs, but most of the vegetation in the project area consists of grasses and scrub species, including gnatcatcher habitat, which should be monitored by a biologist. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				arborist."	~~years' regional expertise in trimming trees/shrubs in this area and who has worked under a certified arborist.~~	
102	Biological Resources 4.4.4.4	4.4-41	13-32	**"MM BR-3: Habitat Restoration Plan for Venturan Coastal Sage Scrub.** Prior to construction of the proposed project, and with the coordination and review of USFWS and CDFG, SCE will prepare a habitat restoration plan for Venturan Coastal Sage Scrub associations for the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas…. 3. Purchase of credits and/or mitigation lands at a ratio above 0.5:1 from an entity reviewed and approved by the USFWS and/or CDFG. Details of the restoration plan will be finalized pending consultation between SCE, USFWS, and CDFG…."	Revise as follows: "**MM BR-3: Habitat Restoration Plan for Venturan Coastal Sage Scrub.** Prior to construction of the proposed project, and with the coordination and review of USFWS ~~and CDFG~~, the applicant and SCE will prepare a habitat restoration plan for Venturan Coastal Sage Scrub associations for the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas….. 3. Purchase of credits and/or mitigation lands at a ratio above 0.5:1 from an entity reviewed and approved by the USFWS ~~and/or CDFG~~. Details of the restoration plan will be finalized pending consultation between the applicant, SCE, and USFWS~~, and CDFG~~….."	Under the heading **MM BR-3: Habitat Restoration Plan for Venturan Coastal Sage Scrub**, the text describes CDFG oversight; however, CDFG oversight is not warranted due to the fact that the gnatcatcher is not a state-listed species. The project proponent should provide oversight over development of the restoration plan in addition to SCE. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
103	Biological Resources 4.4.4.4	4.4-46	11-24	**"MM BR-8: Pre-Construction Surveys for Least Bell's Vireo and Southwestern Willow Flycatcher.** Prior to construction, the applicant and SCE will complete protocol-level surveys for least Bell's vireo and southwestern willow flycatcher in areas of suitable or potentially suitable habitat in the proposed project component areas. Surveys will be completed by a permitted biologist(s) according to the survey protocol for least Bell's vireo (USFWS 2001) and southwestern willow flycatcher (Sogge et al.	Revise as follows: **MM BR-8: Pre-Construction Surveys for Least Bell's Vireo ~~and Southwestern Willow Flycatcher~~.** Prior to construction, the applicant and SCE will complete protocol-level surveys for least Bell's vireo ~~and southwestern willow flycatcher~~ in areas of suitable or potentially suitable habitat in the proposed project component areas. Surveys will be completed by a permitted biologist(s) according to the survey protocol for least Bell's vireo (USFWS 2001) ~~and southwestern willow flycatcher (Sogge et al. 2010).~~ Whenever least	Under the heading **MM BR-8: Pre-Construction Surveys for Least Bell's Vireo and Southwestern Willow Flycatcher**, the mitigation measure should be revised with removal of reference to SWWF. The riparian habitat within the project area is not suitable for SWWF. SWWF requires wide willow riparian forest corridors with areas of standing water under the forest canopy. This type of habitat is not present in the project area, as supported in Exhibit A-2 of the accompanying Cover Letter. See Exhibit A-1 of the accompanying Cover Letter for supporting revisions.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				2010). Whenever least Bell's vireo or southwestern willow flycatcher territory or nest sites are confirmed, the applicant and/or SCE will notify the USFWS and CDFG immediately upon return from the field. In the event that any least Bell's vireos or southwestern willow flycatchers or their nests are observed, biologists will establish and maintain a minimum 500-foot exclusionary buffer by installing temporary flagging or fencing between the nest site and construction activities. Federal endangered species recovery permits are not required for least Bell's vireo surveys, but are required in all USFWS regions where the southwestern willow flycatcher breeds (application forms can be downloaded at http://www.fws.gov/forms/3-200-55.pdf). State survey permits also may be required from the CDFG for both species.**"**	Bell's vireo ~~or southwestern willow flycatcher~~ territory or nest sites are confirmed, the applicant and/or SCE will notify the USFWS and CDFG immediately upon return from the field. In the event that any least Bell's vireos ~~or southwestern willow flycatchers~~ or their nests are observed, biologists will establish and maintain a minimum 500-foot exclusionary buffer by installing temporary flagging or fencing between the nest site and construction activities. ~~Federal endangered species recovery permits are not required for least Bell's vireo surveys, but are required in all USFWS regions where the southwestern willow flycatcher breeds (application forms can be downloaded at http://www.fws.gov/forms/3-200-55.pdf).~~ State survey permits also may be required from the CDFG for both species.**"**	
104	Cultural Resources, 4.5	4.5-17	36-43	**"MM CR-4: Stop Work for Unanticipated Cultural Resources Discoveries.** In the event that previously unidentified cultural resources are uncovered during implementation of the project, the applicant and SCE will ensure that ground-disturbing work would be halted or diverted away from the discovery to another location. The CPUC-approved archeological monitor will inspect the discovery and determine whether further investigation is required."	Revise as follows: "**MM CR-4: Stop Work for Unanticipated Cultural Resources Discoveries.** In the event that previously unidentified cultural resources are uncovered during implementation of the project, the applicant and SCE will ensure that ground-disturbing work would be halted or diverted away from the discovery to another location. The CPUC <u>staff</u> approved archeological ~~monitor~~ <u>contractor</u> will inspect <u>and review</u> the discovery and determine whether further investigation is required."	Under the heading **MM CR-4: Stop Work for Unanticipated Cultural Resources Discoveries**, provide clarification that CPUC approval does not require commissioner approval for the archeological contractor See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
105	Cultural Resources, 4.5	4.5-5	12	"historic properties"	Revise as follows: "historic ~~properties~~ resources"	Under the heading **66-kV Subtransmission Line Segments D and E and Telecommunications Route #3**, the term "historic properties" is presented; however this term is federal terminology; this project has no federal nexus. Therefore, the term "historic resources" should be used as it is a CEQA term and is more appropriate.
106	Cultural Resources, 4.5	4.5-5	29	"The Area of Potential Effect (APE) for 66-kV Subtransmission Line Segments A, B, C, D, and E and Telecommunications Route #1 was defined as a 30-meter radius around each existing tower or structure. Archaeological surveys of the APE were conducted on April 23 and 26, 2009… Each tower area and access road was subjected to intensive pedestrian-level surveys with transect widths no more than 10 meters apart to ensure that all surface-exposed artifacts and sites within the APE would be identified. Ground visibility varied from excellent in areas recently affected by fire, to poor in most cases where vegetation or ground cover was dense. The area around most of the towers has been previously disturbed. No archaeological materials were observed or collected in the APE (SoCalGas 2011)."	Revise as follows: "~~The Area of Potential Effect (APE)~~ The project area for 66-kV ~~S~~subtransmission Line Segments A, B, C, D, and E and Telecommunications Route #1 was defined as a 30-meter radius around each existing tower or structure. Archaeological surveys of the ~~APE~~ project area were conducted on April 23 and 26, 2009…. Each tower area and access road was subjected to intensive pedestrian-level surveys with transect widths no more than 10 meters apart to ensure that all surface-exposed artifacts and sites within the ~~APE~~ project area would be identified. Ground visibility varied from excellent in areas recently affected by fire, to poor in most cases where vegetation or ground cover was dense. The area around most of the towers has been previously disturbed. No archaeological materials were observed or collected in the ~~APE~~ project area (SoCalGas 2011)."	Under the heading **Field Surveys**, the term "*APE*" is presented; however this term is federal terminology; this project has no federal nexus. CEQA has no analogous term and refers to general project impacts but not in a spatial context. *Project area* is a typical term used in CEQA documents.
107	Cultural Resources, 4.5	4.5-6	3	"A letter requesting a search of the Sacred Lands Files at the Native American Heritage Commission (NAHC) was sent on June 22, 2011. No response has yet been	Revise as follows: ~~"A letter requesting a search of the Sacred Lands Files at the Native American Heritage Commission (NAHC) was sent on June 22, 2011. No response~~	Under the heading, **Native American Consultation**, the text describes that the NAHC has not yet responded to the letter request for Sacred Land Files. However, the NAHC responded on

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				received. Along with the results of the search, the NAHC will provide a list of Native American tribes and contacts who have expressed an interest in the proposed project component areas. Letters will be sent to the contacts provided to give an opportunity for the Native American community to express concerns about the proposed project."	~~has yet been received~~. The NAHC responded to the NOP on October 26, 2010. The response included results of the Sacred Lands File Search, which did not identify any resources within the project area. However, there are resources in close proximity. Along with the results of the search, the NAHC ~~will~~ provided a list of Native American tribes and contacts who have expressed an interest in the proposed project component areas. Letters ~~will be~~ were sent to the contacts provided to give an opportunity for the Native American community to express concerns about the proposed project.	October 26, 2010 to the NOP, as presented in the Scoping Report (Appendix C of the DEIR) and described the SLF records search results and provided a list of contacts. Revise the text to be consistent with the Scoping Report, and provide additional detail on any responses received from listed contacts.
108	Cultural Resources, 4.5	4.5-9	37	"5097.98 (b) and (e)"	Revise as follows: "5097.98 ~~(b)~~ (a) and ~~(e)~~ (b)"	Under the heading **Public Resources Code Section**, the regulatory citation is inaccurate. 5097.98 (a) and (b) are the primary regulatory drivers for burial notifications to the NAHC and subsequent actions. There is no (e).
109	Cultural Resources, 4.5	4.5-16	2	"Construction activities could impact known and unknown historical resources. Data collected from the records search and surveys revealed that historical resources have been documented within the proposed project component areas (see discussion below). Further, cultural resources surveys have not been conducted for some areas of the proposed project, and it is possible that previously unrecorded historical resources are present."	Revise as follows: "Construction activities could impact known and unknown historical resources. Data collected from the records search and surveys revealed that historical resources have been documented within the ~~proposed project component~~ records search areas (see discussion below). None of the resources will be impacted by the proposed project. However, ~~Further,~~ cultural resource~~s~~ surveys have not been conducted for some areas of the proposed project, and it is possible that previously unrecorded historical resources are present. Therefore, construction activities could impact unknown historical resources."	Under the heading of **Impact Analysis, Impact CR-1**, the following CEQA (Appendix G) checklist question regarding - Substantial adverse change in the significance of an historical resource has been included in the analysis. No historical resources have been identified in the proposed project area. Although inventory and evaluation has not been completed, based on the types of resources identified to date, this approach should mitigate impacts to a level less than significant. The impacts related to construction and operation of project components implemented by both the applicant and SCE have been adequately

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						evaluated.
110	Cultural Resources, 4.5	4.5-16	37	"Prior to issuance of construction permits, the applicant and SCE will submit Cultural Resources Plans for the respective project components, prepared by the approved consultant(s) for review and approval by the CPUC. The intent of the Cultural Resources Plans will be to address cultural resources eligible for the CRHR that cannot be preserved by avoidance and to identify areas where monitoring of earth-disturbing activities is required."	Revise as follows: "Prior to issuance of construction permits, the applicant and SCE will submit Archaeological Monitoring and Treatment ~~Cultural Resources~~ Plans for the respective project components, prepared by the approved ~~consultant(s)~~ contractor for review and approval by the CPUC staff. The intent of the ~~Cultural Resources~~ Plans will be to address cultural resources eligible for the CRHR that cannot be preserved by avoidance and to identify areas where monitoring of earth-disturbing activities is required."	Under the heading, **MM CR-1: Cultural Resources Plan,** clarification should be presented as to which Cultural Resources Plans will be required – Under MM CR-6 a Paleontological Monitoring and Treatment Plan is explicitly called for. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
111	Cultural Resources, 4.5	4.5-17	17	"**MM CR-2: Additional Cultural Resources Surveys.** Prior to issuance of construction permits, the applicant and SCE will ensure that qualified archaeological, as specified in the Cultural Resources Plans, will conduct intensive-level cultural resources surveys (transects no greater than 15 meters) for all areas to be disturbed that have not already been surveyed for cultural resources and, prior to the project, had previously been undisturbed."	Revise as follows: "**MM CR-2: Additional Cultural Resources Surveys.** Prior to issuance of construction permits, the applicant and SCE will ~~ensure that~~ retain qualified archaeological ~~consultants~~ contractor(s), as specified in the ~~Cultural Resources Plans~~ Archeological Monitoring and Treatment Plan~~, will~~ to conduct intensive-level cultural resources surveys (transects no greater than 15 meters) for all areas to be disturbed that have not already been surveyed for cultural resources and, prior to the project, had previously been undisturbed."	Under the heading **MM CR-2: Additional Cultural Resources Surveys**, the use of "ensure" appears excessive and should be revised for clarification. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
112	Cultural Resources, 4.5	4.5-17	36	"If the resource is significant but cannot be avoided and may be subject to further impact, the CPUC- approved archaeological monitor would evaluate the significance of the resource based on eligibility for the California Register of	Revise as follows: "If the resource is significant but cannot be avoided and may be subject to further impact, the CPUC-staff approved archaeologist~~cal monitor~~ would evaluate the significance of the resource based on eligibility for the California Register of Historical	Under the heading **MM CR-4: Stop Work for Unanticipated Cultural Resources Discoveries,** typically monitors do not evaluate the significance of a site and the protocol for evaluation will be established in the plans specified in MM CR-1. Clarifying text should be added to the measure.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				Historical Resources (CRHR) or local registers and implement appropriate measures in accordance with the Cultural Resources Plans."	Resources (CRHR) or local registers and implement appropriate measures in accordance with the Archaeological Monitoring and Treatment ~~Cultural Resources~~ Plans."	See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
113	Cultural Resources, 4.5	4.5-17	3	**"MM CR-5: Cultural Resources Reporting.** Prior to final inspection after construction of project components has been completed, the applicant's and SCE's qualified archaeologists as specified in the Cultural Resources Plans will submit reports to the CPUC summarizing all monitoring and mitigation activities and confirming that all mitigation measures have been implemented."	Revise as follows: **"MM CR-5: Cultural Resources Reporting.** Prior to final inspection after construction of project components has been completed, the applicant's and SCE's qualified archaeologists as specified in the ~~Cultural Resources~~ Archaeological Monitoring and Treatment Plans will submit reports to the CPUC summarizing all monitoring and mitigation activities and confirming that all mitigation measures have been implemented."	Under the heading, **MM CR-5: Cultural Resources Reporting,** type of plan needs clarification. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
114	Cultural Resources, 4.5	4.5-21	10	"Implementation of MM CR-6, MM CR-7, MM CR-8, MM CR-9, and MM CR-10, which include the development of Paleontological Monitoring and Treatment Plans, paleontology construction monitoring, data recovery procedures, construction personnel training, and stop work procedures for unanticipated discoveries would reduce impacts on paleontological resources to less than significant."	Revise as follows: "Implementation of MM CR-6, ~~MM CR-7,~~ MM CR-8, MM CR-9, and AMP HZ-6, ~~and MM CR-10,~~ which include the development of Paleontological Monitoring and Treatment Plans, paleontology construction monitoring, data recovery procedures, construction personnel training, and stop work procedures for unanticipated discoveries would reduce impacts on paleontological resources to less than significant."	Under the heading of **Impact Analysis, Impact CR-3** the following CEQA checklist (Appendix G) question - Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature and been included in the analysis. The impacts related to construction and operation of project components implemented by both the applicant and SCE have been adequately evaluated. Recommend replacing MM CR-7 with MM HZ-6 and renumbering the remaining MM CRs.
115	Cultural Resources, 4.5	4.5-22	4	**"MM CR-7: Construction Personnel Training.** Prior to 1 the initiation of construction or ground disturbing activities in areas with high paleontological sensitivity, the applicant….."	Revise as follows: ~~**"MM CR-7: Construction Personnel Training.** Prior to 1 the initiation of construction or ground disturbing activities in areas with high paleontological sensitivity, the applicant…..~~**APM**	Under the heading, **MM CR-7: Construction Personnel Training.,** MM CR-7 is redundant with HZ-6. Recommend deleting MM CR-7 and replacing it with

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
					HZ-6: Worker Environmental Awareness Training. . Prior to construction, the applicant and SCE will develop and implement Worker Environmental Awareness Training Programs based…."	APM HZ-6: Worker Environmental Awareness Training. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
116	Cultural Resources, 4.5	4.5-22	12	"**MM CR-8: Paleontology Construction Monitoring.** Based on the Paleontological Monitoring and Treatment Plans, the applicant and SCE will conduct paleontological monitoring using CPUC approved paleontological monitors . This will include monitoring during rough grading and trenching in areas determined to have high paleontological sensitivity and that have the potential to be shallow enough to be adversely affected by such earthwork as determined by the CPUC- approved paleontological monitors."	Revise as follows: **MM CR-~~8~~7: Paleontology Construction Monitoring.** Based on the Paleontological Monitoring and Treatment Plans, the applicant and SCE will conduct paleontological monitoring using CPUC staff approved paleontological ~~monitors~~ contractors. This will include monitoring during rough grading and trenching in areas determined to have high paleontological sensitivity and that have the potential to be shallow enough to be adversely affected by such earthwork as determined by the CPUC-staff approved ~~paleontological monitors~~ Paleontological Monitoring and Treatment Plans.	Under the heading**, MM CR-8: Paleontology Construction Monitoring,** the decision regarding monitoring area needs to be clarified. MM CR-8 needs to be renumbered to MM CR-7 based on the replacement of previous MM CR-7 with HZ-6. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
117	Cultural Resources, 4.5	4.5-22	18	"**MM CR-9: Stop Work for Unanticipated Paleontological Discoveries** If the resource is significant but cannot be avoided and may be subject to further impact, the CPUC-approved paleontological would evaluate the significance of the resource and implement appropriate measures in accordance with the Paleontological Monitoring and Treatment Plans"	Revise as follows: **MM CR-~~9~~8: Stop Work for Unanticipated Paleontological Discoveries.** If the resource is significant but cannot be avoided and may be subject to further impact, the CPUC-approved paleontologist~~cal~~ ~~monitor~~ would evaluate the significance of the resource and implement appropriate measures in accordance with the Paleontological Monitoring and Treatment Plans.	Under the heading **MM CR-9: Stop Work for Unanticipated Paleontological Discoveries**. Typically monitors do not evaluate the significance of a resource and the protocol for evaluation will be established in the plans specified in MM CR-6. MM needs to be renumbered to CR-8 based on the replacement of previous MM CR-7 with HZ-6. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
118	Cultural Resources, 4.5	4.5-22	28-32	"***MM CR-10: Paleontological Data Recovery***"	Revise as follows: ***MM CR-~~10~~9: Paleontological Data Recovery***	Under the heading ***MM CR-10: Paleontological Data Recovery***, MM needs to be renumbered to CR-9 based on the replacement of previous MM

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						CR-7 with HZ-6. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
119	Geology, Soils and Minerals 4.6	4.6-15	7 through 12	"***Subsidence*** The proposed project component areas are located within an area of known subsidence associated with fluid withdrawal (ground water or petroleum), peat oxidation, or hydrocompaction. Subsidence would be primarily associated with the withdrawal of oil and gas from the sedimentary strata located within the storage field. However, although both groundwater and petroleum have been removed from the ground, there is no evidence that significant subsidence has occurred or may occur in the future. The likelihood of seismically induced settlement is, therefore, considered to be remote."	Revise as follows: "***Subsidence*** The proposed project component areas are <u>not</u> located within an area of known subsidence associated with fluid withdrawal (ground water or petroleum), peat oxidation, or hydrocompaction. ~~Subsidence would be primarily associated with the withdrawal of oil and gas from the sedimentary strata located within the storage field. However, although~~ <u>Although</u> both groundwater and petroleum have been removed from the ground, there is no evidence that significant subsidence has occurred or may occur in the future. <u>Based on the geologic structure and rock type comprising the storage field, subsidence related to the Proposed Project is considered to be remote</u>. ~~The~~ <u>In addition</u>, likelihood of seismically induced settlement is~~, therefore,~~ considered to be remote."	Under the heading **Subsidence**, the original statement is not applicable to the project area and is technically incorrect.
120	Hazards and Hazardous Materials	4.8-8	29-32	"Gas migration from an underground well to the surface can occur in three ways: (1) from defective cementing of new wells or abandoned wells, (2) through overpressurization of cracks or faults, and (3) through the formation of new fractures due to the natural gas injection and storage process."	Revise as follows: "Gas migration from an underground well to the surface can occur in three ways: (1) from defective cementing of new wells or abandoned wells, (2) through overpressurization of cracks or faults, and (3) through the formation of new fractures <u>when the natural gas injection pressure is higher than the original naturally occurring pore pressure</u> ~~due to the natural gas injection and storage process~~. <u>Note that in the case of Aliso Canyon storage reservoir, injection pressure does not exceed the original</u>	Under the heading **Natural Gas and the Aliso Canyon Storage Reservoir**, the text inaccurately describes gas migration process through new fractures. However, new fractures cannot form unless the injection pressure is higher than the original naturally occurring pore pressure. In the case of Aliso Canyon, injection pressure does not exceed the original naturally occurring pore pressure at the time of discovery of the reservoir. Clarifying text should be provided.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
					naturally occurring pore pressure at the time of discovery of the reservoir."	
121	Hazards and Hazardous Materials	4.8-11	18-20	"A second safety incident occurred in January 1993, during the Northridge 6.7 magnitude earthquake in the region. Ground moving and shaking caused significant equipment damage and multiple pipeline ruptures, resulting in a shutdown of operations."	Revise as follows: "A second safety incident occurred in January 1993, during the Northridge 6.7 magnitude earthquake in the region. Ground moving and shaking "caused ~~significant~~ minor equipment damage to pipelines at Aliso Canyon" ~~and multiple pipeline ruptures~~, resulting in a temporary suspension of operations in order to thoroughly inspect the entire system before resuming operations."	Under the heading **Storage Field Safety Record,** the reference to the earthquake inaccurately describes the impact. The earthquake caused only minor equipment damage. Pipelines ruptured down in the valley, however no pipelines ruptured at the Aliso Canyon natural gas storage facility.
122	Hazards 4.8.3	4.8-39	39-41	**"Impact HZ-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.** *LESS THAN SIGNIFICANT"*	Revise as follows: **"Impact HZ-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.** *~~LESS THAN SIGNIFICANT~~NO IMPACT"*	Under the heading, **Impact HZ-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.** *LESS THAN SIGNIFICANT*, the significance determination should be revised consistent with the evaluation from"less than significant" to "no impact" Significance determinations are not clearly defined. This is a **GLOBAL COMMENT**
123	Hazards 4.8.3	4.8-23	1st Row of Table 4.8-5	"Natural gas (within compressors and piping); lubricating oils (within equipment); and minor maintenance chemicals. Waste oil, gas stream condensates, oily debris, minor trash, and metal scrap. "	Revise as follows: "~~Natural gas (within compressors and piping); lubricating oils (within equipment); and minor maintenance chemicals. Waste oil, gas stream condensates, oily debris, minor trash, and metal scrap. "~~Same as current use"	In **Table 4.8-5, column Hazardous Materials and Wastes Anticipated During Proposed Project Operation**, the text should indicate "same as current use."
124	Hazards 4.8.4	4.8-26	31-32	"Storage pipelines are also cleaned	Revise as follows:	Under the heading **Southern California Gas Safety Procedures**, the text inaccurately describes

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				regularly prior to the start of the injection season."	"~~Storage pipelines are also cleaned regularly prior to the start of the injection season~~."	cleaning of storage pipelines and should be deleted.
125	Hydrology and Water Quality 4.9.4	4.9-11	4-34	"For the SCE project elements, construction laydown areas may require some grading, and wire pull, splicing, and tensioning locations would generally be located on existing level areas and existing roads to minimize the need for grading and cleanup."	Revise as follows: "For the SCE project elements, construction laydown areas may require some grading, and wire pull, splicing, and tensioning locations would generally be located on existing level areas and existing roads to minimize the need for grading and cleanup. <u>The installation of the Telecommunications Route #2 from the Chatsworth Substation to the Natural Substation will not require any grading or site disturbance that could potentially impact hydrology or water quality and so is not discussed further in the regulatory section or the analysis</u>."	Under the heading, **Environmental Impacts and Mitigation Measures,** the introduction section does not discuss the activities that are proposed for the Telecommunications Route #2 from the Chatsworth Substation to the Natural Substation. A statement is recommended to establish that this portion of the project does not include activities that may impact hydrology or water quality and so is not discussed further. This extends to excluding Ventura County regulations from the regulatory setting.
126	Hydrology and Water Quality 4.9.4.1	4.9-12	25	**"Geology, Soils, and Mineral Resources** **• APM GE-1: Geotechnical Studies.** **• APM GE-2: Seismic-resistant Design Measures."**	Revise as follows: **"Geology, Soils, and Mineral Resources** **• APM GE-1: Geotechnical Studies.** **~~• APM GE-2: Seismic-resistant Design Measures."~~**	Under the heading, **Applicant Proposed Measures,** the Applicant Proposed Measure *APM GE-2: Seismic-resistant Design Measures* has been listed as a proposed measure for *Impact HY-1: Violate water quality standards or waste discharge requirements.* However, APM GE-2 is not directly related to the protection of water quality and should be deleted. This is a **GLOBAL COMMENT**
127	Hydrology and Water Quality 4.9.4.2	4,9-17	46-47	**"Impact HY-10: Risk of loss, injury or death involving flooding.** *LESS THAN SIGNIFICANT"*	Revise as follows: **"Impact HY-10: Risk of loss, injury or death involving flooding.** *~~LESS THAN SIGNIFICANT~~<u>NO IMPACT</u>"*	Under the heading, **Impact HY-10; Risk of loss, injury or death involving flooding,** the significance determination should be revised consistent with the evaluation from "less than significant" to "no impact" Significance determinations are not clearly defined. This is a **GLOBAL COMMENT**

