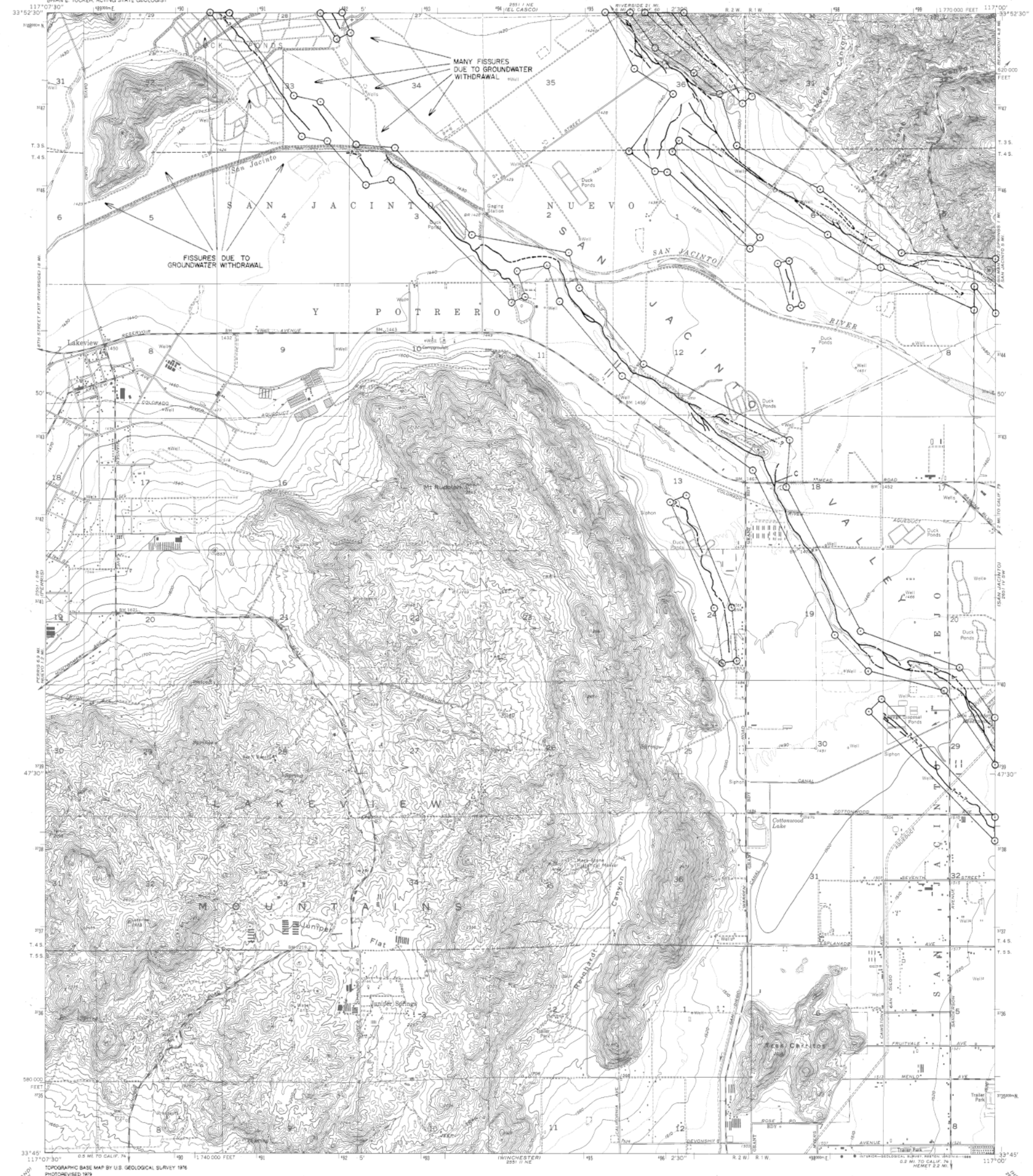
Section 4.7
Geology and Soils

ESA

STATE OF CALIFORNIA—GEORGE DEUKMEJIAN, GOVERNOR
THE RESOURCES AGENCY—GORDON K. VAN VLECK, SECRETARY
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LAKEVIEW QUADRANGLE
CALIFORNIA—RIVERSIDE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)