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
128	Hydrology and Water Quality 4.9.4.2	4.9-18	4-5	"Accordingly,~~ ~~any potential impact would be less than significant."	Revise as follows: "Accordingly,~~ any potential impact would be less than significant~~ the proposed project would have no impact associated with exposing people or structures to a significant risk of loss, injury or death involving flooding."	Under the heading, **Impact HY-10; Risk of loss, injury or death involving flooding,** the evaluation correctly states that the smaller footprints of the TSPs "are less likely to result in an accumulation of debris due to a flood event. This evaluation should result in a conclusion of "no impact" as the potential impact has been reduced from existing conditions.
129	Hydrology and Water Quality 4.9.4.2	4.9-17	35-36, 39-42, 44	. "A mudflow is a downhill movement of soft, wet earth and debris caused by a rapid and heavy accumulation of rain or snowmelt in areas subject to potential for landslides. As discussed in Section 4.6, "Geology, Soils, and Mineral Resources," the proposed project is located within areas with earthquake induced landslide potential. The applicant would employ APM GE-1, which involves the completion of geotechnical studies, prior to construction of the proposed Natural Substation (geotechnical studies have been completed for the Central Compressor Station) and would employ measures recommended in the geotechnical studies during construction to address potential impacts related to geological instability. In addition, the applicant would employ APM GE-2, ensuring that the final design of the proposed project, (including the proposed 66-kV subtransmission line modifications), would incorporate seismic-resistant design measures and be geotechnically	Revise as follows: "A mudflow is a downhill movement of soft, wet earth and debris caused by a rapid and heavy accumulation of rain or snowmelt in areas subject to potential for landslides. ~~As discussed in Section 4.6, "Geology, Soils, and Mineral Resources," the proposed project is located within areas with earthquake induced landslide potential. The applicant would employ APM GE-1, which involves the completion of geotechnical studies, prior to construction of the proposed Natural Substation (geotechnical studies have been completed for the Central Compressor Station) and would employ measures recommended in the geotechnical studies during construction to address potential impacts related to geological instability. In addition, the applicant would employ APM GE-2, ensuring that the final design of the proposed project, (including the proposed 66-kV subtransmission line modifications), would incorporate seismic-resistant design measures and be geotechnically appropriate for the setting of proposed project. Project components would meet applicable state seismic safety standards, including special foundation design, additional bracing, and structure~~	Under the heading**, Impact HY-8; Risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow**, the CEQA checklist (Appendix G) question has not been correctly analyzed. The logic used to assess this potential impact for mudflows is incorrect. Earthquake induced landslide hazards and potential for mudflows are not directly related as implied in lines 35 and 36 on page 4.9-17. Section 4.6 states that "Portions of the proposed project traverse hills and slopes that may be susceptible to landslides both seismically and seismically induced. These landslides occur in areas with steep and unstable slopes; these types of slopes in the area could experience rapid earth movement in the form of a landslide with or without a seismic trigger." This statement is not relevant for mudflows. It is recommended that the analysis should add the following sentence on line 44, before the last sentence of the section to correctly address mudflows. "Although the possibility of mudflows in construction areas is considered low,

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				appropriate for the setting of proposed project. Project components would meet applicable state seismic safety standards, including special foundation design, additional bracing, and structure support. Therefore, any potential impacts would be less than significant."	~~support~~. Although the possibility of mudflows in construction areas is considered low, implementation of the SWPPP would further reduce the possibility of mudflows in these areas. However the Proposed Project would not alter the existing potential or baseline conditions related to mudflow hazards in the Project area. Therefore, any potential impacts would be less than significant."	implementation of the SWPPP would further reduce the possibility of mudflows in these areas. However the Proposed Project would not alter the existing potential or baseline conditions related to mudflow hazards in the Project area." Therefore, potential impacts are less than significant. The discussion concerning seismic-resistant design is irrelevant to this impact and should be deleted. The sentence starting at the end of line 39 and continuing to line 42 (In addition the applicant would employ APM GE-2….for the setting of the proposed project.) should be deleted in its entirety.
130	Hydrology and Water Quality 4.9.2.3	4.9-9 and 4.9-10	41, 45-46 (Pg. 4.9-9), 1 (Pg. 4.9-10).	"A grading permit is required by the LACDWP for the proposed projects that would result in the excavation or fill of more than 50 cubic yards of soil, per Title 26, Chapter 33, of the Los Angeles County Code. … The LACDWP review process for the grading permit could require hydrologic evaluation and drainage designs (LACDWP 2009). …If grading authorized by the permit is anticipated to extend into or through the rainy season (November 1 to April 15 of the following year), separate updated Erosion Control Plans must also be submitted to the LACDWP prior to October 1, per Section 3319.3 of the County of Los Angeles Building Code."	Revise as follows: "A grading permit is required by the ~~LACDWP~~ LACDPW for the proposed projects that would result in the excavation or fill of more than 50 cubic yards of soil, per Title 26, Chapter 33, of the Los Angeles County Code. … The ~~LACDWP~~ LACDPW review process for the grading permit could require hydrologic evaluation and drainage designs (~~LACDWP~~ LACDPW 2009). …If grading authorized by the permit is anticipated to extend into or through the rainy season (November 1 to April 15 of the following year), separate updated Erosion Control Plans must also be submitted to the ~~LACDWP~~ LACDPW prior to October 1, per Section 3319.3 of the County of Los Angeles Building Code."	Under the heading, **Los Angeles County Department of Water and Power,** this section refers to the Los Angeles County Department of Water and Power (LACDWP) requiring a grading permit, performing a review process, and requiring an Erosion Control Plan. However, the correct name for the local agency is the Los Angeles County Department of Public Works (LACDPW) who will require this information.
131	Hazards 4.9.2.3	4.9-10	5	"LACDWP is updating its 2005 Urban Water Management Plan (UWMP), the preparation of which is required under the	Revise as follows: ~~"LACDWP~~ LADWP is updating its 2005 Urban	Under the heading, **Los Angeles County Department of Water and Power,** line 5 refers to the Los Angeles County Department of Water and

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				California Urban Water Management Planning Act."	Water Management Plan (UWMP), the preparation of which is required under the California Urban Water Management Planning Act."	Power (LACDWP) updating its 2005 Urban Water Management Plan (UWMP). However, the correct name of the municipal utility that supplies water to the project and is updating its UWMP is the Los Angeles Department of Water and Power (LADWP). It is recommended that the paragraph including lines 5 to 10 on page 4.9-10 be moved to Section 4.9.1.5 (page 4.9-7) that discusses water supply and usage for the proposed project.
132	Hazards 4.9 References	4.9-18	40	"LACDWP (Los Angeles County Department of Water and Power) 2009. Grading Review Sheet …"	Revise as follows: "~~LACDWP (Los Angeles County Department of Water and Power)~~LACDPW (Los Angeles County Department of Public Works). 2009. Grading Review Sheet …"	Under the heading, **References**, line 40 refers to Los Angeles County Department of Water and Power (LACDWP) Grading Review sheet. The correct name for the local agency is the Los Angeles County Department of Public Works (LACDPW)
133	Land Use 4.10	4.10-1 and 4.10-2	33-41	"**Open Space Preserves, Parks, and Significant Ecological Areas** Figure 4.10-1 shows open space areas, parks, and Significant Ecological Areas (SEAs) in the vicinity of the proposed project components. Portions of Segment C of the 66-kilovolt (kV) subtransmission line and Telecommunications Route #1 (Mile Post 5 to Mile Post 7) parallel the border between the City and County of Los Angeles. This border coincides with the boundary between Michael D. Antonovich Open Space and O'Melveny Park……"	Revise as follows: "**Open Space Preserves, Parks, and Significant Ecological Areas** Figure 4.10-1 shows open space areas, parks, and Significant Ecological Areas (SEAs) in the vicinity of the proposed project components. An SEA designation is given to land in the County that contains irreplaceable biological resources. This designation is derived from the Los Angeles County General Plan. Portions of Segment C of the 66-kilovolt (kV) subtransmission line and Telecommunications Route #1 (Mile Post 5 to Mile	Under the subheading **Open Space Preserves, Parks, and Significant Ecological Areas,** the text does not describe any open space preserves. A brief discussion should be added about applicable open space preserves in the text to be consistent with the subheading title. For example, the Michael D. Antonovich Open Space is an open space preserve that was dedicated in the Santa Clarita Woodlands Park by the Santa Monica Mountains Conservancy and the Mountains Recreation and Conservation Authority.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
					Post 7) parallel the border between the City and County of Los Angeles. This border coincides with the boundary between Michael D. Antonovich Open Space and O'Melveny Park. <u>The Michael D. Antonovich Open Space is an open space preserve that was dedicated in the Santa Clarita Woodlands Park by the Santa Monica Mountains Conservancy and the Mountains Recreation and Conservation Authority</u>…."	In addition, the term "Significant Ecological Areas" (SEAs) should be clearly defined. Also, it should be made clear where this definition is coming from (i.e., this designation derives from the Los Angeles County General Plan). Lastly, a brief discussion should be added about any open space areas, parks, and/or SEAs near or within Telecommunications Route #3 and Segments A, B, D, and E. Currently, the text describes the open space areas, parks, and SEAs near or within the storage field site, telecommunication routes #1 and #2, and Segment C. Even if there are no open space areas, parks, and/or SEAs near or within Telecommunications Route #3 and Segments A, B, D, and E, it should still be stated. By only describing certain portions of the proposed project, it suggests that only these portions of the proposed project were evaluated regarding these types of land uses.
134	Land Use 4.10	4.10-3	Figure 4.10-1		Revise figure per provided comments	On **Figure 4.10-1,** no source information is provided to indicate where the information presented on this figure came from. A citation should be added to source the data used in this figure. Add a citation(s) to source the data used in the figure.
135	Land Use 4.10	4.10-6	28	"This area is both designated in the City's General Plan and zoned for Open Space. The storage field is located in an area designated as Rural in the Los Angeles County General Plan and zoned Heavy	Revise as follows: "The storage field is located in an area designated as ~~Rural~~ <u>Non-Urban</u> in the Los Angeles County General Plan and zoned Heavy Agriculture (A-2)."	Under subheading **Aliso Canyon Storage Field**, the text (starting on line 28) indicates that the County of Los Angeles General Plan land use designation for the storage field is Rural. This land

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				Agriculture (A-2)."		use designation should be Non-Urban, not Rural. The text should be revised accordingly.
136	Land Use 4.10	4.10-7	Figure 4.10-2		Revise the figure as follows: • Add a citation(s) to source the data used in this figure. • Double-check the general plan land use designations for accuracy and revise, as needed. Make sure to discuss with your legal department the use of any general plan land use designations from draft plans, such as the Draft One Vision One Valley Land Use Map. • Add multiple legends to clearly depict the different jurisdiction's general plan land use designations. Consider following the format of Figure 4.9-1 of the ACTR PEA. • Add the missing general plan land use designations around portions of the Telecommunications Route #1 and 66-kV subtransmission line reconductoring route in the County of Los Angeles near the I-5 freeway and the SR-14 junction.	On **Figure 4.10-2,** no source information is provided to indicate where the information presented on this figure came from. A citation should be added to source the data used in this figure. In addition, this figure currently depicts a uniform general plan land use designation throughout the project area. The general plan land use designations should vary per jurisdiction, as each jurisdiction has their own general plan land use designation. For example, there should be a legend for each jurisdiction's general plan land use designation. Currently, there is one legend at the bottom and it is unclear what jurisdiction(s) this legend derives from. Figure 4.9-1 of the ACTR PEA provides a good example of illustrating multiple general plan land use designations in the project area. Furthermore, the general plan land use designations should be double-checked for accuracy. For example, most of the storage field site is shaded an olive green color, indicating that the general plan land use designation is Agriculture per the figure legend. However, according to the County of Los Angeles General Plan (adopted in 1980 and last amended in July 2005 (GPA03)), the County general plan land use designation for the storage field site is <u>Non-Urban</u>.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						Lastly, it appears there are parcels of land around the proposed project that do not show any general plan land use designations. Specifically, there are no general plan land use designations shown around portions of the Telecommunications Route #1 and 66-kV subtransmission line reconductoring route in the County of Los Angeles near the I-5 freeway and the SR-14 junction. This missing general plan land use designation data should be added to this figure.
137	Land Use 4.10	4.10-11, 4.10-26 and 4.10-27		"County of Los Angeles. 2011. County of Los Angeles General Plan. Zoning Ordinance."	Check and revise all in-text citation and references section – see comments provided	**(Comment continued)** For example, when the reader cross-references the "County of Los Angeles 2011" in-text citation with the references section at the end of Section 4.10, they are provided with the following full citation on p. 4.10-27: This one reference is referring to two different documents with two different adoption dates: The County of Los Angeles General Plan, and the County of Los Angeles Zoning Ordinance. The County of Los Angeles General Plan was adopted in 1980 and is currently being updated. A 2011 Draft General Plan Update was released to the public for comment in April 2011, but this is a working document and the Environmental Impact Report for the General Plan Update has not even been released yet. This draft document should not be used for this analysis. In addition, the County of Los Angeles Zoning Ordinance (Title 22) is a

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						completely separate document from the County's General Plan and should be cited separately with the appropriate adoption date. It should also be made clear in these references whether or not these sources were print or electronic sources. If they were electronic sources obtained via a website, the website should be provided or there should be some indication that this is a web source. As a <u>universal comment</u>, the in-text citations throughout Section 4.10 and the references provided at the end of this section should be double-checked for accuracy and should be revised accordingly.
138	Land Use 4.10	4.10-20	5-32	"***Special Ecological Areas*** The county contains 60 SEAs. Areas designated as SEAs in the county have been identified as ecologically valuable for the perpetuation of plant and wildlife resources in the region. Some limited development is allowed within SEAs. For more information on SEAs and the SEATAC review process, see Section 4.4, "Biological Resources……Development within a designated SEA will be reviewed for compliance with the following criteria:…. If a project is located within the boundaries of an SEA, the Significant Ecological Areas Technical Advisory Committee (SEATAC) will review the project during the permitting process and make recommendations in order to reduce or avoid impacts (Los Angeles County 2009a).***"***	Revise as follows: "***~~Special~~ <u>Significant</u> Ecological Areas*** The ~~c~~<u>C</u>ounty <u>of Los Angeles</u> contains 60 SEAs. Areas designated as SEAs in the county have been identified as ecologically valuable for the perpetuation of plant and wildlife resources in the region. Some limited development is allowed within SEAs. For more information on SEAs and the SEATAC review process, see Section 4.4, "Biological Resources……Development within a designated SEA will be reviewed for compliance <u>by the Significant Ecological Areas Technical Advisory Committee (SEATAC) during the permitting process</u> with the following criteria (Los Angeles County 2009a)"	Under subheading **Special Ecological Areas**, the title of this subheading should be slightly revised (i.e., change "Special" to "Significant") for accuracy. In addition, the first sentence (on line 6) under this subheading refers to "the county." It is unclear what county this text is referring to and should be clarified, especially as the proposed project traverses through more than one county. Also, the acronym "SEATAC" should be spelled out the first time it is used (on line 8) for clarity. Currently, this acronym is used, and then spelled out later in this subsection (on line 30). In addition, this sentence on line 8 refers the reader to Section 4.4 of the DEIR for more information on the SEAs and SEATAC review process, but this is the first time this SEATAC review process is mentioned. We suggest making this sentence the last sentence

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						of the subsection and incorporating the text starting on line 30 within the second paragraph for flow and clarity.
139	Land Use 4.10	4.10-26	13-24	"Portions of the 66-kV subtransmission line route and Telecommunications Route #1, and Telecommunications Route #2 would pass through areas designated as SEAs by Los Angeles County. As discussed under Impact LU-2 and in Section 4.4, "Biological Resources," the proposed project would represent a reduction in land disturbance within the area of the SEA; thus, it is unlikely that the proposed project would conflict with the requirements of the county's SEA program."	Revise as follows: "~~Portions of the 66-kV subtransmission line route and Telecommunications Route #1, and Telecommunications Route #2 would pass through areas designated as SEAs by Los Angeles County. As discussed under Impact LU-2 and in Section 4.4, "Biological Resources," the proposed project would represent a reduction in land disturbance within the area of the SEA; thus, it is unlikely that the proposed project would conflict with the requirements of the county's SEA program.~~ <u>As stated in Section 4.4 Biological Resources, no HCPs or NCCPs have been adopted in the proposed project area; therefore, there would be no impacts and no mitigation would be required</u>."	Under subheading **Impact LU-3**, the text needs to be revised to fully and accurately address the applicable CEQA threshold. Currently, the discussion is focused on the whether or not the proposed project conflicts with the County of Los Angeles' SEA program. The current discussion is equating the County's SEA program with a habitat conservation plan (HCP) or natural community conservation plan (NCCP), which is incorrect. SEAs are not HCPs or NCCPs and should not be discussed in this section. Only HCPs or NCCPs should be discussed in this section. If there are no HCPs or NCCPs in the project area, then this needs to be stated and the impact finding should be Revised accordingly (i.e., change the finding from "less than significant" to "no impact"). The impact discussion also needs to be revised to show that the entire project is being evaluated, not just certain components. Currently, the discussion only mentions portions of the 66-kV subtransmission line route and Telecommunications Routes #1 and #2. Lastly, there should be a statement regarding mitigation measures (or lack thereof) associated with conflicting with any applicable HCP or NCCP.
140	Noise 4.11.1	4.11-2	20-21	"It is widely accepted that the average human ear can perceive changes of 3 dBA,…"	Revise as follows: "It is widely accepted that the average human ear can <u>barely</u> perceive changes of 3 dBA,…"	Under the heading, **Noise and Vibration Fundamentals**: the statement "It is widely accepted that the average human ear can perceive changes of 3 dBA,…" is not accurate as it is widely accepted

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						that a 3 dBA change is "barely perceivable" to the average human ear under normal conditions.
141	Noise 4.11.4.2	4.11-18	Table 4.11-18	"83 dBA L_{eq}" *Exceeds Daytime Standard:* "Yes"	Please revise as follows*:* "~~83 dBA~~ 72 dBA L_{eq}" *Please revise as follows for all determination in the column Exceeds Daytime Standard:* "~~Yes~~ No"	In Table 4.11.18, in the column titled **Composite Noise Level at 50 feet (dBA, Lmax),** the value presented is inaccurate. Construction noise attributed to installing the telecommunications line is 72 dBA L_{eq} at 50 feet or 60 dBA L_{eq} or less at distances of 150 feet or greater, a noise level below the city's standard for receptors. In the column titled **Exceeds Daytime Standard**, please revise the determination to No, based on the updated noise levels presented above. Please see supporting analysis presented in Exhibit A-5 of the accompanying cover letter.
142	Noise 4.11.4.4	4.11-24	22	"SCE will prepare and implement a noise control plan to address all SCE structure installation/replacement and substation modifications associated with the SCE-proposed project components."	Revise as follows: "~~SCE will prepare and implement a noise control plan to address all SCE structure installation/replacement and substation modifications associated with the SCE-proposed project components~~."	Under the heading, **MM NS-1; Noise Reduction and Control Practices**, MM NS-1 is a redundant measure, as the project is already subject to a noise control plan (APM NS-2) that does not preclude the identified reconductoring or optic fiber line installation. Additionally, the noise control plan would include any and all measure as appropriate and would be able to be focused as once full knowledge of the activities thus the detailed requirements of MM NS-1 may be unnecessary. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
143	Noise 4.11.4.4	4.11-24; 4.11-25	46-47; 1-2	"Given the short duration of construction activity (less than a week) at any single location during reconductoring and fiber optic cable installation, this impact would be less than significant with the	Revise as follows: "Given the short duration of construction activity (less than a week) at any single location during reconductoring and fiber optic cable installation, this impact would be less than significant with the	Under the heading, **Construction Noise**, the statement incorrectly states that impacts would be lessened by the compliance with applicable plans and ordinances. However, the project's impacts are mitigated by the implementation of the NS APMs,

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				implementation of mitigation after compliance with the proposed policies of applicable General Plan Noise Elements for all jurisdictions, and implementation of the APM NS-1, APM NS-2, and APM NS-3."	~~implementation of mitigation after compliance with the proposed policies of applicable General Plan Noise Elements for all jurisdictions, and~~ implementation of the APM NS-1, APM NS-2, and APM NS-3."	which require compliance with local regulations.
144	Noise 4.11.4.4	4.11-25	31	**"MM NS-2: Operational Noise Control.** After construction of the Central Compressor Station is completed, the applicant will take measures as necessary to ensure that the operational noise levels from the Central Compressor Station do not exceed 45 dBA at the closest receptor in the City of Los Angeles. Measures that may be implemented to achieve this level during the operational phase for turbines, compressors, and cooling equipment proposed to be installed at the Central Compressor Station could include: • Turbines will be placed within an acoustical enclosure; • Compressor noise will be mitigated by placing an acoustical blanket over the compressor itself or enclosing the compressor within an appropriately rated acoustical building; • Noise emitted from gas process coolers will be mitigated by installing acoustic barriers without gaps around the equipment casing and with a continuous minimum surface density of 42 kilograms per square meter in order to minimize the transmission of sound."	Revise as follows: "~~**MM NS-2: Operational Noise Control.** After construction of the Central Compressor Station is completed, the applicant will take measures as necessary to ensure that the operational noise levels from the Central Compressor Station do not exceed 45 dBA at the closest receptor in the City of Los Angeles. Measures that may be implemented to achieve this level during the operational phase for turbines, compressors, and cooling equipment proposed to be installed at the Central Compressor Station could include:~~ ~~• Turbines will be placed within an acoustical enclosure;~~ ~~• Compressor noise will be mitigated by placing an acoustical blanket over the compressor itself or enclosing the compressor within an appropriately rated acoustical building;~~ ~~• Noise emitted from gas process coolers will be mitigated by installing acoustic barriers without gaps around the equipment casing and with a continuous minimum surface density of~~ ~~42 kilograms per square meter in order to minimize the transmission of sound~~."	Under the heading, **MM NS-2; Operational Noise Control**, there does not seem to be an impact nexus for requiring MM NS-2. If the EIR preparer does not feel confident the analysis is accurate, which states there would not be any noise impact as the project is currently designed, then a more appropriate measure would be a noise survey after the project is built to verify compliance. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
145	Noise	4.11-27	31	"In addition, implementation of MM NS-1 would mitigate the effects of a temporary	Revise as follows:	Under the heading, **Impact NS-4; Substantial temporary or periodic increase in ambient noise**

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
	4.11.4.4			increase of ambient noise levels within the vicinity of the Plant Station site, Natural Substation, and reconductoring and fiber optic installation sites, resulting in a less than significant impact (after mitigation) related to construction noise under this criterion."	"In addition, implementation of ~~MM NS-1~~ APM NS-2 would ~~mitigate~~ reduce and control the effects of a temporary increase of ambient noise levels within the vicinity of the Plant Station site, Natural Substation, and reconductoring and fiber optic installation sites, resulting in a less than significant impact (after mitigation) related to construction noise under this criterion."	**levels in the project vicinity,** Impact NS-4 calls out MM NS-1 as a mitigating factor and it should rely more on the APM NS-2. See previous comment on MM NS-1.
146	Noise 4.11.4.4	4.11-28	1	"Operational noise from the proposed Central Compressor Station would produce a composite noise level of 75 dBA at the property line, which would, with the implementation of MM NS-2, attenuate over distance to less than 45 dBA at the closest sensitive receptors…. With the applicant's implementation of MM NS-2 during operation of the Central Compressor Station, it is anticipated that noise levels would not cause a substantial permanent increase over the existing ambient noise levels at the Plant Station site."	Revise as follows: "Operational noise from the proposed Central Compressor Station would produce a composite noise level of 75 dBA at the property line, which would, with the implementation of APM NS-2 ~~MM NS-2~~, attenuate over distance to less than ~~45~~ 23 dBA at the closest sensitive receptors… With the applicant's implementation of ~~MM NS-2~~ APM NS-2during operation of the Central Compressor Station, it is anticipated that noise levels would not cause a substantial permanent increase over the existing ambient noise levels at the Plant Station site."	Under the heading, **Impact NS-4; Substantial temporary or periodic increase in ambient noise levels in the project vicinity,** Impact NS-4 Operational Noise identifies potential impacts from project operation; however, the analysis identifies an operational noise level at the nearest residence as 23 dBA L_{eq} (Page 21, Line 43).
147	Recreation 4.14	4.14-5	11-13	**"Impact RE-1:** Result in substantial physical deterioration of parks and recreational facilities"	Revise as follows: **"Impact RE-1:** Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated ~~Result in substantial physical deterioration of parks and recreational facilities"~~	Under the subheading **Impact RE-1,** the criteria should be fully restated to make it clear to the reader that the impact analysis is not simply looking to see if the project would result in substantial physical deterioration of parks and recreational facilities, but specifically seeing if the project would cause an increase in the use of existing parks or recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
148	Recreation 4.14	4.14-5	23-28	"Although project construction workers could increase the use of local recreational facilities, this use would be temporary." "There would be no long-term increase in the use of existing neighborhood and regional parks or other recreational facilities."	Revise as follows: "Although project construction workers could increase the use of local <u>and regional parks and</u> recreational facilities, this use would be temporary <u>and minimal as the proposed project would only slightly increase the local construction workforce population if outside contractors were required. Furthermore, due to the large number of parks and recreational facilities located within two miles of the project site and the short project construction period of 22 months, it is anticipated that the temporary increase of the use of parks and recreational facilities during construction would not result in substantial or accelerated physical deterioration of these parks and recreational facilities.</u> "There would be no long-term increase in the use of existing neighborhood and regional parks or other recreational facilities <u>that would result in substantial physical deterioration of these facilities</u>."	Under subsection **4.14.4 – Environmental Impacts and Mitigation Measures**, there is a discussion about the potential increased use of the parks and recreational facilities in the project area; however, there is no discussion about the potential physical deterioration of these parks and recreational facilities resulting from this increased use, per CEQA checklist (Appendix G). The text should be slightly revised to address this issue, thereby fully addressing this threshold.
149	Recreation 4.14	4.14-5	30	"A less than significant impact would result under this criterion."	Revise as follows: "~~A less than significant~~ <u>No</u> impact would result under this criterion."	Under subsection **4.14.4 – Environmental Impacts and Mitigation Measures**, correct to accurately reflect that no impact on Recreation would result from the proposed project.
150	Chapter 5 Alternatives	5-5	6	"Regardless, during operations, emissions of NOx, carbon monoxide, and other pollutants under the Design Alternative would be higher than those from the proposed project."	Revise as follows: "Regardless, during operations, emissions of NOx, carbon monoxide, and other pollutants under the Design Alternative would be <u>substantially</u> higher than those from the proposed project."	Under the heading **Air Quality,** onsite emissions generated from the design alternative would result in 100% greater emissions compared to the proposed project. Clarifying text should be included to reflect the significant decrease in emissions due

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						to an electric-driven project.
151	Chapter 5 Alternatives	5-5	39 and 40	"Although GHG emission under the Design Alternative would be less than significant, during operations they would be greater than for the proposed project."	Revise as follows: "Although GHG emission under the Design Alternative would be less than significant, during operations they would be <u>substantially</u> greater than for the proposed project."	Under the heading **Greenhouse Gases,** onsite emissions generated from the design alternative would result in 100% greater emissions compared to the proposed project. Clarifying text should be included to reflect the significant decrease in emissions due to an electric-driven project.
152	Chapter 5 Alternatives	5-5	48	"Up to 75 acres of critical habitat would be disturbed by construction of the new and modified electrical and telecommunications facilities for the proposed project."	Revise as follows: "Up to ~~75~~ <u>2.5</u> acres of critical habitat would be disturbed by construction of the new and modified electrical and telecommunications facilities for the proposed project."	Under the heading **Coastal California Gnatcatcher,** the text inaccurately describes acreages of critical habitat that would be disturbed by the proposed project. The referenced 75 acres should be deleted and replaced with accurate disturbed acreage values presented in updated Table 2-7 (see Exhibit A-4 of the accompanying cover letter).
153	Chapter 5 Alternatives	5-7	38-46	"Fire hazards during construction activities would be reduced under the Design Alternative because the proposed electrical and telecommunications facilities would not be required. The storage field and proposed subtransmission line reconductoring and telecommunications line routes are located within a Very High Fire Hazard Severity Zone (Section 4.8, "Hazards and Hazardous Materials"). Implementation of the mitigation measures identified in this EIR for the proposed project, other than those specific to SCE, would ensure that impacts from increased risk of fire hazards during construction would be less than significant. The Design	Revise as follows: "Fire hazards during construction activities would be reduced under the Design Alternative because the proposed electrical and telecommunications facilities would not be required. The storage field and proposed subtransmission line reconductoring and telecommunications line routes are located within a Very High Fire Hazard Severity Zone (Section 4.8, "Hazards and Hazardous Materials"). <u>However, the proposed project would reduce or avoid potential impacts associated with hazardous materials during operations because it eliminates use of SCR technology inherent with the use of gas powered turbines. Because of the long term reduction or avoidance of potential impacts from hazardous materials during operations, the</u>	Under the heading **Hazards and Hazardous Materials**, additional information from the PEA should be presented for clarity, and conclusion corrected to correspond to additional text. See PEA Section 6.1.2 for discussion on SCR.

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				Alternative would be environmentally superior in comparison to the proposed project because impacts during construction of the proposed project from fire hazards would be avoided or reduced.	proposed project is environmentally superior overall. ~~Implementation of the mitigation measures identified in this EIR for the proposed project, other than those specific to SCE, would ensure that impacts from increased risk of fire hazards during construction would be less than significant. The Design Alternative would be environmentally superior in comparison to the proposed project because impacts during construction of the proposed project from fire hazards would be avoided or reduced.~~	
154	Chapter 5 Alternatives	5-8	5-9	"The proposed 66-kV Subtransmission Line Segments A and B and Telecommunications Routes #1 and #3 would generate noise levels that could exceed applicable daytime allowable noise standards in the City of Santa Clarita, City of Los Angeles, City of San Fernando, and Los Angeles County (Section 4.11, "Noise"). Sensitive receptors near 66-kV Subtransmission Line Segments A and B and Telecommunications Routes #1 and #3 would be avoided under the Design Alternative."	Revise as follows: "The proposed 66-kV Subtransmission Line Segments A and B ~~and Telecommunications Routes #1 and #3~~ would generate noise levels that could exceed applicable daytime allowable noise standards in the City of Santa Clarita, City of Los Angeles, City of San Fernando, and Los Angeles County (Section 4.11, "Noise"). Sensitive receptors near 66-kV Subtransmission Line Segments A ~~and B and Telecommunications Routes #1 and #3~~ would be avoided under the Design Alternative."	Under the heading **Noise**, the references to Telecommunications Routes #1 and #3 should be deleted because the noise analysis presented in Section 4.11 assumed a noise level for construction activities that was not accurate. Construction activities would not generate noise levels in excess of the allowable noise standards. See supplemental information in Exhibit A-5 of the accompanying cover letter that includes the correct noise level information. The use of electrical tower/pole replacement and placement noise levels (83 dBA L_{eq}) for the installation of telecommunication lines is inappropriate. The removal and installation of poles is largely driven by large cranes, auger trucks, cement mixers, and jackhammers and is used as the basis of determining noise impacts in the ACTR DEIR as these are loudest pieces of equipment associated with these activities. Construction noise attributed to installing the

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
						telecommunications line is 72 dBA L_{eq} at 50 feet or 60 dBA L_{eq} or less at distances of 150 feet or greater, a noise level below the city's standard for receptors.
155	Chapter 5 Alternatives	5-9	3-7	"The Design Alternative would be environmentally superior in comparison to the proposed project with regard to Aesthetics; Agriculture and Forestry Resources; Hydrology and Water Quality; Land Use and Planning; Geology, Soils, and Mineral Resources; Public Services and Utilities; Recreation; and Transportation and Traffic because impacts on these resource areas from construction and operation of the proposed electrical and telecommunications facilities would be avoided or reduced."	Delete existing text. ~~"The Design Alternative would be environmentally superior in comparison to the proposed project with regard to Aesthetics; Agriculture and Forestry Resources; Hydrology and Water Quality; Land Use and Planning; Geology, Soils, and Mineral Resources; Public Services and Utilities; Recreation; and Transportation and Traffic because impacts on these resource areas from construction and operation of the proposed electrical and telecommunications facilities would be avoided or reduced~~. The Proposed Project would be environmentally superior or similar in comparison to the Design Alternative with regard to several resource areas, resulting in substantially reduced or similar impacts for these resource areas. • Agriculture and Forestry Resources • Air Quality (long term) • Geology, Soils, and Mineral Resources • Greenhouse Gas Emissions • Hazards and Hazardous Materials • Land Use and Planning • Population and Housing • Recreation The Design Alternative would be environmentally superior in comparison to the Proposed Project with regard to the resource areas listed below	Under the heading **Determination**, replace existing text to provide clarity and to be consistent with conclusions presented in revised Table 5-1, as provided in Exhibit A-6 of the accompanying cover letter.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
					because impacts on these resource areas from construction and operation of the proposed electrical facilities would be avoided or reduced. • Aesthetics • Biological Resources • Cultural Resources • Hydrology and Water Quality • Noise • Public Services and Utilities • Traffic and Transportation "	
156	Chapter 5 Alternatives	5-9	30 to 32	"Both the alternative and the proposed project would increase injection capacity at the storage field by approximately 150 million cubic feet per day as required by the terms of the Settlement Agreement (Appendix A)."	Revise as follows: "Both the alternative and the proposed project would increase injection ~~capacity~~ rate at the storage field by approximately 150 million cubic feet per day as required by the terms of the Settlement Agreement (Appendix A)."	Under the heading **Growth-inducing Impacts,** the text inaccurately reference an increase in injection capacity at the storage field as a result of the proposed project. However, it is not the injection capacity but the injection rate that will change and allow for greater recycled throughput at the storage field.
157	Chapter 5 Alternatives	5-9	34-40	"Although neither the Design Alternative nor the proposed project is expected to substantially induce growth, the proposed Natural Substation is expandable from 56 to 112 megavolt amperes if needed to accommodate future growth. For this reason, the Design Alternative would be environmentally superior with regard to growth-inducing impacts, because regardless of which type of compressor is installed, the storage field's injection capacity would be increased by approximately the same amount, and hence, an accommodation for increased electrical demand that could be associated	Revise as follows: ~~"Although neither the Design Alternative nor the proposed project is expected to substantially induce growth, the proposed Natural Substation is expandable from 56 to 112 megavolt amperes if needed to accommodate future growth. For this reason, the Design Alternative would be environmentally superior with regard to growth-inducing impacts, because regardless of which type of compressor is installed, the storage field's injection capacity would be increased by approximately the same amount, and hence, an accommodation for increased electrical demand that could be associated with future economic or population growth would be avoided because the~~	Under the heading **Growth-inducing Impacts,** the text inaccurately describes the purpose of the Natural Substation based on need for expansion. However, the Natural Substation is a "dedicated substation", designed with room for spare transformers. Clarifying text should be provided.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				with future economic or population growth would be avoided because the Natural Substation would not be constructed."	~~Natural Substation would not be constructed.~~ The Proposed Project or the Design Alternative would not induce growth. The proposed Natural Substation is a "dedicated substation" supplying electricity only for operation the gas storage facility. The Natural Substation would not support any other future SCE customers. New compressors would increase injection rate at the gas storage facility, but both storage capacity and withdrawal rates would remain unchanged. Therefore, the Proposed Project is not growth inducing."	
158	Chapter 5 Alternatives	5-10	13-17	"In the City of San Fernando, noise from construction of the proposed project would be exempt from the city's noise standards. Given that the average maximum noise level from construction activities would be 83 dBA Leq, a noise source would be in exceedance of the city's standard for a receptor within 225 feet of the source (Section 4.11, "Noise")."	Revise as follows. "In the City of San Fernando, noise from construction of the proposed project would be exempt from the city's noise standards. Given that the average maximum noise level from construction activities would be ~~83 dBA Leq, a noise source would be in exceedance of the city's standard for a receptor within 225 feet of the source~~ 72 dBA L_{eq} at 50 feet or 60 dBA L_{eq} or less at distances of 150 feet or greater, a noise level below the city's standard for receptors. (Section 4.11, "Noise")."	Under the heading **Noise**, the text should be corrected for consistency with corrections in Section 4.11 (See Comment 153a)
159	Chapter 5 Alternatives	5-12	24-28	"Although the proposed project is not expected to substantially induce growth (Chapter 6, "Cumulative and Growth-inducing Impacts"), the Natural Substation is expandable from 56 to 112 megavolt amperes if needed to accommodate future growth. For this reason, the No Project Alternative would be environmentally superior with regard to growth-inducing	Revise as follows. ~~"Although the proposed project is not expected to substantially induce growth (Chapter 6, "Cumulative and Growth-inducing Impacts"), the Natural Substation is expandable from 56 to 112 megavolt amperes if needed to accommodate future growth. For this reason, the No Project Alternative would be environmentally superior with~~	Under the heading **Growth-inducing Impacts**, the text inaccurately describes the Natural Substation; the Natural Substation is a "dedicated substation," designed with room for spare transformers. Clarifying text should be provided.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				impacts because the Natural Substation would not be constructed."	~~regard to growth-inducing impacts because the Natural Substation would not be constructed.~~ The Proposed Project would not induce growth. The proposed Natural Substation is a "dedicated substation" supplying electricity only for operation the gas storage facility. The Natural Substation would not support any other future SCE customers. New compressors would increase injection rate at the gas storage facility, but both storage capacity and withdrawal rates would remain unchanged. Therefore, the Proposed Project is not growth inducing."	
160	Chapter 5 Alternatives	5-12	41-48	"The proposed project would be environmentally superior with regard to air quality in comparison to each of the alternatives evaluated in this EIR. For biological resources; cultural and paleontological resources; hazards and hazardous materials; and noise, the No Project Alternative would be environmentally superior. However, when the Environmentally Superior Alternative is the No Project Alternative, CEQA requires the identification of an Environmentally Superior Alternative among the other alternatives (CEQA Guidelines Section 15126.6). Therefore, the Design Alternative would be environmentally superior with regard to these four resource areas because the analysis presented in this chapter has shown that impacts would be	Revise as follows. "The proposed project would be environmentally superior with regard to air quality in comparison to each of the alternatives evaluated in this EIR. For biological resources; cultural and paleontological resources; ~~hazards and hazardous materials;~~ and noise, the No Project Alternative would be environmentally superior. ~~However, when the Environmentally Superior Alternative is the No Project Alternative, CEQA requires the identification of an Environmentally Superior Alternative among the other alternatives (CEQA Guidelines Section 15126.6). Therefore, the Design Alternative would be environmentally superior with regard to these four resource areas because the analysis presented in this chapter has shown that impacts would be avoided or reduced in comparison to the proposed project (Section~~	Under the heading **Growth-inducing Impacts**, revise text consistent with the revisions presented for Table 5-1 (see Exhibit A-6 of the accompanying cover letter).

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				avoided or reduced in comparison to the proposed project (Section 5.2.1.1)."	~~5.2.1.1).~~ **5.3.1 Proposed Project vs. Design Alternative** The Proposed Project would be either environmentally superior or similar in comparison to the Design Alternative with regard to several resource areas, resulting in substantially reduced or similar impacts for these resource areas. • Agriculture and Forestry Resources • Air Quality (long term) • Geology, Soils, and Mineral Resources • Greenhouse Gas Emissions • Hazards and Hazardous Materials • Land Use and Planning • Population and Housing • Recreation The Design Alternative would be environmentally superior in comparison to the Proposed Project with regard to the resource areas listed below because impacts on these resource areas from construction and operation of the proposed electrical facilities would be avoided or reduced. • Aesthetics • Biological Resources • Cultural Resources • Hydrology and Water Quality • Noise • Public Services and Utilities • Traffic and Transportation In comparison to the Proposed Project, the Design Alternative would result in substantially greater long-term impacts to air quality and GHG emissions. For the Design Alternative, cumulative	

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
					impacts would be greater, while neither alternative would induce growth. Based on the substantially greater impacts associated with the Design Alternative, the Proposed Project is the environmentally superior alternative. **5.3.2 Proposed Project vs. No Project Alternative** The Proposed Project would be environmentally superior or similar in comparison to the No Project Alternative with regard to several resource areas, resulting in substantially reduced or similar impacts for these resource areas. • Agriculture and Forestry Resources • Air Quality (long term) • Greenhouse Gas Emissions • Hazards and Hazardous Materials • Land Use and Planning • Population and Housing • Recreation The No Project Alternative would be environmentally superior in comparison to the Proposed Project with regard to the resource areas listed below because impacts on these resource areas from construction and operation of the proposed gas storage facilities and supporting electrical facilities would be avoided or reduced. • Aesthetics • Biological Resources • Cultural Resources • Geology, Soils, and Mineral Resources • Hydrology and Water Quality	

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
					• Noise • Public Services and Utilities • Traffic and Transportation For the No Project Alternative, cumulative impacts would be greater, while neither alternative would induce growth. Based on the substantially greater air quality and GHG emission impacts associated with the No Project Alternative, as well as the No Project Alternative not meeting Project Objectives, the Proposed Project is the environmentally superior alternative."	
161	Chapter 5 Alternatives	5-13	1-2	"With regard to temporary construction noise, Routing Alternative A would be environmentally superior to the proposed project because fewer sensitive receptors would be impacted."	Revise as follows. "With regard to temporary construction ~~noise, Routing Alternative A would be environmentally superior to the proposed project because fewer sensitive receptors would be impacted.~~ noise associated with installing telecommunications lines, noise levels are below thresholds and therefore, no impacts are identified. Therefore, potential noise impacts for the Proposed Project and Routing Alternative A would be the same, less than significant."	Under the heading **5.3 Environmentally Superior Alternative**, the text should be revised to accurately describe noise impacts associated with fiber optic installation consistent with the comments and additional analysis presented for noise (See Exhibit A-5 of the accompanying cover letter).
162	Chapter 5 Alternatives	5-13	27-34	"Although long-term impacts on coastal California gnatcatcher and other biological resources would be avoided under the Design Alternative, and a number of short-term construction impacts would be avoided or reduced, the alternative's air quality and GHG emissions impacts would be both long-term and widespread,	Revise as follows. "Although long-term impacts on coastal California gnatcatcher and other biological resources would be avoided under the Design Alternative, and a number of short-term construction impacts would be avoided or reduced, the alternative's air quality and GHG emissions impacts would be both long-	Under the heading **5.3 Environmentally Superior Alternative,** the text should be revised to accurately describe noise impacts associated with fiber optic installation consistent with the comments and additional analysis presented for noise (See Exhibit A-2 of the accompanying cover letter).

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				impacting resources in addition to those located in proximity to the components of the Design Alternative. Air quality and GHG impacts would also be cumulatively more considerable than under the proposed project (Section 5.2.1.1). Furthermore, while offsets can be purchased for some air quality impacts, and offsets may be negotiated for GHG impacts, mitigation through the purchase of offsets is indirect. Direct mitigation for air pollutant and GHG emissions can be difficult to implement and, in some cases, cannot sufficiently reduce impacts. Therefore, because the proposed project, during operations, would avoid or reduce long-term impacts from air pollutant emissions and result in a net reduction of GHG emissions in comparison to the Design Alternative, and construction noise from Routing Alternative A would impact fewer sensitive noise receptors, the proposed project with Routing Alternative A would be the Environmentally Superior Alternative."	term and widespread, impacting resources in addition to those located in proximity to the components of the Design Alternative. Air quality and GHG impacts would also be cumulatively more considerable than under the proposed project (Section 5.2.1.1). Furthermore, while offsets can be purchased for some air quality impacts, and offsets may be negotiated for GHG impacts, mitigation through the purchase of offsets is indirect. Direct mitigation for air pollutant and GHG emissions can be difficult to implement and, in some cases, cannot sufficiently reduce impacts. Therefore, because the proposed project, during operations, would avoid or reduce long-term impacts from air pollutant emissions and result in a net reduction of GHG emissions in comparison to the Design Alternative, ~~and construction noise from Routing Alternative A would impact fewer sensitive noise receptors, the proposed project with Routing Alternative A would be the Environmentally Superior Alternative~~ <u>and telecommunication line construction noise impacts from both the Routing Alternative A and the Proposed Project are less than significant, the Proposed Project would be the Environmentally Superior Alternative</u>."	
163	Chapter 6 Cumulative	6-1	43-45	"This table does not include all projects that would contribute to cumulative impacts along the proposed project; rather, it includes a number of concurrent projects in the area to demonstrate the scope and nature of development in Riverside County."	Revise as follows: " This table does not include all projects that would contribute to cumulative impacts along the proposed project; rather, it includes a number of concurrent projects in the area to demonstrate the scope and nature of development in <u>Los Angeles and Ventura Counties.</u> ~~Riverside County~~."	Under the heading **6.1.1 Methodology**, the applicable counties within the project area are not presented. Remove reference to Riverside County and revise text to include Los Angeles and Ventura Counties.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
164	Chapter 6 Cumulative	6-18	36-37	"The proposed project would temporarily disturb up to 174.66 acres of land zoned for Agriculture and up 37 to 50.18 acres of land zoned for Open Space in both Los Angeles and Ventura Counties; however, the proposed project components would not disturb land under active agricultural use. Therefore, the proposed project would not result in a considerable contribution to cumulative impacts on state designated important farmland in Los Angeles or Ventura Counties."	Revise as follows: ~~The proposed project would temporarily disturb up to 174.66 acres of land zoned for Agriculture and up 37 to 50.18 acres of land zoned for Open Space in both Los Angeles and Ventura Counties; however, the~~ The proposed project components would not disturb land under active agricultural use, and no impacts to agricultural resources would occur. Therefore, the proposed project would not result in a considerable contribution to cumulative impacts on state designated important farmland in Los Angeles or Ventura Counties.	Under the heading **Cumulative Impact Analysis,** the text inaccurately presents land disturbance for the project. In addition, the proposed project would not: • Conflict with existing zoning for agricultural use or a Williamson Act contract; • Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use of conversion of forest land to non-forest use • Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance • Conflict with existing zone for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production • Result in the loss of forest land or conversion of forest land to non-forest use Therefore, there are No Impacts to Agricultural and Forestry Resources..
165	Chapter 6 Cumulative	6-27	36-38	"Given that the proposed project's impact on this resource area would be minor at most, the proposed project would not result in a considerable contribution to cumulative impacts related to population and housing."	Revise as follows: "Given that the proposed ~~project's~~ project would have no impact on this resource area ~~would be minor at most~~, the proposed project would not result in a considerable contribution to cumulative impacts related to population and housing."	Under the heading **6.1.3.12 Population and Housing**, the text referencing the impact determination should be revised for consistency with corrections to Chapter 4.
166	Chapter 6 Cumulative	6-28	48	"Increasing injection capacity would allow the applicant to purchase and store a greater."	Revise as follows: "Increasing injection ~~capacity~~ rate would allow the applicant to purchase and store a greater."	Under the heading **6.2 Growth Inducing Impacts**, the text inaccurately reference an increase in injection capacity at the storage field as a result of the proposed project. However, it is not the injection capacity but the injection rate that will change and allow for greater recycled throughput at

Master Comment Table

Comment No.	Section	Page	Lines	Original Text	Suggested Revision	Comment
						the storage field
167	Chapter 6 Cumulative	6-29	21-22	"Space would be available at the proposed Natural Substation for the installation of up to two additional 28-megavolt-ampere (MVA) transformers (for a total of 112 MVA) if needed to accommodate a future increase in the demand for electrical power if such an increase should occur. At this time, SCE does not anticipate that future demand for electrical power would dictate the need for expansion of the proposed substation. Any expansion of the proposed Natural Substation would be conducted in response to growth rather than as an inducement to it. Therefore, because the proposed project would not result in increases in employment, housing, or demands for community facilities and services nor result in the removal of existing constraints to growth of the creation of factors that encourage or otherwise facilitate development that would not otherwise have occurred, its implementation would not have growth inducing impacts."	Revise as follows: "The Proposed Project would not induce growth. The proposed Natural Substation is a "dedicated substation" supplying electricity only for operation the gas storage facility. The Natural Substation would not support any other future SCE customers. Space would be available at the proposed Natural Substation for the installation of up to two additional spare 28-megavolt-ampere (MVA) transformers, ~~(for a total of 112 MVA)~~ if needed for reliability. ~~to accommodate a future increase in the demand for electrical power if such an increase should occur. At this time, SCE does not anticipate that future demand for electrical power would dictate the need for expansion of the proposed substation. Any expansion of the proposed Natural Substation would be conducted in response to growth rather than as an inducement to it.~~ New compressors would increase injection rate at the gas storage facility, but both storage capacity and withdrawal rates would remain unchanged. Therefore, because the proposed project would not result in increases in employment, housing, or demands for community facilities and services nor result in the removal of existing constraints to growth of the creation of factors that encourage or otherwise facilitate development that would not otherwise have occurred, its implementation would not have growth inducing impacts."	Under the heading **6.2 Growth Inducing Impacts**, revise text to correctly describe the substation function and future storage facility operations.

APPENDIX A
SoCalGas's Aliso Canyon Turbine Replacement (ACTR) Project
Comments to the Draft EIR

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
168	Chapter 6 Cumulative	6-30	10-13	"During operations, the proposed compressors would increase the storage field's natural-gas injection capacity from approximately 300 million cubic feet per day to approximately 450 million cubic feet per day, but the storage field's withdrawal capacity would not change. Increasing injection capacity would allow the applicant to purchase and store a greater amount of natural gas during periods of low demand when natural gas is less expensive. This, in turn, would lower the cost of natural gas services provided by the storage field. Although increasing injection capacity would not have a direct effect on the withdrawal of natural gas, the proposed compressors would use electricity instead of combusting natural gas. Therefore, a local reduction of natural gas consumption would result from operation of the proposed project. Given that natural gas is one of the nonrenewable resources combusted to produce electricity, however, a net reduction in natural gas combustion is not anticipated from operation of the proposed project."	Revise as follows: "During operations, the proposed compressors would increase the storage field's natural-gas maximum injection ~~capacity~~ rate from approximately 300 million cubic feet per day to approximately 450 million cubic feet per day, but the storage field's withdrawal capacity would not change. Increasing injection ~~capacity~~ rate would allow the applicant to purchase ~~and store~~ a greater amount of natural gas during periods of low demand when natural gas is less expensive. This, in turn, would lower the cost of natural gas services provided by the storage field. Although increasing injection ~~capacity~~ rate would not have a direct effect on the withdrawal of natural gas, the proposed compressors would use electricity instead of combusting natural gas. Therefore, a local reduction of natural gas consumption would result from operation of the proposed project. ~~Given that~~ Although natural gas is one of the nonrenewable resources combusted to produce electricity, electricity is produced from multiple sources: hydro-electric, nuclear, solar, wind, and geothermal. Therefore, a net reduction in natural gas combustion is ~~not~~ anticipated from operation of the proposed project."	Under the heading **6.4 Significant and Irreversible Environmental Changes**, the text inaccurately describes the processes at the storage field. Revise to correct technical errors in paragraph.
169	Chapter 7 Mitigation Monitoring Plan	7-1	n/a	"This MMP is a draft program, and would be finalized if the CPUC approves the revised project, including the Phase 3 Expansion. At that time final mitigation measures would be incorporated into the program and the roles and responsibilities	Revise as follows: "This MMP is a draft program, and would be finalized if the CPUC approves the proposed project ~~project, including the Phase 3 Expansion~~. At that time final mitigation measures would be incorporated into the program and the roles and	Under the heading **7.0 Mitigation Monitoring Plan,** language is included that references Phase 3 Expansion which is not representative of the proposed project. Delete text.