MANY FISSURES DUE TO GROUNDWATER WITHDRAWAL
FISSURES DUE TO GROUNDWATER WITHDRAWAL
SAN JACINTO NUEVO
SAN JACINTO VALLEY
LAKEVIEW MOUNTAINS
Lakeview
San Jacinto
SAN JACINTO RIVER
Mt Rudolph
Juniper Flat
Juniper Springs
Cottonwood Lake
Mary Grove California Mission
Perris Canyon
Duck Ponds
Trailer Park
Disposal Ponds
Reservoir
Campground
Gaging Station
Siphon
Canal
Aqueduct
Colorado River Aqueduct
Sky Harbor Airport
Reche Canyon
Box Canyon
Reche Canyon
Rose Canyon
Rose Canyon
Rose

California Department of Conservation, California Geological Survey
Alquist-Priolo Earthquake Fault Evaluation and Zoning Program

Metadata for Alquist-Priolo Earthquake Fault Zones
Earthquake Fault Zone Map of the Lakeview Quadrangle
File Name: LAKVI_AP

Table of Contents
Identification Information
Data Quality Information
Spatial Data Organization Information
Spatial Reference Information
Entity and Attribute Information
Distribution Information
Metadata Reference Information

IDENTIFICATION INFORMATION

Citation:

Citation_Information

Publication_Date: 2002

Publication_Time: Unknown

Title: GIS files of Official Maps of Alquist-Priolo Earthquake Fault Zones, Southern Region

Series_Information:

Series_Name: CD-ROM

Issue_Identification: CGS CD 2001-05

Publication_Information:

Publication_Place: Sacramento, CA

Publisher: Department of Conservation, California Geological Survey

Description:

Abstract: This data set contains the Alquist-Priolo Earthquake Fault Zones and fault traces as shown on the Official Alquist-Priolo Earthquake Fault Zones Map of the Lakeview quadrangle. The dataset is comprised of polygons and lines that form regulatory zone boundaries (Alquist-Priolo Earthquake Fault Zones) and fault traces of areas where surface fault rupture previously has occurred, or where local topographic, geological, and geotechnical conditions indicate a potential for permanent ground displacements such that mitigation by avoidance as stated in Public Resources Code Section 2621.5 would be required.

Purpose: This map will assist cities and counties in fulfilling their responsibility to prohibit the location of developments and structures for human occupancy across the trace of active faults as required by the Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code Sections 2621-2630).

For information regarding the scope and recommended methods to be used in conducting the required site investigations, see DMG Special Publication 42, Fault-Rupture Hazard Zones in California.

Supplemental_Information: This database can be used in conjunction with the published version of the Official Map of Earthquake Fault

Zones, Lakeview Quadrangle. Also, digital raster graphic images are available for the Southern Region (Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region, DMG CD 2000-03). These digital raster graphic image collections are available from the California Department of Conservation, California Geological Survey (CGS) by mail: P.O. Box 2980 Sacramento, CA 95812-2980 or by phone (916) 445-5716. These cd sets are also available from CGS offices in San Francisco (415) 904-7707 and Los Angeles (213) 239-0878.

Faults shown are the basis for establishing the boundaries of the Earthquake Fault Zones. This database may not show all faults that have the potential for surface fault rupture, either within the Earthquake Fault Zones or outside their boundaries.

The identification and location of these faults are based on the best available data. However, the quality of data used is varied. Fault traces have been drawn as accurately as possible at the map scale (1:24,000).

This map does not shown Seismic Hazard Zones, if any, that may exist in this area. Please refer to the latest Official Maps of Seismic Hazard Zones for disclosures and other actions that are required by the Seismic Hazards Mapping Act. For more information on this subject see DMG Special Publication 117.

Fault information on this map is not sufficient to serve as a substitute for the geologic site investigations required under Chapter 7.5 of Division 2 of the California Public Resources Code.

Time_Period_of_Content

Time_Period_Information

Single_Date/Time

Calendar_Date

Currentness_Reference: publication date of original map 1988

Status Progress: Complete

Maintenance_and_Update_Frequency: Unknown

Spatial_Domain

Bounding_Coordinates

West_Bounding_Coordinate: -117.125
East_Bounding_Coordinate: -117.000
North_Bounding_Coordinate: 33.875
South_Bounding_Coordinate: 33.750

Keywords

Theme

Theme_Keyword_Thesaurus: None

Theme_Keyword: Earthquake Fault Zone Map
Theme_Keyword: earthquake hazard identification and mitigation
Theme_Keyword: surface fault rupture
Theme_Keyword: active fault
Theme_Keyword: fault map
Theme_Keyword: Alquist-Priolo

Place

Place_Keyword_Thesaurus: None

Place_Keyword: City: San Jacinto
Place_Keyword: County: Riverside
Place_Keyword: California
Place_Keyword: USA

Access_Constraints: Because digital data are easily altered, cities, counties, and others who use this file in their permit review and approval processes, or for other actions mandated by law (e.g., real estate disclosure at time of transfer) are advised to obtain the file directly from the Department of Conservation, California Geological Survey.