Master Comment Table

Comment No.	Section	Page	Lines	Original Text	Suggested Revision	Comment
				for their implementation refined."	responsibilities for their implementation refined.	
170	Mitigation Monitoring Plan	7-46	APM HZ-8, 2 d.	"An onboard self extinguishing fire suppression system capable of extinguishing any equipment-caused fire to be kept on heavy construction operating equipment"	Revise as follows: "~~An onboard self extinguishing fire suppression system capable of extinguishing any equipment-caused fire to be kept on heavy construction operating equipment~~"	In **Table 7-1 MMRP, APM HZ-8** is presented as an APM, however this was not proposed by the applicant. Revise consistent with the APM provided on 12/8/11 or revise as mitigation. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
171	Mitigation Monitoring Plan	7-49	APM HZ-8, 4 a.	"The applicant and SCE or the respective construction contractors shall furnish any and all forces and equipment to extinguish any uncontrolled fire near the project component areas as directed by Fire Department or CAL FIRE representatives;"		In **Table 7-1 MMRP, APM HZ-8** is presented as an APM, however this was not proposed by the applicant. Revise consistent with the APM provided on 12/8/11 or revise as mitigation. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
172	Mitigation Monitoring Plan	7-49	APM HZ-8, 4 c.	"In the event that the applicant and SCE or the respective construction contractors sets fire to incinerate cleared vegetation,…"	Revise as follows: "In the event that ~~the applicant and~~ SCE or the respective construction contractors sets fire to incinerate cleared vegetation,…<u>The applicant will not burn cleared vegetation during construction activities.</u>"	In **Table 7-1 MMRP, APM HZ-8** is presented as an APM, however this was not proposed by the applicant. Revise consistent with the APM provided on 12/8/11 or revise as mitigation. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
173	Mitigation Monitoring Plan	7-49,50	APM HZ-8, 5.	"5. Measures will also include additional, special provisions for days when the National Weather Service issues a Red Flag Warning. Standard protocols implemented during these periods will include: a. Measures to address storage and parking areas; b. Measures to address the use of gasoline-powered tools; c. Procedures for road closures as	Revise as follows: "~~5. Measures will also include additional, special provisions for days when the National Weather Service issues a Red Flag Warning. Standard protocols implemented during these periods will include:~~ ~~a. Measures to address storage and parking areas;~~ ~~b. Measures to address the use of gasoline-powered tools;~~ ~~c. Procedures for road closures as necessary;~~	In **Table 7-1 MMRP, APM HZ-8** is presented as an APM, however this was not proposed by the applicant. Revise consistent with the APM provided on 12/8/11 or revise as mitigation. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.

Master Comment Table						
Comment No.	**Section**	**Page**	**Lines**	**Original Text**	**Suggested Revision**	**Comment**
				necessary; d. Procedures for use of a fire guard as necessary; and e. Additional fire suppression tools and fire suppression equipment, and training requirements."	~~d. Procedures for use of a fire guard as necessary; and~~ ~~e. Additional fire suppression tools and fire suppression equipment, and training requirements~~."	
174	Mitigation Monitoring Plan	7-50	APM HZ-2	"Plant Power Line Inspection and Maintenance. After construction, the applicant will inspect and maintain the Plant Power Line on at least a monthly basis for the purpose of reducing wildfire hazards."	Revise as follows: "~~Plant Power Line Inspection and Maintenance. After construction, the applicant will inspect and maintain the Plant Power Line on at least a monthly basis for the purpose of reducing wildfire hazards~~."	In **Table 7-1 MMRP, APM HZ-2**, the applicable requirement should reference an annual visual inspections and 3 to 5 year detailed inspections depending on the equipment. Monthly inspections greatly exceeds GO-165 requirements and SDG&E's CMP manual. SoCalGas does both visual and detailed inspections annually. Text should be deleted. See revised Table ES-1 as provided in Exhibit A-1 of the accompanying cover letter.
175	Appendix E2 Figure 2	n/a	n/a		Revise figure – see comments provided	Gnatcatcher surveys also occurred at the landfill site where the 66kV towers cross parcel
176	Appendix E-4 Section 1.1	n/a	n/a	" For each surveyed tree, information was collected on tree location, heath, habitat, understory species, and potential project activity that would impact individual trees or overall oak tree woodland environments."	Revise as follows: " For each surveyed tree, information was collected on tree location, health, habitat, understory species, and potential project activity that would impact individual trees or overall oak tree woodland environments."	In Section 1.1 of Appendix E-4, there is a typo that should be corrected for clarity.
177	Appendix E-7 Section 4.0	n/a	n/a	"APM-BR-08: Pursuant to city of Santa Clarita/Los Angeles County ordinance guidelines"	Revise as follows: "APM-BR-08: Pursuant to city of Santa Clarita, Ventura, and Los Angeles County ordinance guidelines"	In Section 4.0 of Appendix E-7, APM BR-8 should include all applicable counties within the project area. Ventura County should be included for accuracy.

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EXHIBIT A-1

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Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
4.1 Aesthetics			
Impact AE-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area	**APM AE-1: Night Lighting.** The applicant and SCE will ensure that construction activities occurring at night will use lighting to protect the safety of the construction workers but orient the lights to minimize their effect on any nearby sensitive receptors. The lighting will be directed downward and shielded to eliminate offsite light spill at times when the lighting might be in use.	Confirm that construction lighting is oriented to minimized effects on nearby sensitive receptors (APM AE1).	During construction
4.2 Agriculture			
No applicable APMs or mitigation measures.			
4.3 Air Quality			
Impact AQ-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment.	**APM AQ-1: Maintain Engines in Good Working Condition.** The applicant and SCE will ensure that equipment engines will be maintained in good condition and in proper tune as per the manufacturers' specifications. **APM AQ-2: Minimization of Equipment Use.** The applicant and SCE will ensure that staff and daily construction activities will be efficiently scheduled to minimize the use of unnecessary/duplicate equipment when possible. **APM AQ-3 Minimization of Disturbed Areas.** The applicant and SCE will ensure that the amount of area disturbed by clearing, grading, earth moving, or excavation operations is minimized to reduce the amount of fugitive dust that is generated during construction in a manner that meets or exceeds the requirements of the South Coast Air Quality Management District's Rule 403 (Fugitive Dust Regulations). **APM AQ-4: Watering Prior to Grading and Excavation.** The applicant and SCE will ensure that pre-grading/excavation activities will include watering the area to be graded or excavated before commencement of grading or excavation operations. Application of water (preferably reclaimed, if available) will penetrate sufficiently to minimize fugitive dust during grading activities. **APM AQ-5**: Vehicle Speed Limits. The applicant will post signs in the storage field along designated travel routes and limiting traffic to 15 miles per hour or less on unpaved roads. **APM AQ-6**: Fugitive Dust from High Winds. During periods of high winds (i.e., wind speed sufficient to cause fugitive dust to impact adjacent properties), the applicant	Confirm that ~~Regional Clean Air Incentive Market Trading~~ Mobile Source Emission Reduction Credits are purchased as specified in MM AQ-2. See additional requirements for APMs AQ-1 through AQ-7 and MMs AQ-1 and AQ-2.	Prior to and during construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	and SCE will ensure that all clearing, grading, earth moving, and excavation operations during project construction will be curtailed to the degree necessary to prevent fugitive dust created by onsite activities and operations from being a nuisance or hazard, either offsite or onsite. **APM AQ-7:** Cleaning of Paved Roads. The applicant and SCE will ensure that paved road surfaces will use vacuum sweeping and/or water flushing to remove buildup of loose material to control dust emissions from travel on paved access roads (including adjacent public streets impacted by construction activities) and paved parking areas. **MM AQ-1**: Oxides of Nitrogen (NOx) Credits. The emissions of NOx due to construction of the proposed project will be mitigated through the purchase of ~~Regional Clean Air Incentive Market Trading~~ Mobile Source Emission Reduction Credits (RTCs) for every pound of NOx emissions in excess of the SCAQMD daily significance threshold of 100 pounds per day. The total amount of NOx ~~RTCs~~ MSERCs to be purchased will be calculated when the construction schedule and operating conditions are finalized. The applicant will purchase ~~and submit~~ the required ~~RTCs~~ MSERCs ~~to the SCAQMD~~ prior to the start of project construction. The applicant will also track actual daily emissions during construction according to a monitoring plan that includes records of equipment and vehicle usage. **MM AQ-2: Tier 3 Off-Road Emissions Standards.** All off-road diesel-powered construction equipment greater than 50 horsepower used during reconductoring of the 66-kV subtransmission line will meet Tier 3 off-road emissions standards.		
4.4 Biological Resources			

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
Impact BR-1: Substantial adverse direct or indirect effect on special status species.	***Coastal California Gnatcatcher Habitat (Including Critical Habitat)*** **APM AQ-3: Minimization of Disturbed Areas.** See above. **APM AQ-4: Watering Prior to Grading and Excavation.** See above. **APM BR-2: Designated Work Zones and Sensitive Resource Avoidance.** Prior to ground-disturbing activities, the applicant and SCE will ensure that work zones are clearly staked and flagged. Construction work areas will be identified to ensure that construction activities, equipment, and associated activities are confined to designated work zones and areas supporting sensitive resources (special-status plants and wildlife, and high-value habitats, such as wetlands) are avoided. **APM BR-3: Post-Construction Restoration for Reconductoring.** SCE will ensure that all areas that are temporarily disturbed during 66-kV subtransmission line reconductoring will be restored as close to preconstruction conditions as possible or to the conditions agreed upon between the landowner and SCE following completion of construction of the proposed project. **APM BR-4: Preconstruction Gnatcatcher Surveys**. The applicant and SCE will ensure that protocol-level pre-construction surveys will be conducted for coastal California gnatcatcher, in project component areas where suitable habitat exists ~~and for all project activities proposed within U.S. Fish and Wildlife Service designated critical habitat~~ in accordance with the U.S. Fish and Wildlife Service Coastal California Gnatcatcher (Polioptila californica californica) Presence/Absence Survey Guidelines, February 28, 1997. In the event that coastal California gnatcatcher are observed in pre-construction surveys, a buffer of 500 feet from any active nest will be flagged and maintained by a biological monitor. Areas of 2 or more contiguous acres of suitable coastal California gnatcatcher habitat will be identified at the time of pre-construction surveys.~~,~~ If infeasible to maintain a buffer of 500 feet from an active gnatcatcher nest, ~~and~~ work within or near these areas will be performed outside of the breeding and nesting season (coastal California gnatcatcher breeding/nesting season is approximately February 15 through August 30).	• Ensure that the applicant and SCE conduct preconstruction surveys for wildlife and plant species as specified in APM BR-1a through APM BR-1d. • Ensure that the applicant and SCE conduct protocol-level pre-construction surveys for coastal California gnatcatcher as specified in APM BR-4 and least Bell's vireo and southwestern willow flycatcher as specified in MM BR-8. • Ensure that SCE conducts surveys of vegetation and estimates the total area of intact Venturan Coastal Sage Scrub (MM BR-2) and prepares a Habitat Restoration Plan for Venturan Coastal Sage Scrub (MM BR-3). • Ensure that the applicant and SCE complete formal delineations per USACE protocols as specified in MM BR-5. • Ensure that the applicant and SCE design all transmission structures as specified in MM BR-6 and implement avian protection plans as specified in MM BR-7. • Ensure that the applicant and SCE conduct pre-construction nesting surveys for golden eagle as specified MM BR-9. • Ensure that the applicant and SCE conduct pre-construction surveys for Plummer's mariposa lily and slender mariposa lily as specified MM BR-10. See above/below for APMs AQ3, AQ-4, GE-3, and HZ-6. See additional requirements for APMs BR-1 through BR-8 and MMs BR-1 through BR-11.	Prior to, during, and after construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	APM BR-5: Exclusionary Fencing. The applicant and SCE will ensure that exclusionary fencing will be installed around work and laydown/staging areas, where necessary, to prevent inadvertent encroachment into the native habitat adjacent to areas of impact. Brightly colored, protective construction fencing and/or silt fencing will be erected surrounding the work area where it abuts native habitat prior to the start of construction and/or demolition. **APM BR-6: Biological Monitoring.** The applicant and SCE will ensure that biological monitoring will be conducted during construction in all areas within 100 feet of native vegetation that has the potential, or is known, to provide habitat for special status species. **APM GE-3: Erosion and Sediment Control.** See above. **APM HZ-~~6~~5: Worker Environmental Awareness Training.** See below. **MM BR-1: Trimming of Vegetation.** In order to minimize the removal of vegetation in areas of habitat for the coastal California gnatcatcher, for the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas, SCE will ensure that trimming of all native vegetation, riparian vegetation, and vegetation that provides potential habitat for coastal California gnatcatcher will monitored by a qualified biologist. Trimming of native trees and native arborescent shrubs will be monitored by a qualified arborist ~~be performed by a certified arborist or a person with a minimum of 6 years' regional expertise in trimming trees/shrubs in this area and who has worked under a certified arborist.~~ **MM BR-2: Minimize Removal of Venturan Coastal Sage Scrub.** For the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas, SCE will minimize the removal of Venturan Coastal Sage Scrub associations, particularly within designated critical habitat for the coastal California gnatcatcher. Prior to construction and for each of these project areas, SCE will: 1. Ensure that a survey of vegetation and estimate of the total area of intact Venturan Coastal Sage Scrub is completed by a qualified botanist familiar with this vegetation association. 2. Avoid removal of more than 10 percent of intact Venturan Coastal Sage Scrub within a single project area. "Project Areas" are defined as:		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	a. Storage field project components (including the proposed Natural Substation): areas of ground disturbance during construction; b. Access and other roads that would be constructed/modified: 300 linear feet, with a 100-foot buffer on either side of the road; and c. c. 66-kV line and Telecommunications Route #2: for each pole, a 100-foot radius around the base, plus 100 feet along each extent of the linear ROW beyond the 100-foot radius area. 3. Ensure that areas of intact, contiguous Venturan Coastal Sage Scrub shall not be reduced below a 2-acre threshold. In the event that the applicant wishes to remove more than 10 percent of intact Venturan Coastal Sage Scrub within a single project area, or where intact, contiguous areas of Venturan Coastal Sage Scrub may be reduced below a 2-acre threshold, the applicant will compensate for this loss through the restoration and/or creation of Venturan Coastal Sage Scrub habitat per the applicant's Habitat Restoration Plan for Venturan Coastal Sage Scrub, at a minimum ratio of 2:1 (for example, 2 acres of Venturan Coastal Sage Scrub created or restored for every 1 acre impacted). **MM BR-3: Habitat Restoration Plan for Venturan Coastal Sage Scrub.** Prior to construction of the proposed project, and with the coordination and review of USFWS and ~~CDFG,~~ The applicant and SCE will prepare a habitat restoration plan for Venturan Coastal Sage Scrub associations for the 66-kV subtransmission line, Telecommunications Route #2, and proposed Natural Substation project areas. The restoration plan will be prepared by a qualified botanist familiar with this vegetation association. Per the requirements of MM BR-2, Venturan Coastal Sage Scrub habitat occurring in these work areas will be identified and quantified; surveys (including vegetation maps) and quantification of Venturan Coastal Sage Scrub habitat will be included in the restoration plan. Restoration will occur at a minimum ratio of 0.5:1 (0.5 acres of Venturan Coastal Sage Scrub created or restored for every 1 acre impacted during project construction), and may be completed by: 1. Establishing Venturan Coastal Sage Scrub habitat within the project areas (onsite); 2. Establishing Venturan Coastal Sage Scrub habitat outside the project areas (offsite); or		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	3. 3. Purchase of credits and/or mitigation lands at a ratio above 0.5:1 from an entity reviewed and approved by the USFWS ~~and/or CDFG~~. Details of the restoration plan will be finalized pending consultation between SCE~~,~~ and USFWS~~, and CDFG.~~ For Options 1. and 2. (establishing Venturan Coastal Sage Scrub onsite or offsite), the plan will include the following elements: planting/seeding palettes; monitoring and contingency program; monitoring schedule, including duration and performance criteria (a minimum of 80 percent successful plant establishment after a minimum of three years); and any specific measures that will be required to ensure success of the restoration effort. **MM BR-4: Restriction of Vehicular Traffic.** The applicant and SCE will ensure that, in all project construction areas, vehicular traffic (including movement of all equipment) is restricted to established access roads indicated by flagging and signage. All access roads that are not otherwise assigned official speed limits will be restricted to a speed limit of a maximum of 20 miles per hour. ***Special Status Amphibians and Reptiles*** **APM AQ-3: Minimization of Disturbed Areas.** See above. **APMs BR-2, BR-5, and BR-6.** See above. **APM GE-3: Erosion and Sediment Control.** See above. **APM HZ-~~6~~5: Worker Environmental Awareness Training.** See below. **MM BR-5: Impacts on Hydrologic Features.** Prior to project construction, for all proposed project components in the vicinity of hydrologic features, the applicant and SCE will: 1. Complete formal delineations per USACE protocols to confirm and determine the extent of jurisdictional wetlands present in the proposed project areas; 2. Consult with the USACE and CDFG to determine whether CWA Section 404 permits and California Department of Fishand Game Code Section 1600 Streambed Alteration Agreements are necessary for the proposed project, apply for these permits as needed, and determine the area of fill that would require compensation; 3. Commit to compensatory mitigation for any wetland fill per any required permits and in consultation with USACE and CDFG (wetland fill requiring		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	mitigation will be compensated for at a minimum ratio of 0.5:1, or 0.5 acres of wetland creation or restoration for every 1 acre of wetland fill caused by the proposed project); and 4. Ensure that biological monitors establish and maintain a minimum exclusionary buffer of 50 feet from the delineated extent of all jurisdictional wetland features during project construction. Construction of any proposed project component that requires altering, removing, or filling the bed or bank of seasonal drainages, or other jurisdictional or potentially jurisdictional water features, and/or cannot maintain the 50-foot exclusionary buffer, will be performed only when water is not present in the feature. ***Special Status Birds*** **APM AQ-3: Minimization of Disturbed Areas.** See above. **APM BR-1a: Preconstruction Surveys.** Prior to construction and activities that may include vegetation clearing, staging and stockpiling, or other activities with the potential to directly or indirectly affect wildlife, the applicant and SCE will ensure that preconstruction surveys are conducted by qualified biologists for sensitive biological resources, including special-status wildlife and special-status plant species, in the project component areas, including access roads and staging areas. **APM BR-1b: Exclusionary Fending.** In the event that special-status wildlife and special-status plants are identified within a proposed project component area or vicinity (survey buffer), buffers will be established by temporary flagging or fencing (this distance may be greater depending on the species and construction activity, as determined by the biologist) between the identified resource and construction activities. Flagging and fencing will be performed or supervised by a qualified biologist to ensure that these activities are conducted without harm to sensitive species, or habitat flagging and fencing will be performed or supervised by a qualified biologist to ensure that these activities are conducted without harm to sensitive species or habitat. The information gathered from these surveys will be used to determine project planning and minimize impacts on sensitive resources from project-related activities. In addition, the results of these surveys will be used to determine the extent to which environmental specialist construction monitors will be required. **APM BR-1c: Nesting Bird Surveys.** For nesting birds, a field survey will be conducted by a qualified biologist to determine if active nests of bird species		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	protected by the Migratory Bird Treaty Act and/or the California Fish and Game Code are present in the construction zone or within a minimum of 100 feet (500 feet for raptors) of the construction zone. In the event of the identification of nesting birds within a proposed project component area or vicinity, a minimum 50-foot exclusionary buffer will be established by temporary flagging or fencing (this distance may be greater depending on the bird species and construction activity, as determined by the biologist) between the nest site and construction activities. Clearing and construction within the fenced area will be postponed or halted (except for vehicle traffic on existing roads), at the discretion of the biological monitor, until the nest is vacated and juveniles have fledged. **APM BR-1d: Construction Monitoring.** The biologist shall serve as a construction monitor during those periods when construction activities occur near active nest areas to ensure that no inadvertent impacts on these nests will occur. Biological monitoring will be conducted during construction work in areas in close proximity to native habitat to assure project compliance with all APMs and Mitigation Measures. **APMs BR-2 through BR-6.** See above. **APM BR-7: Wildlife Relocation and Protection.** During construction activities, wildlife resources that are not considered to have special status and are determined to be in harm's way may be relocated by the applicant and SCE and/or their construction contractors to native habitat near the work area but outside the construction impact zone in order to avoid injury or mortality. Only agency authorized biologists may relocate special status species. For the trench to be excavated in the area of the Central Compressor Station during construction for the purposes of pipeline installation, the applicant will ensure that ~~-~~open trenches are inspected twice daily, once in the morning before activities commence and once at the end of the day or before ~~backfilling of the trench would occur within 72 hours of pipeline installation to preclude potential impacts to wildlife that may fall into the trench~~. At the conclusion of each day's trenching activity, the end of the trench would be left ramped at an approximate 2-to-1 slope to allow any wildlife falling into the trench to escape. **APM BR-8: Oak Tree Impact Avoidance.** ~~In accordance with City of Santa Clarita/Los Angeles County ordinance and policy guidelines, the~~ The applicant and SCE will ensure that loss or impacts to all native oak trees via trimming or ground disturbance within the dripline (i.e., the outermost extent of the canopy) will be		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	avoided using specific measures and/or agency guidance. All activities that have the potential to adversely affect oak trees (i.e. trimming, excavation, paving, removal) will be monitored by a qualified arborist. If impacts cannot be avoided, the applicant or SCE will replace damaged or removed oak trees at a 2:1 ratio. Plantings will be 15 gallon containers in areas deemed suitable by the arborist. ~~If impacts cannot be avoided, the applicant or SCE will submit an Oak Tree Permit Application (including an Oak Tree Report) to Los Angeles County and obtain an Oak Tree Permit prior to construction.~~ **APM GE-3: Erosion and Sediment Control.** See above. **APM HZ-~~6~~5: Worker Environmental Awareness Training.** See below. **APM HZ-~~7~~6: Wood Pole Recycling and Disposal.** See above. **MM BR-1 through MM BR-5.** See above. **MM BR- 6: Avian Safe Building Standards.** The applicant and SCE will design all transmission structures installed as part of the proposed project to be consistent with the Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (APLIC 2006). **MM BR-7: Avian Protection Plans.** Prior to construction, the applicant and SCE will develop and implement avian protection plans according to Avian Protection Plan (APP) Guidelines (APLIC & USFWS 2005). The avian protection plans will include provisions to reduce impacts on avian species during construction and operation of the proposed project, including measures to reduce impacts on nesting birds, and will provide for the adaptive management of project-related issues. The Avian Protection Plans will be reviewed and approved by the CDFG and USFWS prior to construction. **MM BR-8: Pre-Construction Surveys for Least Bell's Vireo ~~and Southwestern Willow Flycatcher~~.** Prior to construction, the applicant and SCE will complete protocol-level surveys for least Bell's vireo ~~and southwestern willow flycatcher~~ in areas of suitable or potentially suitable habitat in the proposed project component areas. Surveys will be completed by a permitted biologist(s) according to the survey protocol for least Bell's vireo (USFWS 2001) ~~and southwestern willow flycatcher (Sogge et al. 2010).~~ Whenever least Bell's vireo ~~or southwestern willow flycatcher~~ territory or nest sites are confirmed, the applicant and/or SCE will notify the USFWS and CDFG immediately upon return from the field. In the event that any least Bell's		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	vireos ~~or southwestern willow flycatchers~~ or their nests are observed, biologists will establish and maintain a minimum 500-foot exclusionary buffer by installing temporary flagging or fencing between the nest site and construction activities. ~~Federal endangered species recovery permits are not required for least Bell's vireo surveys, but are required in all USFWS regions where the southwestern willow flycatcher breeds (application forms can be downloaded at http://www.fws.gov/forms/3-200-55.pdf).~~ State survey permits also may be required from the CDFG for both species. **MM BR-9: Nesting Golden Eagle.** Nesting surveys for golden eagles will be completed per the most recent USFWS survey guidelines by the applicant and SCE prior to project construction and will include areas within 660 feet of proposed project components located within suitable golden eagle nesting habitat. If surveys identify nesting golden eagles within 660 feet of the proposed project component areas, the applicant and SCE will ensure that all construction activities within 660 feet of the nest occur outside of the nesting season (January through June, subject to adjustment based on field observations). The nest will be monitored from outside the 660-foot buffer by a qualified raptor ecologist with demonstrated experience monitoring eagles and knowledge of normal eagle nesting behavior. In the event that the raptor ecologist observes abnormal behavior or notes any sign of potential disturbance to the nesting birds, the ecologist will ensure that work will be stopped within 1,320 feet of the nest. Work can continue within the buffered area(s) after the raptor ecologist determines that the chicks have fledged and the nest is not active for the season. In the event that golden eagle nests are identified on structures to be removed or modified, the structures will be left in place pending consultation with the USFWS and CDFG. ***Special Status Mammals*** **APM AQ-3: Minimization of Disturbed Areas.** See above. **APM BR-2: Designated Work Zones and Sensitive Resource Avoidance.** See above. **APM BR-3: Post-construction Restoration for Reconductoring.** See above. **APM BR-5: Exclusionary Fencing.** See above. **APM BR-6: Biological Monitoring.** See above. **APM BR-8: Oak Tree Impact Avoidance.** See above.		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	APM GE-3: Erosion and Sediment Control. See below. **APM HZ-~~6~~5: Worker Environmental Awareness Training.** See below. ***Special Status Plants*** **APM AQ-3: Minimization of Disturbed Areas.** See above. **APM AQ-4: Watering Prior to Grading and Excavation.** See above. **APMs BR-1 through BR-6 and APM BR-8.** See above. **APM HZ-~~6~~5: Worker Environmental Awareness Training.** See below. **MM BR-4: Restriction of Vehicular Traffic.** See above. **MM BR-10 Restoration of Plummer's Mariposa Lily and Slender Mariposa Lily.** The applicant and SCE will complete pre-construction surveys during the appropriate blooming period to identify Plummer's mariposa lily and slender mariposa lily populations in the proposed project component areas at the storage field and in the area of the 66-kV subtransmission line. Plummer's mariposa lily and slender mariposa lily plants will be identified by a qualified biologist and flagged or surrounded with fencing in such a way that disturbance of the populations will be avoided. In the event that populations or individuals of either species cannot be avoided, restoration will occur. The applicant will develop and implement a restoration plan for both plants which will be reviewed and approved by CDFG prior to project construction. Restoration will occur after construction and to an extent such that "no net loss" (i.e., replacement of destroyed plants at a 1:1 ratio) is ensured for all plants of either species in the proposed project component areas. Restoration may be completed by: 1. Establishing Plummer's mariposa lily and slender mariposa lily plants within the proposed project areas (onsite); 2. Establishing Plummer's mariposa lily and slender mariposa lily plants outside the project areas (offsite); or 3. Purchase of credits and/or mitigation lands at a ratio above 1:1 from an entity reviewed and approved by the USFWS and/or CDFG. Details of the restoration plan will be pending consultation between SCE, USFWS, and CDFG. For Options 1. and 2. (establishing Plummer's mariposa lily and slender mariposa lily plants onsite or off-site), the plan will include the following elements: planting/seeding palettes; monitoring and contingency program; monitoring schedule, including duration and performance criteria		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	(a minimum of 80 percent successful plant establishment after a minimum of three years); and any specific measures that will be required to ensure success of the restoration effort. **MM BR-11: Non-Native and Invasive Plant Species.** The applicant and SCE will avoid and reduce the spread of non-native and invasive plant species in the proposed project component areas through the following actions: 1. All equipment brought in from offsite that could transport soils, seeds, or other plant propagules (i.e., seeds, spores, tubers, or stems that can reproduce the plant) will be washed at a containment area to prevent introduction of unwanted plant material to the proposed project component areas; 2. All construction vehicles or equipment operating within the proposed project component areas in areas known to have noxious or invasive weeds will similarly be clean of any soils or plant materials before transport or re-deployment elsewhere within the proposed project component areas to prevent transferring weeds; 3. All soils, gravel, imported fill, or other construction materials brought from offsite that could inadvertently contain unwanted plant propagules will come from confirmed weed-free sources; 4. All seeds to be used in revegetation and reclamation activities will come from onsite, or from certified weed-free sources; and 5. All temporary disturbance areas, including access roads, transmission line corridors, and towers would be monitored on a quarterly basis for one year after project construction is completed for invasive species establishment, and weed control measures will be initiated immediately upon evidence of invasive species introduction.		
Impact BR-2: Substantial adverse effect on riparian habitat or other sensitive natural community.	***Riparian Habitat*** **APM AQ-3: Minimization of Disturbed Areas.** See above. **APM BR-2: Designated Work Zones and Sensitive** Resource **Avoidance.** See above. **APM BR-3: Post-construction Restoration for Reconductoring.** See above. **APM BR-5: Exclusionary Fencing.** See above.	Ensure that the applicant and SCE survey for riparian zones within the storage field, the 66 kV subtransmission line routes, and Telecommunications Route#2 as specified in MM BR-12. Ensure that SCE surveyed Telecommunications Route #2 for individual oak trees as specified in MM BR-13. See above/below for APMs BR1 through BR-8;	Prior to, during, and after construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	APM GE-3: Erosion **and Sediment Control.** See below. **APM HZ-~~6~~5: Worker Environmental Awareness** Training**.** See below. **MM BR-1: Trimming of Vegetation.** See above. **MM BR-5:** Impacts **on Hydrologic Features.** See above. **MM BR-12: Minimize Impact on Riparian Habitat.** The applicant and SCE will complete the following: 1. A qualified ecologist will survey and determine the spatial extent of riparian zones in the areas of the storage field, the 66-kV subtransmission line, and Telecommunications Route #2; 2. Where riparian vegetation would be impacted by project construction activities, the applicant and SCE will consult with CDFG to determine if a Lake and Streambed Alteration Agreement pursuant to California Fish and Game Code 1600 would be necessary; and 3. In those areas where riparian vegetation is required to be removed, the applicant and SCE will work with a qualified arborist to determine the minimum amount of vegetation required to be removed in order to accommodate project construction, and the correct trimming procedures to employ. ***Sensitive Natural Communities*** **APMs BR-1 through BR-8.** See above. **APM AQ-3: Minimization of Disturbed Areas.** See above. **MMs BR-1 through BR-10 and MM BR-12**. See above. **MM BR-13: Oak Trees in the Vicinity of Telecommunications Route #2**. Prior to construction, SCE will survey the area of Telecommunications Route #2 for individual oak trees that meet the criteria for protection under the Los Angeles County ordinance. All oak trees whose trunks measure 25 inches or more in circumference (8 inches in diameter) will not be removed, nor will ground compaction occur within a 10-foot radius from the drip line of any oak tree that meets this criterion. Impacts on all oak trees within the area of disturbance for Telecommunications Route #2 beyond minor trimming will be avoided and minimized (i.e., no more than 25 percent of any individual oak tree canopy will be trimmed during one growing season). In the event that impacts on oak trees meeting the above criterion cannot be avoided or minimized, the applicant will provide oak tree seedling replacement at a 2:1 ratio, pending consultation with Los Angeles County.	APMs AQ-3, GE-3, and HZ-6; and MMs BR1 through BR-10. See additional requirements for MM BR-12 and MM BR-13.	

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
Impact BR-3: Substantial adverse effect on federally protected wetlands.	**APM AQ-3: Minimization of Disturbed Areas.** See above. **APM BR-2: Designated Work Zones and Sensitive Resource Avoidance.** See above. **APM GE-3: Erosion and Sediment Control.** See below. **MM BR-5: Impacts on Hydrologic Features.** See above.	See above/below.	See above/below.
Impact BR-4: Substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedance of the use of native wildlife nursery sites.	**APM BR-2: Designated Work Zones and Sensitive Resource Avoidance.** See above.	See above.	See above.
Impact BR-5: Conflict with local policy and ordinance protecting oak trees.	**APM AQ-3: Minimization of Disturbed Areas.** See above. **APM AQ-4: Watering Prior to Grading and Excavation.** See above. **APM BR-8: Oak Tree Impact Avoidance.** See above.	See above.	See above.
4.5 Cultural Resources			
Impact CR-1: Substantial adverse change in the significance of an historical resource.	**APM CR-1: Conductor Pull and Tension Sites.** SCE will ensure that, where feasible, conductor pull and tension sites are located on existing level areas and existing roads to minimize the need for grading and cleanup. **APM CR-2: Unidentified Cultural Resources.** The applicant and SCE will ensure that, if previously unidentified cultural resources are unearthed during construction activities, construction will be halted in that area and directed away from the discovery until a qualified archaeologist assesses the significance of the resource. If determined to be required by the archeologist, the archaeologist will evaluate the significance of the discovered resources based on eligibility for the California Register of Historical Resources (CRHR) or local registers. Should any cultural resources be identified during construction activities in all project areas (including but not limited to culturally sensitive areas), the applicant and SCE will ensure that qualified archaeologists will monitor cultural resources mitigation and ground-disturbing activities in the area of the find. The size of the area of the find will be determined by the archeologist. The archaeologist will recommend appropriate measures to record, preserve, or recover the resources. Preliminary recommendations of CRHR eligibility made by the archaeologist will be reviewed by	Ensure that cultural surveys are completed after final siting for SCE project components and that qualified cultural resources consultants and archaeologists are retained by the applicant and SCE (APM CR-4, MM CR1, and MM CR-2). Confirm that Cultural Resources Plans were prepared by the applicant and SCE per MM CR1 requirements. See additional requirements for APMs CR-1, CR-2, and CR-4 and MM CR-4. See requirements for APM HZ-~~6~~5, below. Ensure that final inspection is completed after project components are constructed (MM CR-5).	Prior to, during, and after construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	the CPUC. **MM CR-4: Stop Work for Unanticipated Cultural Resources Discoveries.** In the event that previously unidentified cultural resources are uncovered during implementation of the project, the applicant and SCE will ensure that ground-disturbing work would be halted or diverted away from the discovery to another location. The CPUC staff approved archeological ~~monitor~~ contractor will inspect and review the discovery and determine whether further investigation is required. If the discovery is significant but can be avoided and no further impacts would occur, the resource would be documented appropriately and no further effort would be required. If the resource is significant but cannot be avoided and may be subject to further impact, the CPUC-approved archeological monitor would evaluate the significance of the resource based on eligibility for the California Register of Historical Resources (CRHR) or local registers and implement appropriate measures in accordance with the Cultural Resources Plans. **APM HZ-~~6~~5: Worker Environmental Awareness Training.** See below. **MM CR-1: Cultural Resources Plan.** The applicant and SCE will retain the services of qualified cultural resources consultants who meet or exceed the U.S. Secretary of the Interior qualification standards for archaeologists published in 36 Code of Federal Regulations 61 and have experience working in the jurisdictions traversed by the project, sufficient that they can identify the full range of cultural resources that may be found in the region. The consultants will also have knowledge of the cultural history of the project area and will be approved by the California Public Utilities Commission (CPUC). Prior to issuance of construction permits, the applicant and SCE will submit Archaeological Monitoring and Treatment ~~Cultural Resources Plans~~ for the respective project components, prepared by the approved ~~consultant(s)~~ contractor for review and approval by the CPUC staff. The intent of the ~~Cultural Resources~~ Plans will be to address cultural resources eligible for the CRHR that cannot be preserved by avoidance and to identify areas where monitoring of earth-disturbing activities is required. The monitoring plan shall include, at a minimum: • A list of personnel to which the plan applies; Requirements, as necessary, and plans for continued Native American involvement and outreach, including participation of Native American monitors during ground-disturbing activities as determined appropriate; • Brief identification and description of the general range of the resources that may be encountered; Identification of the elements of a site that		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	would lead to it meeting the definition of a cultural resource requiring protection and mitigation; • Identification and description of resource mitigation that would be undertaken if required; • Description of monitoring procedures that will take place for each project component area as required; • Description of how often monitoring will occur (e.g., full-time, part time, spot checking); • Description of the circumstances that would result in the halting of work; • Description of the procedures for halting work and notification procedures for construction crews; • Testing and evaluation procedures for resources encountered; • Description of procedures for curating any collected materials; • Reporting procedures; and • Contact information for those to be notified or reported to. **MM CR-2: Additional Cultural Resources Surveys.** Prior to issuance of construction permits, the applicant and SCE will ~~ensure that~~ retain qualified archaeological ~~consultants~~ contractor(s), as specified in the ~~Cultural Resources Plans~~ Archeological Monitoring and Treatment Plan~~, will~~ to conduct intensive-level cultural resources surveys (transects no greater than 15 meters) for all areas to be disturbed that have not already been surveyed for cultural resources and, prior to the project, had previously been undisturbed. Reports that specify the research design, methods, and survey results will be submitted to the CPUC for review. Cultural resources surveys for areas along Telecommunications Route #3 that are located more than 600 feet east of San Fernando Substation will not be required, because these areas are located within residential neighborhoods and are disturbed areas. **MM CR-3: Construction Monitoring.** Prior to issuance of grading permit(s), the applicant and SCE will retain qualified archaeologists as specified in the Cultural Resources Plans to monitor cultural resources mitigation and ground disturbing activities in culturally sensitive areas. Culturally sensitive areas would include those areas along the 66-kV subtransmission line reconductoring routes and Telecommunications Route #3 and within the storage field that have not previously been disturbed. Cultural resources monitoring for areas along Telecommunications Route #3 that are located more than 600 feet east of San Fernando Substation will not be required because these areas are located within residential neighborhoods		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	and are disturbed areas. The qualified archaeologists will attend preconstruction meetings to provide comments and/or suggestions concerning monitoring plans and discuss excavation plans with excavation contractors. **MM CR-4: Stop Work for Unanticipated Cultural Resources Discoveries.** In the event that previously unidentified cultural resources are uncovered during implementation of the project, the applicant and SCE will ensure that ground disturbing work would be halted or diverted away from the discovery to another location. The CPUC-approved archeological monitor will inspect the discovery and determine whether further investigation is required. If the discovery is significant but can be avoided and no further impacts would occur, the resource would be documented appropriately and no further effort would be required. If the resource is significant but cannot be avoided and may be subject to further impact, the CPUC-staff approved archaeologist~~cal monitor~~ would evaluate the significance of the resource based on eligibility for the California Register of Historical Resources (CRHR) or local registers and implement appropriate measures in accordance with the Archaeological Monitoring and Treatment ~~Cultural Resources~~ Plans. **MM CR-5: Cultural Resources Reporting.** Prior to final inspection after construction of project components has been completed, the applicant's and SCE's qualified archaeologists as specified in the ~~Cultural Resources~~ Archaeological Monitoring and Treatment Plans will submit reports to the CPUC summarizing all monitoring and mitigation activities and confirming that all mitigation measures have been implemented. If a cultural resource that meets the definition of a significant resource is encountered and data recovery is necessary, then a data recovery program will be implemented for the resource that is approved by both the qualified archeologist/s and the CPUC.		
Impact CR-2: Substantial adverse change in the significance of an archaeological resource.	See Impact CR-1, above.	See Impact CR-1, above.	See Impact CR-1, above.
Impact CR-3: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	**MM CR-6: Paleontological Monitoring and Treatment Plan.** Prior to construction permit issuance, the applicant and SCE will retain CPUC-approved paleontologists to prepare Paleontological Monitoring and Treatment Plans, and submit to the CPUC for review and approval. The CPUC-approved paleontologists will have knowledge of the local paleontology and be familiar with paleontological procedures and techniques. The Paleontological Monitoring and Treatment Plans will follow	Ensure that CPUC-approved paleontologists are retained by the applicant and SCE (MM CR-6). Confirm that Paleontological Monitoring and Treatment Plans were prepared by the applicant and SCE per MM CR-6 requirements. Confirm that applicant and SCE construction personnel are	Prior to, during, and after construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	Society of Vertebrate Paleontology guidelines and meet all regulatory requirements. The Paleontological Monitoring and Treatment Plans will address the 66-kV subtransmission line reconductoring routes, Telecommunications route #2, and Telecommunications Route #3, Natural Substation, guardhouse, and entry road widening sites. The Paleontological Monitoring and Treatment Plans will identify construction impact areas of moderate to high sensitivity for encountering potential paleontological resources and the shallowest depths at which those resources may be encountered. The Paleontological Monitoring and Treatment Plans will detail the criteria to be used to determine whether an encountered resource is significant and if it should be avoided or recovered for its data potential. The Paleontological Monitoring and Treatment Plans will also detail methods of recovery, preparation and analysis of specimens, final curation of specimens at a federally accredited repository, data analysis, and reporting. The Paleontological Monitoring and Treatment Plans will outline coordination strategies to ensure that CPUC-approved paleontological monitors will conduct full-time monitoring of all grading activities in sediments determined to have a moderate to high sensitivity. For sediments of low or undetermined sensitivity, the Paleontological Monitoring and Treatment Plans will specify what level of monitoring is necessary. Sediments with no sensitivity will not require paleontological monitoring. The Paleontological Monitoring and Treatment Plans will define specific conditions in which monitoring of earthwork activities could be reduced and/or depth criteria established to trigger monitoring. These factors will be defined by the CPUC-approved paleontologists. **APM HZ-5: Worker Environmental Awareness Training.** See below. ~~**MM CR-7: Construction Personnel Training.** Prior to the initiation of construction or ground-disturbing activities in areas with high paleontological sensitivity, the applicant and SCE shall ensure that all construction personnel conducting rough grading shall be trained regarding the recognition of possible subsurface paleontological resources and protection of all paleontological resources during construction grading. The applicant and SCE will complete training for all applicable personnel. Training will inform all applicable personnel of the procedures to be followed upon the discovery of paleontological resources. All personnel will be instructed that unauthorized collection or disturbance of protected fossils on-or off-site by the applicant or SCE or their representatives or employees is illegal and that violators shall be subject to prosecution under appropriate federal and state laws. Unauthorized resource collection or disturbance may constitute grounds for the~~	trained per MM CR-7 requirements. See additional requirements for MM CR-6 through MM CR-10.	