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DATA QUALITY INFORMATION

Attribute_Accuracy:

Attribute_Accuracy_Report: Initial editing and final proofing were done by California Geological Survey staff. The attribute accuracy was tested by overlaying the original clear-film overlay on plots derived from the digital data to confirm match.

Quantitative_Attribute_Accuracy_Assessment:

Attribute_Accuracy_Explanation: Original hardcopy EFZ maps were compiled over the past 25 years at a scale of 1:24,000. Digital EFZ files were created by scanning the original clear-film overlays (hardcopy maps) used to generate Official EFZ maps. The scanned images were then digitized on screen. Users of these digital files must recognize the difference between precision and accuracy. The digital data can be reproduced precisely at any scale, but the accuracy of the data remains constant. As the scale is increased from 1:24,000, uncertainty and errors in fault location and EFZ boundary and turning point locations remain the same. U.S. Geological Survey base map standards provide that 90 percent of cultural features be located within 40 feet (horizontal accuracy) at the scale of 1:24,000. Turning point locations were placed on the original hardcopy maps using the criteria of establishing the desired setback distance from the fault zone and using a readily identifiable feature on the ground. However, the turning points and connecting EFZ boundaries have not been surveyed to verify their mapped positions. For example, the center of the intersection between two streets is an ideal turning point because it is easily located on the ground. However, base map accuracy may not be better than ± 40 feet, so the digital latitude/longitude coordinates may not coincide with the actual center of the street intersection as determined by GPS or other surveying methods. In addition, the width of the EFZ boundary at 1:24,000 is about 25 feet. Therefore, the actual location of EFZ boundaries should be considered to be no better located than ± 50 feet.

Logical_Consistency_Report: Dataset is consistent with the 1988 Official Map of Alquist-Priolo Earthquake Fault Zones for the Lakeview quadrangle.

Completeness_Report: The dataset contains Alquist-Priolo Earthquake Fault Zones and faults as shown on the 1988 Official Map of Alquist-Priolo Earthquake Fault Zones for the Lakeview quadrangle. The topographic base map, which was included on the published map, is not included.

Positional_Accuracy

Horizontal_Positional_Accuracy

Horizontal_Positional_Accuracy_Report: These data were input at the same scale as the published map, 1:24,000 or 1 inch equals 2,000 feet. U.S. Geological Survey base map standards provide that 90 percent of cultural features be located within 40 feet (horizontal accuracy) at the scale of 1:24,000. The identification and location of earthquake fault zones are based on available data. However, the quality of data used is varied. The information depicted has been drawn as accurately as possible at this map scale.

Lineage:

Source_Information:

Source_Citation:

Citation_Information:

Originator: California Department of Conservation, California Geological Survey

Publication_Date: March 1, 1988

Publication_Time: Unknown

Title: 1988 Official Map of Alquist-Priolo Earthquake Fault Zones for the Lakeview quadrangle

Series_Information:

Series_Name: Official Maps of Alquist-Priolo Earthquake Fault Zones

Issue_Identification: Lakeview quadrangle

Publication_Information:

Publication_Place: Sacramento, California

Publisher: California Department of Conservation, California Geological Survey

Source_Scale_Denominator: 24,000

Type_of_Source_Media: stable-base material

Source_Time_Period_of_Content:

Time _Period_Information:

Single_Date/Time:

Calendar_Date: March 1, 1988

Time_of_Day: unknown

Source_of_Currentness_Reference: publication date

Process_Step:

Process_Description: The original hardcopy maps (clear film overlays) used to reproduce Official Maps of Earthquake Fault Zones were the basis for developing these digital GIS files. Each hardcopy map was scanned at full scale using an Anatech large-format scanner. The scanned image was translated to cit file format, geo-referenced on screen, and was digitized using Microstation v. 5.0 software to create vector files in dgn format. The digital files were printed at 1:24,000 scale and compared with the original clear-film overlay for completeness and accuracy. These files were then converted to dxf format, using specific layers to display specific line-style data. The California State Plane Coordinate System (SPCS), North America Datum 1927, was used. For ease of importing these files to different GIS platforms, the line styles are separated into individual data layers:

Layer 1: Corner registration tics for individual quadrangle map and most text data
Layer 3: Corner registration tics for oversized quadrangle maps (not present for most maps)
Layer 7: EFZ boundary polygons
Layer 8: Solid lines (accurately located fault traces)
Layer 9: Long dashed lines (approximately located fault traces)
Layer 10: Short-dashed lines (inferred fault traces)
Layer 11: Dotted lines (concealed fault traces).
Layer 12: Thin dashed and dotted lines (aerial photo lineament)

Process_Date: unknown

Process_Contact:

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County: USA

Contact_Voice_Telephone: (916) 323-9672

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SPATIAL DATA ORGANIZATION INFORMATION

Direct_Spatial_Reference_Method: Vector

SPATIAL REFERENCE INFORMATION

Horizontal_Coordinate_System_Definition

Planar

Grid_Coordinate_System

Grid_Coordinate_System_Name: State Plane Coordinate System 1927

State_Plane_Coordinate_System

SPCS_Zone_Identifier: California SPCS Zone 0406

Lambert_Conformal_Conic

Standard_Parallel: 32.7833

Standard_Parallel: 33.8833

Longitude_of_Central_Meridian: -116.25

Latitude_of_Projection_Origin: 32.1667

False_Easting: 2000000.0

False_Northing: 0

Planar_Coordinate_Information

Planar_Coordinate_Encoding_Method: coordinate pair

Coordinate_Representation

Abscissa_Resolution: .01

Ordinate_Resolution: .01

Planar_Distance_Units: U.S. survey feet

Geodetic_Model Horizontal_Datum_Name: North American Datum of 1927

Ellipsoid_Name: Clark 1866

Semi-major_Axis: 20925874.016 ft

Denominator_of_Flattening_Ratio: 294.978698199999

ENTITY AND ATTRIBUTE INFORMATION

Overview_Description:

Entity_and_Attribute_Overview: Digital GIS files are provided as MAPINFO tab files, ESRI shape files, and dxf export files. The GIS files of AP EFZ maps contained in this CD are current as of April 2002. Please check the CGS website at www.conservation.ca.gov/dmg for current information on new and revised EFZ maps.

Original AP EFZ maps consist of a topographic base map (not included in this dataset) and a clear-film overlay containing turning points defining EFZ boundaries and fault traces used to establish the EFZ. Fault traces consist of five line types:

Solid line: accurately located fault trace
Long-dashed line: approximately located fault trace
Short-dashed line: inferred fault trace
Dotted line: concealed fault trace
Query: indicates additional uncertainty
Thin dashed and dotted line: aerial photo lineament (symbol generally not used after 1981)

For ease of importing these files to different GIS platforms, the line styles are separated into individual data layers:

Layer 1: Corner registration tics for individual quadrangle map and most text data
Layer 3: Corner registration tics for oversized quadrangle maps (not present for most maps)
Layer 7: EFZ boundary polygons

Layer 8: Solid lines (accurately located fault traces)
Layer 9: Long dashed lines (approximately located fault traces)
Layer 10: Short-dashed lines (inferred fault traces)
Layer 11: Dotted lines (concealed fault traces).
Layer 12: Thin dashed and dotted lines (aerial photo lineament)

DISTRIBUTION INFORMATION

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Contact_Voice_Telephone: (916) 445-5716

Hours_of_Service: Monday-Friday, 08:00-17:00, Pacific Time

Resource_Description: Official Map of Earthquake Fault Zones for Lakeview Quadrangle

Distribution_Liability: The data and software on this CD-ROM are provided by the California Department of Conservation, California Geological Survey, as is. Any express or implied warranties, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose are disclaimed. In no event shall the California Department of Conservation, California Geological Survey, or its associated contributors be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including, but not limited to, procurement of substitute goods or services; loss of use, data, or profits; or business interruption) however caused and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) that arise in any way out of the use of these data and software, even if advised of the possibility of such damage.

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Standard_Order_Process

Digital_Form

Digital_Transfer_Information

Format_Name: MAPINFO dxf export

Format_Version_Number: 5.5

Digital_Transfer_Option

Offline_Option

Offline_Media: CD-ROM

Custom_Order_Process: This product can also be order by phone using VISA, MasterCard, or American Express or by mail w2ith check, money order or credit card through any CGS office.