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	~~issuance of a stop work order.~~ **MM CR-~~8~~7: Paleontology Construction Monitoring.** Based on the Paleontological Monitoring and Treatment Plans, the applicant and SCE will conduct paleontological monitoring using CPUC staff approved paleontological ~~monitors~~ contractors. This will include monitoring during rough grading and trenching in areas determined to have high paleontological sensitivity and that have the potential to be shallow enough to be adversely affected by such earthwork as determined by the CPUC-staff approved ~~paleontological monitors~~ Paleontological Monitoring and Treatment Plans. **MM CR-~~9~~8: Stop Work for Unanticipated Paleontological Discoveries.** In the event that previously unidentified paleontological resources are uncovered during implementation of the project, the applicant and SCE will ensure that ground-disturbing work would be halted or diverted away from the discovery to another location. A CPUC-approved paleontological monitor would inspect the discovery and determine whether further investigation is required. If the discovery is significant but can be avoided and no further impacts would occur, the resource would be documented in the appropriate paleontological resource records and no further effort would be required. If the resource is significant but cannot be avoided and may be subject to further impact, the CPUC-approved paleontologist~~cal~~ ~~monitor~~ would evaluate the significance of the resource and implement appropriate measures in accordance with the Paleontological Monitoring and Treatment Plans. **MM CR-~~10~~9~~:~~ Paleontological Data Recovery.** Prior to final inspection after construction of project components has been completed, if avoidance of significant paleontological resources is not feasible during grading, treatment (including recovery, specimen preparation, data analysis, curation, and reporting) will be carried out by the applicant and SCE in accordance with the approved Paleontological Monitoring and Treatment Plans.		
Impact CR-4: Disturb any human remains, including those interred outside of formal cemeteries	**APM CR-3: Human Remains.** The applicant and SCE will ensure that, if human remains are encountered during construction or any other phase of development, work will be halted in the area and directed away from the discovery. The County Coroner will be notified within 24 hours of the discovery. No further disturbance will occur until the County Coroner makes the necessary findings of origin and disposition pursuant to Public Resources Code 5097.98–99, Health and Safety Code 7050.5. If the coroner determines that the burial is not historic, but prehistoric,	Ensure that cultural surveys are completed after final siting for SCE project components and that qualified cultural resources consultants and archaeologists are retained by the applicant and SCE (APM CR-4, MM CR1, and MM CR-2). Confirm that Cultural Resources Plans were prepared by the applicant and SCE per MM CR1 requirements. See additional	Prior to, during, and after construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	the Native American Heritage Commission (NAHC) will be contacted to determine the most likely descendent (MLD) for this area. The MLD may become involved with the disposition of the burial following scientific analysis. If the remains are determined to be Native American, the Native American Heritage Commission will be notified within 24 hours as required by Public Resources Code 5097. The CPUC will mediate any disputes regarding treatment of remains. **APM CR-4: Cultural Surveys After Final Project Siting.** See above. **MM CR-1: Cultural Resources Plan.** See above. **MM CR-2: Additional Cultural Resources Surveys.** See above. **MM CR-3: Construction Monitoring.** See above. **MM CR-4: Stop Work for Unanticipated Cultural Resources Discoveries.** See above. **MM CR-5: Cultural Resources Reporting.** See above. **MM CR-~~10~~9: Paleontological Data Recovery. Prior.** See above.	requirements for APMs CR-3 and CR-4, MMs CR-1 through CR-6, and MM CR-10. Ensure that final inspection is completed after project components are constructed (MM CR-5).	
4.6 Geology, Soils, and Mineral Resources			
Impact GE-1: Expose people or structures to risk of loss, injury, or death involving rupture of a known earthquake fault.	**APM GE-1: Geotechnical Studies.** The applicant will ensure that, for the construction of the Central Compressor Station, construction procedures will be conducted as discussed in the recommendations section of the Preliminary Geotechnical Investigation Report prepared by Globus (2006) to avoid impacts related to unstable geologic conditions. In addition, pre-engineering geotechnical studies will be completed by the applicant and SCE for the proposed Natural Substation and select TSP locations prior to construction. The pre-engineering geotechnical studies will evaluate the depth to the water table; document evidence of faulting; and determine liquefaction potential, physical properties of subsurface soil, soil resistivity, slope stability, and the presence of hazardous materials. The applicant and SCE will further ensure that, for the construction of the Natural Substation and select TSP locations, construction procedures will be conducted as discussed in the recommendations section of the geotechnical studies report.	Ensure that pre-engineering geotechnical studies are be completed by the applicant and SCE (APM GE-1). See additional requirements for APM GE-1.	Prior to and during construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
Impact GE-2: Expose people or structures to the risk of loss, injury, or death involving strong seismic ground shaking.	**APM GE-1: Geotechnical Studies.** See above. ~~**APM GE-2: Seismic-resistant Design Measures.** The applicant and SCE will ensure that the proposed project components are designed in accordance with CPUC General Orders and to meet applicable seismic safety standards of the California Building Code and Uniform Building Code standards for Seismic Risk Zone IV. Specific design measures may include, but are not limited to, special foundation design and additional bracing and support of upright facilities. Project facilities and foundations will be designed to withstand changes in soil density. The proposed Natural Substation will be designed consistent with the Institute of Electrical and Electronics Engineers 693 standard, Recommended Practices for Seismic Design of Substations.~~	Ensure that pre-engineering geotechnical studies are be completed by the applicant and SCE (APM GE-1).	Prior to and during construction
Impact GE-3: Expose people or structures to the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction.	See Impact GE-2, above.	See Impact GE-2, above.	See Impact GE-2, above.
Impact GE-4: Expose people or structures to the risk of loss, injury, or death involving landslides.	See Impact GE-2, above.	See Impact GE-2, above.	See Impact GE-2, above.
Impact GE-5: Result in substantial soil erosion or the loss of topsoil.	**APM AQ-3: Minimization of Disturbed Areas.** See above. **APM GE-3: Erosion and Sediment Control.** The applicant and SCE will ensure that erosion and sediment control measures will be implemented in each of the project component areas during construction activities to reduce the amount of soil displaced and transported to other areas by storm water, wind, or other natural forces. To minimize site disturbance, the applicant and SCE or their respective construction contractors will: Remove only the vegetation that is absolutely necessary to remove (e.g., trim or mow instead of grub where feasible); Avoid off-road vehicle use outside work zones; and Instruct all construction personnel on storm water pollution prevention concepts to ensure they are conscious of how their actions affect the potential for erosion and sedimentation. **MM BR-5: Impacts on Hydrologic Features.** See above.	Ensure that the applicant and SCE complete formal delineations per USACE protocols and consult with CDFG and USACE as specified in MM BR-5. See requirements for APMs AQ-3, GE-3, and MM BR-5.	Prior to and during construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
Impact GE-6: Located on a geologic unit or soil that is or would become unstable and result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.	**APM GE-1: Geotechnical Studies.** See above.	See above.	See above.
Impact GE-7: Located on expansive soil.	~~**APM GE-2: Seismic-resistant Design Measures.** See above.~~	~~See above.~~	~~See above.~~
4.7 Greenhouse Gases			
Impact GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	**APM AQ-1: Maintain Engines in Good Working Condition.** See above. **APM AQ-2: Minimization of Equipment Use.** See above. **APM GHG-1: Engine Maintenance.** The applicant and SCE will ensure that construction and operations vehicle equipment engines are maintained in good condition and in proper tune according to manufacturer specifications. **APM GHG-2: Scheduling.** The applicant and SCE will ensure that staff and daily construction activities for each of the project components are efficiently scheduled to minimize the use of unnecessary/duplicate equipment when possible.	See requirements for APMs AQ-1, AQ-2, GHG-1, and GHG-2.	During construction
4.8 Hazards and Hazardous Materials			
Impact HZ-1: Significant hazard from routine transport, use, or disposal of hazardous materials.	**APM HZ-~~3~~2: Hazardous Materials Spill and Release Prevention.** The applicant and SCE will ensure that construction procedures are implemented to minimize the potential for hazardous material spills and releases in each of the project component areas. **APM HZ-~~5~~4: Hazardous Materials Use and Storage and Hazardous Waste.** The applicant and SCE will ensure the following during construction of the proposed project components: All hazardous materials (including fuels, lubricants, and cleaning solvents) will be stored, handled, and used in accordance with applicable regulations. For all hazardous materials in use at construction sites, Material Safety Data Sheets will be available for routine or emergency use. In addition, the applicant will ensure the following for the storage field project components during construction: All hazardous materials planned for use or storage at the storage field site during construction of the proposed Central Compressor Station will be preapproved by the applicant's designated safety staff. Approval of hazardous materials will be determined only after full review of the Material Safety Data Sheet	Ensure that the applicant and SCE implement a Worker Environmental Awareness Training program as specified in APM HZ-~~6~~5. See additional requirements for APMs HZ-~~3~~2, HZ-~~5~~4, HZ-~~6~~5, and HZ-~~7~~6.	Prior to and during construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	for the proposed material. Hazardous materials storage locations at the storage field will be determined based on the storm water pollution prevention plan and storage field policy. Existing materials are stored within the storage field's hazardous material and hazardous waste storage area. The applicant and SCE will also ensure the following during operation of the proposed project components: All hazardous and nonhazardous wastes generated during operation of the proposed project (e.g., waste oil and gas condensates from the compressor station) will be classified and managed in accordance with federal and state regulations and site-specific permits. All hazardous materials (including fuels, lubricants, and cleaning solvents) will be stored, handled, and used in accordance with applicable regulations. **APM HZ-~~6~~5: Worker Environmental Awareness Training. .** Prior to construction, the applicant and SCE will develop and implement Worker Environmental Awareness Training Programs based on the final engineering design, the results of preconstruction surveys, and a list of mitigation measures developed by the CPUC to mitigate significant environmental effects of the proposed project. Prior to start of work, presentations will be prepared by the applicant and SCE and shown to all workers who will be present on the proposed project component sites during construction. A record of all trained personnel (including logs of training sessions signed by all workers who attended each session) will be kept with the construction foreman. The CPUC will conduct regular (monthly and random) audits to ensure that workers on the project component sites have received the appropriate training. Audits will include worker tests and/or interviews to confirm adequate instruction in construction procedures and mitigation measures. All construction personnel will receive the following: 1. Instruction for compliance with project component site-specific biological or cultural resource protective measures and mitigation measures that are developed after preconstruction surveys; 2. A list of phone numbers for key personnel associated with the proposed project including the archeological and biological monitors, environmental compliance coordinator, and regional spill response coordinator; 3. Instruction on the South Coast Air Quality Management District Fugitive Dust and Ozone Precursor Control Measures and Portable Engine Operating Parameters;		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	4. Direction that site vehicles must be properly muffled; 5. Instruction on what typical cultural resources look like, and instruction that if cultural resources are discovered during construction, to suspend work in the vicinity of the find and contact the site supervisor and archeologist or environmental compliance coordinator; 6. Instruction on how to work near any Environmentally Sensitive Areas delineated by archeologists or biologists; 7. Instruction on individual responsibilities under the Clean Water Act, the applicant's and SCE's storm water pollution prevention plans, site-specific best management practices, hazardous materials and waste management requirements, and the location of Material Safety Data Sheets as needed for each proposed project component; 8. Instructions to notify the site supervisor and regional spill response coordinator in the event of hazardous materials spills or leaks from equipment or upon the discovery of soil or groundwater contamination; 9. A copy of the truck routes to be used for material delivery; and 10. Instruction that noncompliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the proposed project components. **APM HZ-~~7~~6~~:~~: Wood Pole Recycling and Disposal.** SCE will ensure that utility pole and other utility wood waste is reused by SCE, returned to the manufacturer, disposed of in a Class I hazardous waste landfill, or disposed of in the lined portion of a municipal landfill certified by the associated Regional Water Quality Control Board.		
Impact HZ-2: Significant hazard from accident conditions involving the release of hazardous materials.	**APM HZ-~~3~~2: Hazardous Materials Spill and Release Prevention.** See above. **APM HZ-~~4~~3: Contaminated Soil Disposal.** The applicant and SCE will ensure that any soil from excavation and grading activities that is suspected of being contaminated with oil or other hazardous materials is characterized and disposed offsite at an appropriately licensed waste facility. **APM HZ-~~5~~4: Hazardous Materials Use and Storage and Hazardous Waste.** See above. **APM HZ-~~6~~5: Worker Environmental Awareness Training.** See above.	Ensure that the applicant prepares a Soil Sampling and Contaminated Soils Contingency Plan as specified in MM HZ-1. Ensure that the applicant and SCE implement a Worker Environmental Awareness Training program as specified in APM HZ-~~6~~5. See additional requirements for APMs HZ-3, HZ-4, HZ-5, and HZ-6 and MM HZ-1.	Prior to and during construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	MM HZ-1: ~~Soil Sampling and~~ Contaminated Soils Contingency Plan. The applicant will prepare a ~~Soil Sampling and~~ Contaminated Soils Contingency Plan that would outline procedures for testing soils in locations where contaminated soils are suspected to be present including the office building and Central Compressor Station site locations. The ~~Soil Sampling and~~ Contaminated Soils Contingency Plan will also outline the steps that would be implemented if contaminated soils are encountered during pre-construction soil sampling and testing or if they are encountered at any point during construction. Provisions outlined in this plan would include phone numbers of city, county, state, and federal agencies and primary, secondary, and final cleanup procedures. In addition, the plan would address health and safety procedures to minimize environmental impacts in the event that hazardous soils or other materials are encountered during construction of the project, including measures such as worker training, containerization and storage, and monitoring. The plan would also establish security measures to prevent unauthorized entry to cleanup sites and to reduce hazards outside the investigation/cleanup area and would identify appropriate, licensed disposal facilities, and haulers.		
Impact HZ-3: Emit hazardous emissions or involve handling hazardous materials, substances, or waste within one-quarter miles of an existing or proposed school.	**APM HZ-~~3~~2: Hazardous Materials Spill and Release Prevention.** See above. **APM HZ-~~5~~ 4: Hazardous Materials Use and Storage and Hazardous Waste.** See above. **APM HZ-~~6~~5: Worker Environmental Awareness Training.** See above.	See above.	See above.
Impact HZ-4: Be located on a site that is included on a list of hazardous materials sites.	**MM HZ-1: ~~Soil Sampling and~~ Contaminated Soils Contingency Plan.** See above.	See above.	See above.
Impact HZ-5: Safety hazards for people residing or working in the project component areas that are within the area of an airport land use plan or within two miles of an airport.	**APM HZ-1: Federal Aviation Administration Consultation.** SCE will consult with the Federal Aviation Administration as part of the design phase for the SCE-proposed project components to ensure that elevated structures such as TSPs will not pose a hazard for air traffic.	See requirements for APM HZ-1.	Prior to construction
Impact HZ-6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	**APM HZ-~~8~~7: Construction Fire Control and Emergency Response Measures.** To address the risk of fire during construction of the proposed project components, the applicant and SCE will develop fire control and emergency response measures as part of the Construction Safety and Emergency Response Plans developed in	Ensure that the applicant and SCE develop Construction Safety and Emergency Response Plans as specified in APM HZ-~~8~~7. See additional requirements for APM HZ-~~8~~7.	Prior to construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	consultation with their contractors for use during construction of the proposed project components. The Construction Fire Control and Emergency Response Measures will describe fire prevention and response practices that the applicant and SCE will implement during construction of the proposed project components to minimize the risk of fire, and in the case of fire, provide for immediate suppression and notification. SCE's Construction Fire Control and Emergency Response Measures will also be generally consistent with SCE's Specification E-2005-104, Transmission Line Project Fire Plan (February 21, 2006). The Construction Fire Control and Emergency Response Measures shall specify that the applicant and SCE, or the respective construction contractors, shall furnish all supervision, labor, tools, equipment, and material necessary to prevent starting any fire, control the spread of fires if started, and provide assistance for extinguishing fires started as a result of project construction activities. Labor shall include the assignment of Fire Risk Managers who will be present at each proposed project component area during construction activities, whose sole responsibility will be to monitor the contractor's fire-prevention activities, and who will have full authority to stop construction in order to prevent fire hazards. 1. The Fire Risk Managers shall: Be responsible for preventing, detecting, controlling, and extinguishing fires set accidentally as a result of construction activity; Review the Fire Control and Emergency Response Measures with the fire patrolperson and construction employees prior to starting work at each project area; Ensure that all construction personnel are trained in fire safety measures relevant to their responsibilities. At a minimum, construction personnel shall be trained and equipped to extinguish small fires; Be equipped with radio or cell phone communication capability; and Maintain an updated a key personnel and emergency services contact (telephone and email) list, kept onsite and made available as needed to construction personnel. 2. Equipment shall include: a. Spark arresters that are in good working order and meet applicable regulatory standards for all diesel and gasoline internal combustion engines, stationary and mobile; b. One shovel and one pressurized chemical fire extinguisher for each gasoline-powered tool, including but not restricted to compressors, hydraulic accumulators, gardening tools (such as chain saws and weed trimmers), soil		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	augers, rock drills, etc.; c. Fire suppression equipment to be kept on all vehicles used for project construction; and ~~d. An onboard self- extinguishing fire suppression system capable of extinguishing any equipment-caused fire to be kept on heavy construction operating equipment.~~ 3. Measures to be undertaken by the applicant, SCE or the respective construction contractors, and monitored and enforced by the Fire Risk Manager, at each of the project areas during construction activities, shall include: a. The installation of fire extinguishers at the proposed Central Compressor Station site; b. The prohibition of smoking at each construction job site as follows: no smoking in wildland areas; no smoking during operation of light or heavy equipment; limit smoking to paved areas or areas cleared of all vegetation; no smoking within 30 feet of any area in which combustible materials (including fuels, gases, and solvents) are stored; no smoking in any project construction areas during any Red Flag Warnings that apply to the area; c. The posting of no smoking signs and fire rules on the project bulletin board at all contractor field offices and areas visible to employees during fire season; d. The maintenance of all construction areas in an orderly, safe, and clean manner. All oily rags and used oil filters shall be removed from project construction areas. After construction activities are completed in each project area, the area shall be cleaned of all trash and surplus materials. All extraneous flammable materials shall be cleared from equipment staging areas and parking areas; e. Confinement of welding activities to cleared areas having a minimum radius of 10 feet measured from place of welding, and observed by the Fire Risk Manager; f. Prevention of the idling of vehicles with hot exhaust manifolds on dirt roads with dead combustible vegetation under the vehicle; g. The provision of portable communication devices (i.e., radio or mobile telephones) as needed to construction personnel and communication protocols for onsite workers to coordinate with local agencies and emergency personnel in the event of fire or other emergencies during construction or operation of the		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	proposed project; and h. Any additional measures as needed during construction to address fire prevention and detection, to lower the risk of wildland fires. 4. Measures will also include the following requirements that would involve coordination between the applicant and SCE, and the Fire Departments and CAL FIRE: ~~a. The applicant and SCE or the respective construction contractors shall furnish any and all forces and equipment to extinguish any uncontrolled fire near the project component areas as directed by Fire Department or CAL FIRE representatives;~~ b. The applicant and SCE or the respective construction contractors shall abide by all restrictions to construction activity that may be enforced by the Fire Departments and/or CAL FIRE during Red Flag Warning days; and c. In the event that ~~the applicant and~~ SCE or the respective construction contractors sets fire to incinerate cleared vegetation,…The application will not burn cleared vegetation during construction activities ~~5. Measures will also include additional, special provisions for days when the National Weather Service issues a Red Flag Warning. Standard protocols implemented during these periods will include:~~ ~~a. Measures to address storage and parking areas;~~ ~~b. Measures to address the use of gasoline-powered tools;~~ ~~c. Procedures for road closures as necessary;~~ ~~d. Procedures for use of a fire guard as necessary; and~~ ~~e. Additional fire suppression tools and fire suppression equipment, and training requirements.~~		
Impact HZ-7: Expose people or structures to a significant risk involving wildland fires.	~~**APM HZ-2: Plant Power Line Inspection and Maintenance.** After construction, the applicant will inspect and maintain the Plant Power Line on at least a monthly basis for the purpose of reducing wildfire hazards.~~ **APM HZ-~~8~~7: Construction Safety and Emergency Response Plan.** See above. **MM HZ-2: Fire Department Review and Coordination.** Prior to construction of the proposed project components, the applicant and SCE will coordinate with CAL FIRE, the City of Los Angeles Fire Department, and the Los Angeles County and	Confirm that the applicant and SCE coordinated with the Los Angeles County and Ventura County Fire Departments as specified in MM HZ-2. Ensure that the applicant and SCE develop Construction Safety and Emergency Response Plans as specified in APM HZ-~~8~~7. See additional requirements for APM~~s~~ ~~HZ-2 and~~ HZ-~~8~~7and MM HZ-2.	Prior to, during, and after construction and during operations

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	Ventura County Fire Departments (Fire Departments) according to the location of the proposed project components, to the satisfaction of the lead agency. The applicant and SCE will submit the following materials ("fire management information") for review by the Fire Departments: proposed project components and design, specific construction methods and equipment, and a description of plans and measures including but not limited to the applicant's Fire/Emergency Action Plan, SCE's Fire Management Plan, the applicant's and SCE's Construction Safety and Emergency Response Plans, and measures that would be undertaken by the applicant and SCE to further address risks involving wildland fires during construction and operation of the proposed project components (including Fire Control and Emergency Response Measures). The Fire Departments will review the applicant and SCE's fire management information prior to construction of the proposed project components. The applicant and SCE will also submit the fire management information along with a record of contacts and coordination with the Fire Departments to the CPUC, for review and approval prior to construction of the proposed project components. The applicant will also submit any revisions of the facility Fire/Emergency Action Plan related to operation of the Central Compressor Station, for the same level of review and approval, prior to the start of project operations at the storage field.		
4.9 Hydrology and Water Quality			
Impact HY-1: Violate water quality standards or waste discharge requirements.	**APM AQ-3: Minimization of Disturbed Areas.** See above. **APM AQ-4: Watering Prior to Grading and Excavation.** See above. **APM AQ-6: Fugitive Dust from High Winds.** See above. **APM BR-3: Post-construction Restoration for Reconductoring.** See above. **APM GE-1: Geotechnical Studies.** See above. ~~**APM GE-2: Seismic-resistant Design Measures.** See above.~~ **APM GE-3: Erosion and Sediment Control.** See above. **APM HZ-~~3~~2: Hazardous Materials Spill and Release Prevention.** See above. **APM HZ-~~4~~3: Contaminated Soil Disposal.** See above. **APM HZ-~~5~~4: Hazardous Materials Use and Storage and Hazardous Waste.** See above. **APM PS-1: Site Cleanup.** See below.	See above/below.	See above/below.

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	APM PS-2: Non-hazardous Waste Management. See below.		
Impact HY-3: Substantial alteration of the existing drainage pattern of the site or area.	**APM AQ-3: Minimization of Disturbed Areas.** See above. **APM BR-3: Post-construction Restoration for Reconductoring.** See above. **APM GE-3: Erosion and Sediment Control.** See above. **MM BR-5: Impacts on Hydrologic Features.** See above.	See above.	See above.
Impact HY-8: Risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow.	**APM GE-1: Geotechnical Studies.** See above. ~~**APM GE-2: Seismic-resistant Design Measures.** See above.~~	See above.	See above.
4.10 Land Use and Planning			
No applicable APMs or mitigation measures.			
4.11 Noise			
Impact NS-1: Noise levels in excess of standards established in the local general plan or noise ordinance.	**APM NS-1: Construction Hours.** The applicant and SCE will ensure that construction of the proposed project components will comply with all applicable City of Los Angeles, City of Santa Clarita, County of Los Angeles, and County of Ventura noise regulations. Construction activities will generally be scheduled during daylight hours (7:00 a.m. to 5:00 p.m.) Monday through Friday and some Saturdays. **APM NS-2: Construction Noise Control Plan.** SCE will prepare and implement a noise control plan to address all SCE structure installation/replacement and substation modifications associated with the SCE-proposed project components. Construction measures required by the Noise Control Plan will include, but not be limited to, the following: Stockpiling and vehicle staging areas will be located as far away from occupied residences as possible; All stationary construction equipment will be operated as far away from residential uses as possible; To the extent feasible, haul routes for removing excavated materials or delivery of materials from each respective project component site will be designed to avoid residential areas	Ensure that construction activities are scheduled during daylight hours Monday through Saturday or that variances from noise ordinances are obtained as necessary (APM NS-1). Ensure that the applicant and SCE notify sensitive receptors about construction as specified in APM NS-3. Ensure that SCE implements a Noise Control Plan (APM NS-2) and all noise control and reduction measures as specified in MM NS-1. See additional requirements for APM NS-1 through NS-4 and MM NS-1.	Prior to, during, and after construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	and areas occupied by residential receptors (e.g., hospitals, schools, convalescent homes, etc.); and Idling construction equipment will be turned off when not in use for periods longer than 15 minutes. **APM NS-3: Notification Procedures.** At least two weeks prior to construction, the applicant and SCE will notify all sensitive receptors within 300 feet of construction activities of the potential to experience significant noise levels during construction. ~~**APM NS-4: Operational Noise Control.**~~ ~~MM NS-2: Operational Noise Control. After construction of the Central Compressor Station is completed, the applicant will take measures as necessary to ensure that the operational noise levels from the Central Compressor Station do not exceed 45 dBA at the closest receptor in the City of Los Angeles. Measures that may be implemented to achieve this level during the operational phase for turbines, compressors, and cooling equipment proposed to be installed at the Central Compressor Station could include: Turbines will be placed within an acoustical enclosure; Compressor noise will be mitigated by placing an acoustical blanket over the compressor itself or enclosing the compressor within an appropriately rated acoustical building; Noise emitted from gas process coolers will be mitigated by installing acoustic barriers without gaps around the equipment casing and with a continuous minimum surface density of 10 kilograms per square meter in order to minimize the transmission of sound.~~ ~~**MM NS-1: Noise Reduction and Control Practices.**~~ ~~SCE will employ the following noise reduction and control practices during subtransmission line reconductoring and fiber optic installation activities that could produce noise levels above 80 dBA Leq near sensitive receptors (within 100 feet): Construction equipment, stationary or mobile, will be equipped with properly operating and maintained mufflers on engine exhausts and compressor components. Construction equipment specifically designed for low noise emissions (i.e., equipment that is powered by electric or natural gas engines instead of diesel or gasoline reciprocating engines) will be used as much as feasible. Electric engines have been reported to have lower noise levels than internal combustion engines. Temporary enclosures or acoustic barriers (i.e., solid sound absorber composite materials) will be used around stationary pieces of equipment. Noise barriers or enclosures will be selected with a sound transmission class of 30 or greater, in accordance with American Society of Testing and Materials Test Method E90. Acoustical curtain enclosures can provide a sound transmission loss of 10 to 13 dBA, whereas portable solid barriers can achieve up to 33 dBA in noise reduction. Acoustic barriers will be used for all construction~~		

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	~~activities within 100 feet of closest receptors. Construction traffic will be routed away from residences and other sensitive receptors, as feasible. Noise from back-up alarms (alarms that signal vehicle travel in reverse) in construction vehicles and equipment will be reduced by providing a layout of construction sites that minimizes the need for back-up alarms and using flagmen to minimize time needed to back up vehicles. As feasible, and in compliance with the applicant's safety practices and public and worker safety provisions required in the Occupational Safety and Health Standards for the Construction Industry (29 CFR Part 1926), the applicant may also use self-adjusting, manually adjustable, or broadband back-up alarms to reduce construction noise.~~		
Impact NS-3: Permanent increase in ambient noise levels in the project vicinity.	~~**APM NS-4: Operational Noise Control.** See above.~~ No applicable APMs or mitigation measures.	~~See above.~~	~~See above.~~
Impact NS-4: Substantial temporary or periodic increase in ambient noise levels in the project vicinity.	~~**APM NS-4: Operational Noise Control.** See above.~~ ~~**MM NS-1: Noise Reduction and Control Practices.** See above~~. No applicable APMs or mitigation measures.	See above.	~~See above.~~
4.12 Population and Housing			
No applicable APMs or mitigation measures.			
4.13 Public Services and Utilities			
Impact PS-1: Result in substantial adverse physical impacts associated with new or physically altered governmental facilities.	~~**APM HZ-2: Plant Power Line Inspection and Maintenance.** See above.~~ **APM HZ-~~8~~7: Construction Safety and Emergency Response Plan.** See above. **MM HZ-2: Fire Department Review and Coordination.** See above.	See above.	See above.
Impact PS-5: Served by a landfill without sufficient permitted capacity to accommodate the proposed project's solid waste disposal needs.	**APM HZ-~~5~~4: Hazardous Materials Use and Storage and Hazardous Waste.** See above. **APM HZ-~~7~~6: Wood Pole Recycling and Disposal.** See above. **APM PS-2: Nonhazardous Waste Management.** The applicant and SCE will ensure that nonhazardous waste materials, including wood, soil, vegetation, and sanitation waste (portable toilets) that would be generated during construction of the project components will either be re-used at the project component construction sites (e.g., clean soil used for backfill) or disposed of at an appropriately licensed	See requirements for APMs HZ-5, HZ-7, and PS-2.	During construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	offsite facility.		
Impact PS-6: Noncompliance with federal, state, or local statues and regulations related to solid waste.	**APM HZ-~~5~~4: Hazardous Materials Use and Storage and Hazardous Waste.** See above. **APM PS-1: Site Cleanup.** The applicant and SCE will direct construction contractors to perform initial site cleanup immediately following construction activities at each of the proposed project components. Initial site cleanup at each project component area will include the following: Removal of all construction debris; Proper disposal or recycling of all construction materials and debris at appropriately licensed landfills and other offsite facilities; and Inspection of project component sites to ensure that cleanup activities are successfully completed. **APM PS-2: Non-hazardous Waste Management.** See above.	See requirements for APMs HZ-5, PS-1, and PS-2.	During construction
4.14 Recreation			
No applicable APMs or mitigation measures.			
4.15 Transportation and Traffic			
Impact TT-1: Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.	**APM TT-1: Traffic Control Plan.** The applicant and SCE will prepare Traffic Control Plans in accordance with the latest version of the California Joint Utility Traffic Control Manual. These Traffic Control Plans will be implemented by the applicant and SCE as needed. The Traffic Control Plans will be developed to minimize short-term construction-related impacts on local traffic and potential traffic safety hazards, and will include measures such as the installation of temporary warning signs at strategic locations near access locations for the project components. The signs will be removed after construction-related activities are completed. The Traffic Control Plans may include the following measures: • Coordination with the City of Los Angeles, City of Santa Clarita, County of Los Angeles, or County of Ventura on any temporary land or road closures; • Installation of traffic control devices as specified in the California Joint Utility Traffic Control Manual; • Provisions for temporary alternate routes to route local traffic around	Ensure that the applicant and SCE develop and implement a Traffic Control Plan (APM TT-1) and Commuter Plan (APM TT3). See additional requirements for APMs TT-1 and TT-3.	Prior to and during construction

Exhibit A-1: Revised Table ES-1 and 7-1

Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs)	Monitoring Requirements	Timing
	construction zones; and Consultation with emergency service providers and development of an Emergency Access Plan for emergency vehicle access in and adjacent to the construction zone. **APM TT-3: Commuter Plan.** The applicant would implement a Commuter Plan that includes a designated offsite parking area that has adequate parking capacity for 150 workers (the peak construction-activity maximum not including SCE workers) and a shuttle that would transport worker crews (approximately 10 workers per trip) from the parking area to worksites.		
Impact TT-2: Conflict with an applicable congestion management program including, but not limited to, LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.	**APM TT-1: Traffic Control Plan.** See above. **APM TT-3: Commuter Plan.** See above.	See above.	See above.
Impact TT-3: Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	**APM TT-1: Traffic Control Plan.** See above.	See above.	See above.
Impact TT-4: Result in inadequate emergency access.	**APM TT-1: Traffic Control Plan.** See above. **APM TT-3: Commuter Plan.** See above.	See above.	See above.
Impact TT-5: Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	**APM TT-1: Traffic Control Plan.** See above. **APM TT-2: Repair of Damaged Roads.** The applicant and SCE will ensure that damage to existing roads that is the direct result of activities related to construction of the proposed project components will be repaired once construction is complete in accordance with local jurisdiction requirements and/or existing franchise agreements held by the applicant and SCE.	See requirements for APMs TT-1 and TT-2.	Prior to, during, and after construction

EXHIBIT A-2

Exhibit A-2

Habitat Evaluation for Breeding Least Bell's Vireo and Southwestern Willow Flycatcher

Methodology

Least Bell's Vireo ***(****Vireo bellii pusillus*) (LBV) and Southwestern willow flycatcher (*Empidonax traillii extimus*)(SWWF) have specific habitat parameters required for successful recruitment during the breeding season. In order to determine the suitability for both species to utilize drainages areas during the breeding season that may be potentially impacted during project activities, a field assessment of linear areas not previously analyzed was conducted to evaluate habitat parameters identified during a scientific literature review. During an aerial analysis utilizing Google Earth, nine linear areas were identified within the project that crosses drainages with potential habitat. Areas 1-8 occurred on telecommunication route 2 and Area 9 occurred on the 66 kV subtransmission alignment. Field evaluations of the nine areas were conducted by endangered species biologist Thomas Juhasz and verified by ornithologist Doug Willick. The riparian habitat that occurs in Limekiln Canyon Wash was previously described within the DEIR; this information is utilized to evaluate habitat suitability for LBV and SWWF. The results of the field evaluations of habitat parameters for nesting LBV and SWWF and the literature review of Limekiln Canyon Wash are presented in Tables 1 and 2. Field assessment notes and maps are included within Attachments 1 and 2.

Description of Breeding Habitat - Least Bell's Vireo

Optimal breeding habitat for least Bell's vireo (LBV) is constituted of climax riparian vegetation with a dense understory of young willows (*Salix* spp.), mulefat (*Baccharis salicifolia*), Mexican elderberry (*Sambucus mexicana*), California rose (*Rosa californica*), mugwort (*Artemisia douglasiana*), poison oak (*Toxicodendron diversilobum*), and wild grape (*Vitis sp.*)(USFWS 1998). Three ecological variables consistently determine habitat quality for LBV: 1) the presence of *Salix* spp.; 2) the tiered stratification of vegetation within riparian breeding habitat; and, 3) the width of the willow riparian habitat. LBV closely associated with habitat dominated by *Salix* sp. with low amounts of aquatic and herbaceous cover (USFWS 1998). LBVs exhibit a clear preference for relatively broad riparian habitats, which typically exhibit more stratification of vegetation. It was noted that an increase in occupied habitat occurs as the width of the willow riparian woodland exceeds 50 meters wide versus 10 meters or less (USFWS 2006). Due to concerted conservation measures, LBV populations are recovering in southern and central California and are occupying habitat left vacant since the mid 1930s. As local populations continue to expand, and occupy the remaining areas of more typical habitat, a higher incidence of LBV utilizing lower quality or "marginal" habitats occurs.

Breeding Habitat Evaluation - Least Bell's Vireo

As presented in the Methodology Section, eight areas along Telecom Route 2 and one area along the 66-kV subtransmission alignment (as presented in the DEIR) were identified for evaluation during field efforts based on presence of potential riparian habitat. Limekiln Canyon Wash was evaluated through the information presented in the DEIR.

- Limekiln Canyon Wash contains willow scrub that is fragmented from other contiguous habitat by a paved road and a channelized conduit. The willows are currently recovering from a past fire event and are surrounded by ruderal vegetation on the banks. As the vegetation is isolated by roads and channelized drainages from other habitat and does not retain the habitat complexity preferred by LBV.

- Area 1 at Box Canyon Road does not have the habitat complexity or standing water preferred by LBV.

- Areas 2, 4 and 6 had marginal to moderate suitability for least Bell's vireo; as riparian habitats are linear in feature, there is likelihood that vireos will utilize the habitat within the buffer zones if they are connected to other suitable habitat (Areas 2, 4 and 6). The habitat is marginal to moderate due to vegetation composition and structure but is well below the 0.5 to 7.5 acre nesting territory size required by LBV (USFWS 2006).

- Area 3 is a drainage with surface water dominated by coast live oak (*Quercus agrifolia*). The understory is open with thickets of poison oak on the floor. The stratified layers of understory vegetation required by LBV are not present.

- Area 5 does not have the required habitat size and complexity required by nesting LBV. The riparian vegetation is in isolated within swatches of ruderal vegetation.

- Area 7 has an ephemeral swale that runs through coast live oak woodland with an annual grassland understory. Suitable habitat is absent in Area 7.

- Area 8 is well below the typical breeding habitat size (0.5 acres +) and linear habitat width with a rapidly flowing but very shallow channel that might be seasonally intermittent.

- The riparian habitat within Area 9 has marginal suitability due to the permanent disturbances along the drainage (5 freeway corridor, development).

There is potential for LBV to occur in project area due to the reoccupation of the Santa Clara and Los Angeles River Systems by singing males (Sepulveda Basin Wildlife Refuge); however, the habitat is either unsuitable (Limekiln Canyon Wash, Areas1, 3, 5, 7, 8) or is only marginal to moderately suitable (Areas 2, 4, 6, 9) due to constricted habitat size and a lack of stratified, dense vegetation required for successful recruitment during the breeding season.

TABLE 1: SUITABILITY OF HABITAT WITHIN DRAINAGES FOR LEAST BELL'S VIREO BREEDING SITES

Drainage Site	Primary Constituent Elements for Breeding, Reproduction, Rearing of Offspring Presence (Y or N)							Habitat Suitability[1]
	Perennial Water	Riparian Vegetation Dominated by Willows	Suitable Habitat Greater Than 0.5 Acres	Contiguous with Other Riparian Habitat	Dense Foliage from Ground- level to 4 m	Structurally Diverse Canopy	Proximity to Human Disturbance(s)	
Limekiln Canyon Wash[2]	Yes[1]	Yes	No	No	No	No	Adjacent to access road	Unsuitable
Site 1 Box Canyon Road	No	Yes	No	No	No	No	Adjacent to road	Unsuitable
Site 2 Santa Susana Road	Yes	No	Yes	Yes	No	Yes	Adjacent to road and baseball field	Marginal to Moderate
Site 3 Santa Susana Road	Yes	No	No	Yes	No	No	Natural	Unsuitable
Site 4 Devils Canyon Creek	Yes	Yes	No	Yes	No	No	Natural	Marginal to Moderate
Site 5 Browns Canyon Creek	Yes[2]	Yes	No	No	No	No	Adjacent to concrete low flow crossing	Unsuitable
Site 6 Browns Canyon Creek	Yes[2]	Yes	No	Yes	Yes	Yes	Natural	Marginal to Moderate
Site 7 Browns Canyon Creek	No	No	No	Yes	No	No	Natural area	Unsuitable
Site 8 Browns Canyon Creek	Yes[2]	Yes	No	Yes	No. Open understory.	No	Natural area	Unsuitable
Site 9 Subtransmission Route	Yes	Yes	Yes	Contiguous northwards; cut off to the south by a road.	No	Yes	Constricted by development and the 5 Freeway	Marginal

[1]Two small perennial ponds exist in the detention basin

[2]Surface water flow may cease during the summer months.

1. Terms are defined as follows: Unsuitable = Habitat does not contain the parameters needed for successful recruitment; Marginal = Habitat contains some habitat qualities required by the species but does not contain enough to facilitate nesting success; Moderate = Habitat meets enough requirements to support breeding efforts; Suitable = Contains optimal parameters required by the species for recruitment.

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Description of Breeding Habitat - Southwestern Willow Flycatcher

Breeding habitat for Southwestern willow flycatcher (SWWF) is restricted to dense, well-developed riparian woodland with stratified layers occurring within the vegetation. Breeding territories are based near lentic (quiet, slow-moving, swampy, or still) surface water or saturated soil (USFWS 2002). Occupied sites are typically located along slow-moving stream reaches; at river backwaters; in swampy abandoned channels and oxbows; marshes; and at the margins of impounded water (e.g., beaver ponds, inflows of streams into reservoirs) (USFWS 2002). Where SWWF's occur along moving streams, those streams tend to be of relatively low gradient, i.e., slow-moving with few (or widely spaced) riffles (USFWS 2002). Sogge et al. (1997) suggest that nesting habitat for SWWF is on average two acres or greater in extent, with linear-shaped habitats at least 10 meters (33 feet) wide. Specific habitat characteristics, such as species composition and diversity, dominant vegetation, and vegetative structure, are quite varied. However, vegetation where nest sites are located typically have a pronounced canopy with dense foliage from the ground level up to approximately 4 m (13 ft) above ground (USFWS 2002). One of the key elements for SWWF is that they definitely prefer the presence of surface water within their territories through the entire breeding season. In many cases, flycatcher nest plants are rooted in or overhang standing water (USFWS 2002).

SWWF's have not been found in confined floodplains where only a single narrow strip of riparian vegetation less than approximately 10 m (33 feet) wide develops unless it is connected to larger riparian zones (USFWS 2002). Unsuitable breeding habitat for SWWF includes areas comprised solely of young or emergent vegetation less than 2 m tall; steep-walled and heavily bouldered narrow canyons; habitats composed exclusively of cattail (*Typha* spp.), sedge (*Carex* spp.), and rush (*Juncus* spp.), and reaches of more mature, shrub-like vegetation that formed very dense stands less than 2 m tall and do not possess an overstory (e.g.mule fat (*Baccharis glutinosa*) thickets) (Rouke et. Al 2004).

Breeding Habitat Evaluation - Southwestern Willow Flycatcher

As described in the Methodology Section above, nine linear areas were identified with potential breeding habitat and have been evaluated to determine suitability. The drainage crossings within the nine linear areas do not have the habitat parameters required by breeding SWWF. Limiting factors for the nine linear areas and Limekiln Canyon Wash area are presented in the bulleted list below:

- As presented in the DEIR, Limekiln Canyon Wash contains willow scrub that is fragmented from other contiguous habitat by a paved road and a channelized conduit. The willows are currently recovering from a past fire event and are surrounded by ruderal vegetation on the banks. As the vegetation is isolated by roads and channelized drainages from other habitat and does not retain the habitat complexity preferred by SWWF.

- Area 1 at Box Canyon Road does not have the habitat complexity or standing water preferred by SWWF.

- Area 2 has the riparian canopy preferred by SWWF and is connected to a larger riparian habitat; however, the steep canyon walls enveloping the site and the limited understory vegetation occurring to 4 meters high (sparse poison oak) makes this riparian corridor less favorable for SWWF recruitment.

- Area 3 is a drainage with surface water dominated by coast live oak (*Quercus agrifolia*). The understory is open with thickets of poison oak on the floor. The stratified layers of understory vegetation required by SWWF are not present.

- Area 4 on Devils Canyon Creek has lentic water present with dense vegetation but does not have the average vegetation typical breeding habitat size (2 acres +) required by the species. The steep canyon walls along Devils Canyon Creek preclude the formation of broader habitat areas preferred by SWWF.

- Area 5 does not have the required habitat size and complexity needed for SWWF breeding territories.

- Area 6 has appropriate understory vegetation and canopy, but is well below the patch size and linear habitat width needed by the species.

- Area 7 has an ephemeral swale that runs through coast live oak woodland with an annual grassland understory. Suitable habitat is absent in Area 7.

- Area 8 is well below the typical breeding habitat size (2 acres +) and linear habitat width with a rapidly flowing channel that might be intermittent in flows.

- Area 9 is unsuitable habitat due to the permanent disturbances along the drainage (5 freeway corridor, development).

All sites are suitable for passage *Empidonax* flycatchers but do not provide the habitat parameters needed by SWWF for successful recruitment within the breeding season from May to July.

TABLE 2: SUITABILITY OF HABITAT WITHIN DRAINAGES FOR SOUTHWESTERN WILLOW FLYCATCHER BREEDING SITES

Drainage Site	Primary Constituent Elements for Breeding, Reproduction, Rearing of Offspring Presence (Y or N)									Habitat Suitability[1]
	Perennial Water	Riparian Vegetation	Vegetation Patch Greater Than 2 Acres	Linear Habitat at least 10m Wide	Contiguous with other Riparian Habitat	Vegetation Exceeds 2m Height	Dense Foliage from Ground-Level to 4m	Stratified Vegetation Layers	Proximity to Human Disturbance(s)	
Limekiln Canyon Wash[2]	Yes[1]	Yes	No	No	No	No	No	No	Adjacent to access road	Unsuitable
Site 1 Box Canyon Road	No	Yes	No	No	No	Yes	No	No	Adjacent to road	Unsuitable
Site 2 Santa Susana Road	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Adjacent to road and baseball field	Unsuitable
Site 3 Santa Susana Road	Yes	No	No	No	Yes	Yes	No	No	Natural	Unsuitable
Site 4 Devils Canyon Creek	Yes	Yes	No	Yes	Yes	No	No	No	Natural	Unsuitable
Site 5 Browns Canyon Creek	Yes[2]	Yes	No	No	No	No	No	No	Adjacent to concrete low flow crossing	Unsuitable
Site 6 Browns Canyon Creek	Yes[2]	Yes	No	No	Yes	Yes	Yes	Yes	Natural	Unsuitable
Site 7 Browns Canyon Creek	No	No	No	No	Yes	Yes	No	No	Natural area	Unsuitable
Site 8 Browns Canyon Creek	Yes[2]	Yes	No	No	Yes	Yes	No. Open understory.	No. dominated by coast live oak	Natural area	Unsuitable
Site 9 Subtransmission Route	Yes	Yes	No	Yes	Yes northwards; cut off to the south by a road.	Yes	No	No	Constricted by development and the 5 Freeway	Unsuitable

[1] Two small perennial ponds exist in the detention basin

[2]Surface water flow may cease during the summer months.

1. Terms are defined as follows: Unsuitable = Habitat does not contain the parameters needed for successful recruitment; Marginal = Habitat contains some habitat qualities required by the species but does not contain enough to facilitate nesting success; Moderate = Habitat meets enough requirements to support breeding efforts; Suitable = Contains optimal parameters required by the species for recruitment.

References:

Rourke, J. W., B. E. Kus and M.J. Whitfield. 2004. Distribution and abundance of the Southwestern Willow Flycatcher at selected southern California sites in 2001. Prepared for the California Department of Fish and Game, Species Conservation and Recovery Program Report 2004-05, Sacramento, California.

Sogge, M. K., R. M. Marshall, S. J. Sferra, and T. J. Tibbitts. 1997. A Southwestern Willow Flycatcher natural history summary and survey protocol. National Park Sevice/USGS Colorado Plateau Research Station, Northern Arizona University. NRTR-97/12.

U.S. Fish and Wildlife Service. 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico. i-ix + 210 pp., Appendices A-O

U.S. Fish and Wildlife Service (USFWS). 1998. Draft Recovery Plan for the Least Bell's Vireo. Fish and Wildlife Service, Portland, OR. 139 pp.

U.S. Fish and Wildlife Service (USFWS). 2006. Least Bell's Vireo: 5- Year Review Summary and Evaluation. Fish and Wildlife Service, Carlsbad, CA. 26 pp.

Site 1- Box Canyon Road

- Drainage characteristic: An ephemeral stream with no flowing water. Channel width is approximately 4 feet wide. The channel drops off steeply as it flows to the west; no pooling water is able to develop in the area.

- Vegetation structure: Riparian vegetation dominated by arroyo willow and Mexican elderberry interspersed with canyon sunflower, branching phacelia, and poison oak within the understory.

- Suitability for least Bell's vireo breeding territory: Willow thickets are present but are isolated from other riparian habitat. The lack of standing water precludes this from being suitable vireo breeding habitat.

- Suitability for Southwestern willow flycatcher breeding territory: The narrow ephemeral wash retains enough moisture to induce the growth of willows but does not provide the tiered vegetation and perennial water source required by willow flycatchers to successfully breed. Site 1 is not suitable for Southwestern willow flycatcher.

Site 1 Box Canyon Road
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Artemisia douglasiana	Douglas mugwort	yes
Gnaphalium californicum	California everlasting	yes
Phacelia ramosissima	Branching phacelia	yes
Rubus ursinus	California blackberry	yes
Salix lasiolepis	Arroyo willow	yes
Sambucus mexicana	Mexican elderberry	yes
Toxicodendron diversilobum	Poison oak	yes
Venegasia carpesioides	Canyon sunflower	yes

Photo 1-a: Looking into the ephemeral stream from Santa Susana Pass Road. The canopy is dominated by arroyo willow with an occasional Mexican elderberry. Coast live oaks and patchy undifferentiated scrub are present upslope.

Photo 1-b: The understory of the ephemeral wash. Dominant species are poison oak, branching phacelia, and canyon sunflower. The lack of flowing water and a multitiered vegetation structure precludes either special-status bird species from establishing breeding territories.

Photo 1-c: Debris piles have built up in several parts of the ephemeral wash.

Site 2- Santa Susana Pass Road

- Drainage characteristic: A flowing stream approximately 1 foot wide and 10 inches deep. Flow appears to be perennial.

- Vegetation structure: Mixed riparian forest occurs within the drainage and is dominated by Fremont cottonwood, white alder, coast live oak, and red willow. The understory is dominated by poison oak and is interspersed with a midstory edible fig and shamel ash. Coast live oak and laurel sumac are present upslope.

- Suitability for least Bell's vireo breeding territory: The habitat currently present at Site 2 is marginal to moderate breeding habitat for least Bell's vireo. Optimal habitat is dominated by willows and has a well developed understory; however, the species could utilize the habitat present for breeding.

- Suitability for Southwestern willow flycatcher breeding territory: The mature riparian canopy provides the height required by the species but the area is neither extensive enough in size nore has an understory dense enough for suitable breeding habitat.

Site 2 Santa Susana Pass Road
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Alnus rhombifolia	White alder	yes
Ficus carica	Edible fig	no
Fraxinus udhei	Shamel ash	no
Malosma laurina	Laurel sumac	yes
Populus fremontii	Fremont cottonwood	yes
Quercus agrifolia	Coast live oak	yes
Salix laevigata	Red willow	yes
Toxicodendron diversilobum	Poison oak	yes

Photo 2-a: The understory is heavily dominated by poison oak.

Photo 2-b: understory of the drainage adjacent to the utility line. . Note the presence of refuse and non-native shamel ash saplings.

Photo 2-c: view of the drainage from Santa Susana Pass Road. This area past the emergent *Eucalyptus* sp. is beyond the buffer area and will not be impacted by project activities.

Site 3- Santa Susana Pass Road

- Drainage characteristic: A flowing stream with large alluvial boulders approximately 3 feet wide and 1 foot deep. Flow appears to be perennial.

- Vegetation structure: Coast live oak is dominant within the drainage with intermittent western sycamore and California walnut. The understory is dominated by poison oak.

- Suitability for least Bell's vireo breeding territory: Due to a lack of willows and a tiered vegetation structure, the habitat present does not constitute suitable breeding habitat for least Bell's vireo.

- Suitability for Southwestern willow flycatcher breeding territory: Due to a lack of willows and a tiered vegetation structure, the habitat present does not constitute suitable breeding habitat for southwestern willow flycatcher.

Site 3 Santa Susana Pass Road
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Dryopteris arguta	Coastal wood fern	yes
Juglans californica	California walnut	yes
Keckiella cordifolia	Heart leaved penstemon	yes
Mimulus aurianticus	Bush monkeyflower	yes
Platanus racemosa	Western sycamore	yes
Quercus agrifolia	Coast live oak	yes
Toxicodendron diversilobum	Poison oak	yes

Photo 3-a: View of the flowing water in the channel. Dense thickets of poison oak envelop the banks.

Photo 3-b: View of the understory. The middle story is sparse, with only an occasional western sycamore sapling or a California walnut occurring.

Photo 3-c: view of a California walnut emerging from the poison oak thicket.

Site 4- Devils Canyon Creek

- Drainage characteristic: A perennial flowing stream alternating between riffles and pools is within an approximately 5 foot wide channel. The average depth of a pool is 1 foot.

- Vegetation structure: Riparian vegetation dominated by arroyo and sandbar willow interspersed with California walnut. Mulefat, California rose, California blackberry, and giant wild rye compose a thick understory.

- Suitability for least Bell's vireo breeding territory: Due to the recent burn, the riparian habitat is still recovering to its previous climax state. The habitat currently present in Devils Canyon Creek is marginal to moderate suitable for nesting least Bell's vireo.

- Suitability for Southwestern willow flycatcher breeding territory: Due to the recent burn, the riparian habitat is still recovering to its previous climax state. The narrow channel and associated floodplain does not provide the density or tiered canopy required by willow flycatcher breeding territory.

Site 4 Devils Canyon Creek
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Anagallis arvensis	Scarlet pimpernel	no
Artemisia douglasiana	Douglas mugwort	yes
Hirschfeldia incana	Field mustard	no
Juglans californica	California walnut	yes
Lamium amplexicaule	Henbit	no
Malosma laurina	Laurel sumac	yes
Nicotiana glauca	Tree tobacco	no
Oenothera elata	Hookers evening primrose	yes
Phacelia ramosissima	Branching phacelia	yes
Polypogon mospeliensis	Rabbits foot grass	no
Quercus agrifolia	Coast live oak	yes
Rosa Californica	California wild rose	yes
Salix exigua	Sandbar willow	yes
Salix lasiolepis	Arroyo willow	yes
Toxicodendron diversilobum	Poison oak	yes

Photo 4-a: view of the Devils Canyon Creek as it flows within the buffer zone. The previously burned arroyo willows have resprouted and are beginning to shade the pool again.

Photo 4-b: The recovering riparian vegetation along Devils Canyon Creek. Mulefat, arroyo willow, and sandbar willow are forming dense vegetation in the as the water flow is constricted between the steep slopes.

Photo 4-c: view of pool with overhanging willows.

Site 5- Browns Canyon Creek

- Drainage characteristic: A lightly flowing stream approximately 1 foot wide and 1 inch deep through a deep sand deposit. Flow can be ephemeral in times of drought.

- Vegetation structure: Riparian vegetation occurs in patches isolated from each other by ruderal vegetation covering the sand bank. A low flow concrete structure bisects the stream. Coast live oak woodland occurs upslope from the channel.

- Suitability for least Bell's vireo breeding territory: Due to the fragmented nature of the riparian habitat, no suitable breeding habitat for least Bell's vireo is present.

- Suitability for Southwestern willow flycatcher breeding territory: Due to the fragmented nature of the riparian habitat, no suitable breeding habitat for willow flycatcher is present.

Site 5 Browns Canyon Creek
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Artemisia douglasiana	Douglas mugwort	yes
Hirschfeldia incana	Field mustard	no
Juglans californica	California walnut	yes
Nicotiana glauca	Tree tobacco	no
Phacelia cicutaria	Caterpillar phacelia	yes
Phacelia ramosissima	Branching phacelia	yes
Polypogon mospeliensis	Rabbits foot grass	no
Quercus agrifolia	Coast live oak	yes
Salix lasiolepis	Arroyo willow	yes
Vinca major	Greater periwinkle	no

Photo 5-a: Browns Canyon Creek flowing through a ruderal clearing. The stands of riparian vegetation are isolated from each other in the buffer area by the clearings.

Photo 5-b: View of the concrete low flow crossing that separates two stands of riparian vegetation.

Photo 5-c: View of a riparian stand within the buffer zone. Species composition includes California walnut, arroyo willow, tree tobacco, and Douglas mugwort.

Site 6- Browns Canyon Creek

- Drainage characteristic: A lightly flowing stream approximately 20 inches wide and 2 inches deep. Flow can be ephemeral in times of drought.

- Vegetation structure: The canopy is dominated by arroyo willow with a mixed species understory. The riparian channel is bordered by coast live oaks and undifferentiated scrub upslope.

- Suitability for least Bell's vireo breeding territory: Marginal breeding habitat for least Bell's vireo is present within Site 6 due to the limited amount of suitable riparian vegetation within the riparian corridor.

- Suitability for Southwestern willow flycatcher breeding territory: Flowing water is present but the narrow corridor of riparian vegetation and the lack of very dense, stratified vegetation makes site 6 unsuitable for a breeding pair of southwestern willow flycatchers.

Site 6 Browns Canyon Creek
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Artemisia douglasiana	Douglas mugwort	yes
Baccharis salicifolia	Mulefat	yes
Carex spissa	San Diego sedge	yes
Epipactis giganteum	Giant stream orchid	yes
Quercus agrifolia	Coast live oak	yes
Rubus ursinus	California blackberry	yes
Salix lasiolepis	Arroyo willow	yes
Stachys bullata	California hedge nettle	yes
Toxicodendron diversilobum	Poison oak	yes

Photo 6-a: A thicket of California blackberry occurs underneath willows and up onto the adjacent slope.

Photo 6-b: Flowing water is bordered by mulefat, young willows, California hedge nettle, and California blackberry.

Photo 6-c: The riparian vegetation at Site 6 is well tiered.

Site 7- Browns Canyon Creek

- <u>Drainage characteristic:</u> An ephemeral stream with a light trickle that is less than an inch deep.
- <u>Vegetation structure:</u> The canopy is dominated by coast live oak within an occasional western sycamore. The understory is composed nearly entirely by non-native annual grasses.
- <u>Suitability for least Bell's vireo breeding territory:</u> Due to an intermittent water flow, a lack of willows and a tiered vegetation structure the habitat present does not constitute suitable breeding habitat for least Bell's vireo.
- <u>Suitability for Southwestern willow flycatcher breeding territory:</u> Due to an intermittent water flow, a lack of willows and a tiered vegetation structure the habitat present does not constitute suitable breeding habitat for southwestern willow flycatcher.

Site 7 Browns Canyon Creek
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Baccharis salicifolia	Mulefut	yes
Bromus diandrus	Ripgut brome	no
Bromus madritensis	Foxtail brome	no
Elymus glaucus	Blue wild rye	yes
Platanus racemosa	Western sycamore	yes
Quercus agrifolia	Coast live oak	yes
Solanum douglasii	Douglas nightshade	yes

Photo 7-a: No hydrophytic vegetation is present in channel. Coast live oak woodland with an annual grass understory is the dominant vegetation type.

Photo 7-b: Coast live oak with annual grasses. More mulefat begins to appear in the background as moisture increases.

Photo 7-c: the lightly flowing channel is edged by annual grassland and oak woodland. No riparian vegetation is present.

Site 8- Browns Canyon Creek

- Drainage characteristic: A perennial flowing stream 20 inches wide and 3 inches deep. Can possibly become ephemeral under drought conditions.

- Vegetation structure: The canopy is dominated by coast live oak within an intermittent arroyo willow. The sparse understory is composed of thicket forming species such as California blackberry.

- Suitability for least Bell's vireo breeding territory: Due to a lack of a tiered vegetation structure, the habitat present is marginal breeding habitat for least Bell's vireo.

- Suitability for Southwestern willow flycatcher breeding territory: Due to a lack of a tiered vegetation structure and the narrow riparian corridor, the habitat present does not constitute suitable breeding habitat for southwestern willow flycatcher.

Site 8 Browns Canyon Creek
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Artemisia douglasiana	Douglas mugwort	yes
Epipactis giganteum	Giant stream orchid	yes
Quercus agrifolia	Coast live oak	yes
Rubus ursinus	California blackberry	yes
Salix lasiolepis	Arroyo willow	yes
Toxicodendron diversilobum	Poison oak	yes
Urtica dioica	Stinging nettle	yes

Photo 8-a: Coast live oaks are the dominant canopy cover at Site 8. A colony of giant stream orchids occurs along the lower bank in the lower right of the photograph

Photo 8-b: A few arroyo willows are interspersed within the oak canopy. The understory is composed of California blackberry, poison oak, and Douglas mugwort.

Photo 8-c: Close up of the giant stream orchid

Site 9-Subtransmission Route

- Drainage characteristic: A lightly flowing perennial stream approximately 1 foot wide and 3 inches deep. Can possibly become ephemeral under drought conditions.

- Vegetation structure: Canopy dominated by arroyo willows and red willows with an intermittent Mexican elderberry. Understory not well developed

- Suitability for least Bell's vireo breeding territory: Due to the development constraints on each side of the riparian corridor (5 freeway and office complex), the habitat present constitutes marginal breeding habitat for least Bell's vireo.

- Suitability for Southwestern willow flycatcher breeding territory: Due to a lack of a tiered vegetation structure and the narrow riparian corridor confined by development on both sides, the habitat present does not constitute suitable breeding habitat for southwestern willow flycatcher.

Site 9 Subtransmission Route
Plant Species Observed within CDFG jurisdiction

Scientific Name	Common Name	Native
Polypogon montspeliensis	Rabbits foot grass	no
Salix laevigata	Red willow	yes
Salix lasiolepis	Arroyo willow	yes
Sambucus mexicana	Mexican elderberry	yes

Photo 9-a: A view of the willow canopy overhanging the channel.

Photo 9-b: The sparse understory is composed primarily of woody debris.

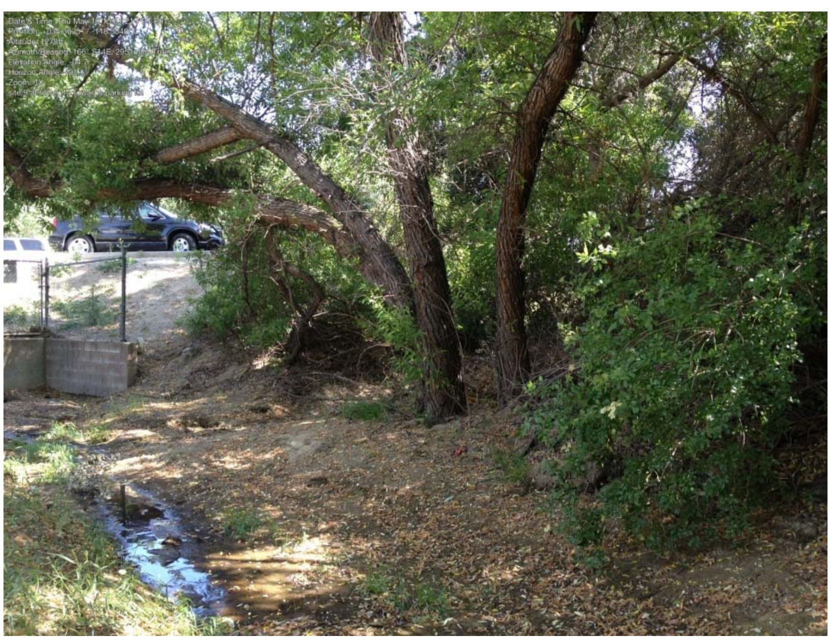

Photo 9-c: View looking towards the culvert and tower 14 (not pictured to the left of the culvert). A red willow and a Mexican elderberry is to the right.

EXHIBIT A-3

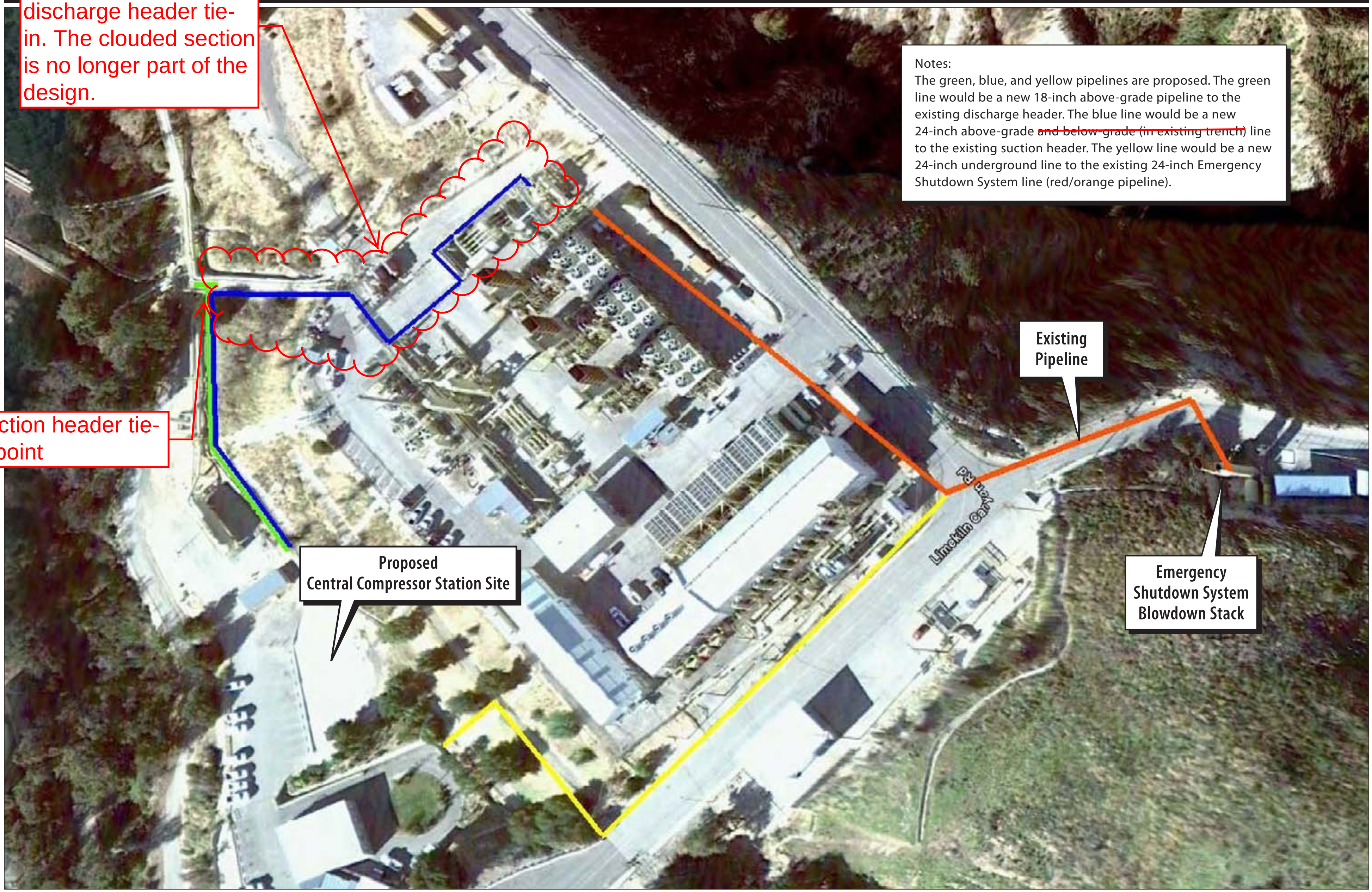

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Figure 2-3

New Pipelines to Connect the Proposed Central Compressor Station to Existing Facilities

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Aliso Canyon Natural Gas Storage Field Property Boundary

Figure 2-4
Existing and Proposed Guardhouses

0 25 50 100 Feet

N

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EXHIBIT A-4

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Exhibit A-4: Revised Table 2-7 Land Disturbance

Components of the Proposed Project	Acres of Disturbance	Length	Width	Acres Permanently Disturbed	Revision and Justification
Proposed Project Facilities					
~~Proposed Central Compressor Station (Includes Site of Existing Office Facilities and Parking)~~	~~1.4~~	~~—~~	~~—~~	~~1.4~~	The footprint of the proposed Central Compressor Station is estimated to be 1.4 acres, as provided in Data Request (DR) 10; however, the area is previously disturbed and does not represent temporary or new permanently disturbed acreage as a result of project implementation. This row should be deleted.
~~Existing Compressor Station to be Decommissioned~~	~~1.4~~	—	—	~~1.4~~	The footprint of existing facilities represents previously disturbed acres and would not result in temporary or new permanently disturbed acreage as a result of project implementation. This row should be deleted
18-inch Pipeline to Discharge Header	0.5	550 feet	40 feet	0.1	Based on DR 11
24-inch Pipeline to Suction Header	0.5	550 feet	40 feet	0.1	Based on DR 11
24-inch Pipeline to Emergency Shutdown System	0.6	600 feet	40 feet	0.1	Based on DR 11
~~Proposed Office Facilities and Parking~~	~~1.3~~	—	—	~~1.3~~	The footprint of the proposed Office Facilities and Parking is estimated to be 1.3 acres, as provided in DR 10; however, the area is previously disturbed and does not represent temporary or new permanently disturbed acreage as a result of project implementation. This row should be deleted.
Proposed Guardhouse	0.02	—	—	0.02	Based on DR 10
12-kV Plant Power Line Route	1.1	~~1,200~~ <u>1,800</u> feet	40 feet	—	Acres of Disturbance = 1.53 – Based on DR 10; Length = 1,800 feet – Based on DR 15
12-kV Plant Power Line TSPs (3)	1.4	200 feet	100 feet	0.2	Based on DR 15

Exhibit A-4: Revised Table 2-7 Land Disturbance

Components of the Proposed Project	Acres of Disturbance	Length	Width	Acres Permanently Disturbed	Revision and Justification
Natural Substation	1	300 feet	150 feet	1	Based on DR 10 (0.69)
~~Equipment/Structure Installations within Existing Substations~~	~~2.3~~	—	—	~~2.3~~	There are 4 proposed TSPs to be installed within and near the San Fernando Substation, two of the four TSPs would be located within the existing substation footprint and would not result in temporary or new land disturbance. The two TSPs that would be located near the substation are accounted for in the two rows below representative of 66-kV subtranmission line structure removal and TSPs. The impacts presented in this row are duplicative and should be deleted.
66-kV Subtransmission Line Structure Removal (64)	29	200 feet	100 feet	—	Based on DR 10
66-kV Subtransmission Line TPSs (~~78~~14)	~~36~~ 6.4	200 feet	100 feet	~~4.6~~ 1.3	There are 14 new TSPs anticipated for installation (64 existing, and 78 proposed, per Table 2-2 of the DEIR). The impacts for TSP installation should be revised and based on new TSPs only. Areas where TSPs planned to replace existing structures are considered previously disturbed. Following construction, impacts would be restored to existing conditions.
Fiber Optic Cable Installation in New Underground Conduit	1.8	1,600 feet	50 feet[d]	—	No recommended revision
Fiber Optic Cable Installation on New Structures	**Not Provided**	—	—	**Not Provided**	No recommended revision
~~Staging Areas~~					
~~Wellhead Site P-42, Wellhead Site P-37, and Porter Fee Road Staging Areas near the Plant Station Site~~	~~8.9~~	—	—	~~8.9~~	The 8.9 acres of disturbance represents the total footprint area to be used for equipment staging, and was provide in DR 10; the area is currently disturbed and does not represent new impacts resulting from project implementation. This row should be deleted.

Exhibit A-4: Revised Table 2-7 Land Disturbance

Components of the Proposed Project	Acres of Disturbance	Length	Width	Acres Permanently Disturbed	Revision and Justification
~~Excess Excavated Soils Area (Wellhead P-32)~~	~~2.8~~	—	—	—	The 2.8 acres of disturbance represents the total footprint area to be used for soil processing, and was provide in DR 10; the area is currently disturbed and does not represent new impacts resulting from project implementation. This row should be deleted.
~~Natural Substation Staging Area (Wellheads P-40 and PS-42)/Alternate Natural Substation Staging Area/Fiber Optic Cable Installation Staging Area~~	~~3.7~~	—	—	—	The staging area proposed for Natural Substation construction activities is within a previously disturbed footprint and does not represent temporary or new disturbance impacts. This row should be deleted.
66-kV Subtransmission Line Staging Areas	**Not Provided**	—	—	—	--
Wire-pulling, Tensioning, and Splicing Sites for 66-kV Subtransmission Line Reconductoring (7) [e, f]	8.4	500 feet	100 feet	—	PEA, p.3-43, 44
Other Fiber Optic Cable Installation Staging Areas	**Not Provided**	—	—	—	No recommended revision
Wire-pulling, Tensioning, and Splicing Sites for Fiber Optic Cable Installations[h]	2.5	60 feet	100 feet	—	No recommended revision
Roads					
Storage Field Entry Road Widening[i]	0.2	500 feet	12 feet	0.2	No recommended revision
12-kV Plant Power Line TSP Access Road (1)	0.2	500 feet	18 feet	0.2	Consistent with DEIR Table 4.9-2
Natural Substation Access Road	0.6	1,500 feet	18 feet	0.6	Consistent with DEIR Table 4.9-2
66-kV Subtransmission Line	**Not Provided**	—	—	**Not Provided**	No recommended revision

Exhibit A-4: Revised Table 2-7 Land Disturbance

Components of the Proposed Project	Acres of Disturbance	Length	Width	Acres Permanently Disturbed	Revision and Justification
Reconductoring Access Roads					
Fiber Optic Cable Installation Access Roads	**Not Provided**	—	—	**Not Provided**	No recommended revision
Total	**~~106~~ 47.8 acres**	—	—	**~~22~~ 2.5 acres**	**Revise total acreages to accurately present potential land disturbance due to project implementation**

EXHIBIT A-5

Exhibit A-5 – Revised Noise Assessment for Fiber Optic Installation/Telecom Construction Activities

The use of pole replacement and placement noise levels for the installation of telecommunication lines is inappropriate. The removal and installation of poles is largely driven by large cranes, auger trucks, cement mixers, and jackhammers and is used as the basis of determining noise impacts in the ACTR DEIR as these are loudest pieces of equipment associated with these activities.

Telecom line installation typically involves the use of spool trucks and boom-lift, or man lift, trucks. Typically, the spool truck would be located at a single location for the majority of a single installation and is idling or sitting with the engine off the majority of the time. The boom truck moves from pole to pole to lift the technician to the top of the pole to install equipment and string the telecom line. The actual time spent at each pole is short-term and typically involves less than half an hour at any single pole.

Based on this scenario, noise levels from the simultaneous operation of both pieces of equipment is estimated to generate and hourly average noise level at 50 feet of 72 dBA L_{eq}. Individually the boom truck is estimated to generate 68 dBA L_{eq} at 50 feet and the spool truck is estimated to generate 70 dBA L_{eq} at 50 feet. Noise levels are modeled using the Federal Highway Administration‘s Road Construction Noise Model (RCNM) (FHWA 2006). RCNM does not include spool trucks so a flat bed truck was used in the model, which assumes the truck is operational a full power approximately 40 percent of an hour and is thus considered a conservative replacement for the spool truck. Based on the calculated noise levels telecom line installation is not anticipated to exceed local standards or result in substantial noise level increase at adjacent properties.

Noise modeling results presented in Attachment 1.

Federal Highway Administration (FHWA)

2006 Road Construction Noise Model, version 1.00. January.

Telecom Line

Roadway Construction Noise Model (RCNM),Version 1.0

Report date: 04/26/2012

Case Description:

**** Receptor #1 ****

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Unknonw	Residential	50.0	40.0	40.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	50.0	0.0
Flat Bed Truck	No	40		74.3	50.0	0.0

Results

	Calculated (dBA)	
Equipment	Lmax	Leq
Man Lift	74.7	67.7
Flat Bed Truck	74.3	70.3
Total	74.7	72.2

EXHIBIT A-6

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Exhibit A-6: Revised Table 5.1. Comparison of Alternatives to the Proposed Project (Adverse Environmental Impacts by Resource Area)

Resource Area	Proposed Project (Impact Determination)	Impact Type	Design Alternative (Alternative Compressor Drive Type)	Routing Alternative A (Telecom: Sylmar Substation to San Fernando Substation)	No Project Alternative	Environmentally Superior Alternative
Aesthetics	Less than significant	Temporary	Less	Similar	Less	Design Alternative
Agriculture and Forestry Resources[1]	<u>No Impact</u> ~~Less than significant~~	<u>No Impact</u> ~~Temporary~~	<u>Similar</u> ~~Less~~	Similar	<u>Similar</u> ~~Less~~	<u>Proposed Project</u> ~~Design Alternative~~
Air Quality[2]	Less than significant *with mitigation*	Long Term	<u>Substantially</u> Greater	Similar	<u>Substantially</u> Greater	Proposed Project
Biological Resources	Less than significant *with mitigation*	Temporary, long term	Less	Similar	Less	Design Alternative
Cultural and Paleontological Resources	Less than significant *with mitigation*	Temporary	Less	Similar	Less	Design Alternative
Geology, Soils, and Mineral Resources	Less than significant	Temporary, long term	<u>Similar</u> ~~Less~~	Similar	Less	<u>Proposed Project</u> ~~Design Alternative~~
Greenhouse Gas Emissions[3]	Less than significant	Long Term	<u>Substantially</u> Greater	Similar	<u>Substantially</u> Greater	Proposed Project
Hazards and Hazardous Materials[4]	Less than significant *with mitigation*	Temporary, <u>Long Term</u>	<u>Greater</u> ~~Less~~	Similar	<u>Greater</u> ~~Less~~	<u>Proposed Project</u> ~~Design Alternative~~
Hydrology and Water Quality	Less than significant	Temporary, long term	Less	Similar	Less	Design Alternative
Land Use and Planning[5]	<u>No Impact</u> ~~Less than significant~~	<u>No Impact</u> ~~Temporary~~	<u>Similar</u> ~~Less~~	Similar	<u>Similar</u> ~~Less~~	<u>Proposed Project</u> ~~Design Alternative~~
Noise	Less than significant *with mitigation*	Temporary	Less	Less	Less	Design Alternative

Exhibit A-6: Revised Table 5.1. Comparison of Alternatives to the Proposed Project (Adverse Environmental Impacts by Resource Area)

Resource Area	Proposed Project (Impact Determination)	Impact Type	Design Alternative (Alternative Compressor Drive Type)	Routing Alternative A (Telecom: Sylmar Substation to San Fernando Substation)	No Project Alternative	Environmentally Superior Alternative
Population and Housing[6]	No Impact ~~Less than significant~~	No Impact ~~Temporary~~	Similar ~~Less~~	Similar	Similar ~~Less~~	Proposed Project ~~Design Alternative~~
Public Services and Utilities	Less than significant	Temporary	Less	Similar	Less	Design Alternative
Recreation[7]	No Impact ~~Less than significant~~	No Impact ~~Temporary~~	Similar ~~Less~~	Similar	Similar ~~Less~~	Proposed Project ~~Design Alternative~~
Transportation and Traffic	Less than significant	Temporary	Less	Similar	Greater	Design Alternative
Cumulative	Less than significant	Temporary, long term	Greater	Similar	Greater	Proposed Project
Growth Inducing[8]	No Impact ~~Less than significant~~	No Impact ~~Temporary~~	Similar ~~Less~~	Similar	Similar ~~Less~~	Proposed Project ~~Design Alternative~~

Notes:

1. See Master Comment Table, comment 82 for supporting analysis and further clarification.
2. See Master Comment Table, comment 150 for supporting analysis and further clarification.
3. See Master Comment Table, comments 151 for supporting analysis and further clarification.:
4. See Master Comment Table, comments 153 for supporting analysis and further clarification.
5. See Master Comment Table, comments 137 for supporting analysis and further clarification.
6. See Master Comment Table, comments 155, 157-159 for supporting analysis and further clarification.
7. See Master Comment Table, comments 155, 157-159 for supporting analysis and further clarification.
8. See Master Comment Table, comments 155, 157-159 for supporting analysis and further clarification.

SANTA SUSANA MOUNTAIN PARK ASSOCIATION

Dedicated to the Preservation of the Santa Susana Mountains and Simi Hills

A Non-Profit 501(c)(4) Organization
Incorporated August 31, 1971

Website: www.ssmpa.com
E-mail: mail@ssmpa.com

May 22, 2012

RECEIVED MAY 23 2012

Aliso Canyon Turbine Replacement Project
505 Sansome Street, Suite 300
San Francisco, CA 94111

Comments on Draft Environmental Impact Report
California SCH #2010101075
Application No. A.09-09-020

Gentlemen and Ladies,

The Santa Susana Mountain Park Association, a Chatsworth-area non-profit established in the early 1970's, hereby submits its comments on the above-referenced application.

Our primary concerns relate to fire, biological resources, and cultural resources.

Fire Concerns:

The Chatsworth-Porter Ranch area long has been subject to frequent, often intense, fires as the DEIR shows. These fires often start in, or travel through the open spaces areas that we treasure surrounding our community. This susceptibility of the Aliso Canyon site to significant fire danger leads us to urge adoption of three provisions.

1. Provide adequate disclosure as part of the DEIR about the effect on the surrounding community of a catastrophic fire. Provide information on the distance and severity of damage based on the current gas storage capacity. Provide similar information on the distance and severity of damage based on the expanded storage capacity. The DEIR notes the storage capacity increase is part of Phase 1 – if additional expansion of the storage area is planned beyond Phase 1, provide additional damage projections on any further capacity expansion that may be contemplated.

2. Have the County of Los Angeles or City of Los Angeles Fire Department provide brush clearance inspections monthly during all months where they perceive there to be a significant fire danger.

3. Create the position of fire safety officer, who patrols power lines and facilities, and who ensures appropriate brush clearance and other appropriate fire prevention policies are implemented and followed.

Concerns about fire are valid based on the history of the area, which is prone to earthquakes and also wildfires. This history was disclosed in the draft Environmental Impact report. The community has seen how a natural disaster such as the "Northridge" earthquake in 1994 caused a major roadway, Balboa Blvd., to become a huge fire. The Sesnon fire of 2008 has been blamed on downed lines that in turn ignited a fire that therefore was associated with this facility.

Depending on the results of the above disclosure, establishment of an alternative storage facility in a low population area many be indicated, and if applicable, should be considered.

Because the site is near a major population area, and has known significant fire risks, extra monitoring by an outside agency on an ongoing basis is appropriate.

With respect to damage that could occur due to a catastrophic fire, disclosure of the effect of the expansion seems to be a fundamentally required disclosure. Failure to disclose what happens seems to be a significant failure in explaining the consequences of the storage expansion. The history of the area shows fire is a significant and ongoing problem. We do not understand why this basic information is not included in the DEIR as presented.

Biological Resources:
It seems likely the actual number of Plummer's mariposa lily plants is far in excess of the two plants noted. These plants do not bloom each year. Mitigation for these plants at a nearby development, Deerlake Highlands (LA County, west of this site) involved moving affected plants offsite, and maintenance at a nursery during the project, with eventual replanting at a similar site. In that project, the number of Plummer's mariposa lilies was very significant. In this project, the plants could be re-established on site after the construction is completed. Additional review for both of the lilies listed in the Draft Environmental Impact Report likely is warranted, based on the infrequent growth cycle that is greatly affected by low rainfall. If the plants are in an area that is significantly affected by the project, additional measures to safeguard the plants may be warranted and should be investigated.

Cultural Resources:
The list of noted archaeological items is extensive and this area was known to be an area used extensively by the Native Americans. We attach a memo by professional archaeologist Albert Knight who is quite familiar with this area, and incorporate his comments on this project as our own. We recommend that a professional archaeologist, and/or native American monitor, be on site prior to the beginning of the project to review the cultural resources, and be present at all times to monitor activity that involves grading and soil disturbance, as the project is underway. This will provide better opportunity to protect any sites and/or resources that may be found; surface level reviews are not able to disclose what is underground, and once destroyed, these items are forever lost. Monitoring activities involving soil disturbance is very important.

Thank you for this opportunity to comment on this project.

Sincerely,

Teena A. Takata
President, Santa Susana Mountain Park Association
P. O. Box 4831
Chatsworth, CA 91313-4831

Attachment:
Letter of Albert Knight concerning Southern California Gas Company Aliso Canyon Turbine Replacement Project, dated May 5, 2012

To:	California Public Utilities Commission and Whom it May Concern
From:	Albert Knight Board of Directors Santa Susana Mountains Park Association
Concerning:	Southern California Gas Company Aliso Canyon Turbine Replacement Project
Date:	May 5, 2012

Friends,

I would like to thank the California PUC for the opportunity to comment on the proposed Southern California Gas Company Aliso Canyon Turbine Replacement Project. I would first like to note that I am a professional archaeologist with approximately 30 years experience in Southern California, I am an Anthropology Department at the Santa Barbara Museum of Natural History, and I am currently employed by a private Cultural Resources Management company, which has its main office in Orange County, California.

The area where the proposed project is to take place is quite familiar to me and, as shown by the background research that has been performed for the project, the entire ROW of the project hosts numerous archaeological sites, both prehistoric and historic. There are so many known archaeological sites that I can make my comments quite brief, and simply state that the entire ROW should be considered highly sensitive. All work that requires soil to be moved, including any and all road grading, needs to be carefully monitored by qualified archaeologists, with local experience, as well as by qualified Native Americans, again with local experience.

I am especially concerned about the main facility on the north side of the San Fernando Valley, about the entire Chatsworth area (in the NW SFV), and about the Simi Hills area. In Los Angeles County, the area of the Chatsworth Academy, and Santa Susana Pass State Historic Park are especially sensitive, as are Sage Ranch and the former Santa Susana Field Lab, in Ventura County.

Known archaeological sites should be visited by the monitors PREVIOUS to work taking place in the areas where the sites are located, so that the monitors are familiar with the resource(s), and any and all sites in or adjacent to work areas should be clearly flagged for avoidance. Also, everyone that will be working on the project should receive sensitivity training, so they know what to expect in the field. Project personal need to understand that if previously known, or previously unknown archaeological resources are encountered during the project, work in that (those) areas need to be temporarily halted, so the resources can be examined and evaluated, before work resumes.

Although the project has the potential to disturb numerous archaeological sites, it also has the potential to add to the body of knowledge concerning the area where the project will take place. If all project personal receive proper training and follow the instructions that they are given, the project should be able to proceed without causing any negative impacts to the resources that exist in the project area.

Again, thank you for the opportunity to comment on the proposed project.

Albert Knight

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