Available_Time_Period

Time_Period_Information

Single_Date/Time

Calendar_Date

METADATA REFERENCE INFORMATION

Metadata_Date: 10/15/2001

Metadata_Review_Date:

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CDMG, 2000 - AP Zones GIS
Hours_of_Service: 08:00-17:00, Monday-Friday

Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata







California Geological Survey

Probabilistic Seismic Hazards Mapping Ground Motion Page

User Selected Site

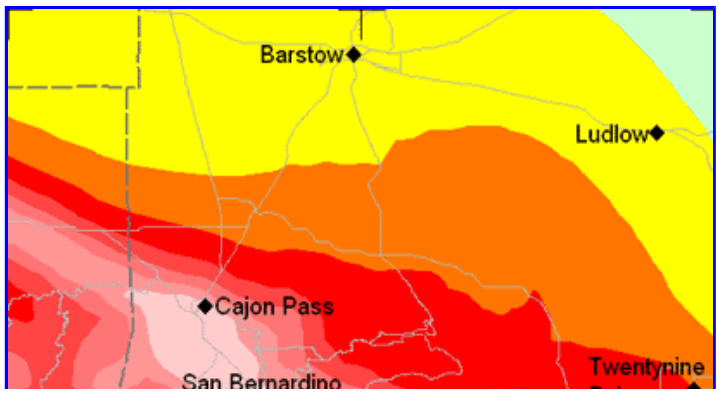
Longitude	-117.1341
Latitude	33.8255

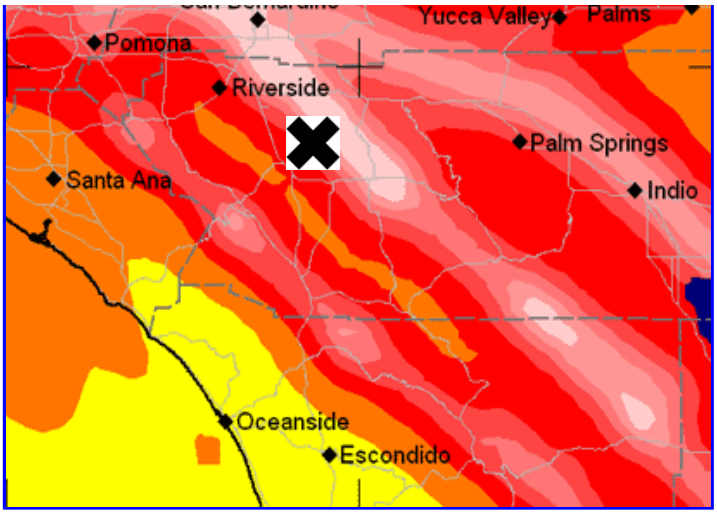
Ground Motions for User Selected Site

Ground motions (10% probability of being exceeded in 50 years) are expressed as a fraction of the acceleration due to gravity (g). Three values of ground motion are shown, peak ground acceleration (Pga), spectral acceleration(Sa) at short (0.2 second) and moderately long (1.0 second) periods. Ground motion values are also modified by the local site soil conditions. Each ground motion value is shown for 3 different site conditions: firm rock (conditions on the boundary between site categories B and C as defined by the building code), soft rock (site category C) and alluvium (site category D).

Ground Motion	Firm Rock	Soft Rock	Alluvium
Pga	0.612	0.612	0.612
Sa 0.2 sec	1.469	1.469	1.469
Sa 1.0 sec	0.567	0.656	0.758

NEHRP Soil Corrections were used to calculate Soft Rock and Alluvium.
Ground Motion values were interpolated from a grid (0.05 degree spacing) of calculated values. Interpolated ground motion may not equal values calculated for a specific site, therefore these values are not intended for design or analysis.





***Click here* to return to the statewide PSHA map or enter new coordinates below:**

Longitude: _____ Latitude: _____ Submit

Please enter coordinates as Decimal Degrees
Example: Longitude -122.0017 Latitude 36.9894

Back to Top of Page

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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Application of SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) for a Permit to Construct Electrical Facilities with Voltages Between 50 kV and 200 kV: Lakeview Substation Project	)))))))	Application No. _____ (Filed September 17, 2010)

PROPONENT'S ENVIRONMENTAL ASSESSMENT LAKEVIEW SUBSTATION PROJECT

Volume 1 of 2

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Dated: September 17, 2010

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List of Acronyms

AB	Assembly Bill
ACSR	Aluminum Conductor Steel Reinforced
ADT	Average Daily Trips
ANSI	American National Standards Institute
AP	Alquist-Priolo
APM	Applicant Proposed Measure
AQMP	Air Quality Management Plan
BMP	Best Management Practice
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
CAL/OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAP	Climate Change Action Plan
CCR	California Code of Regulations
CDC	California Department of Conservation
CDFG	California Department of Fish and Game
CDP	Census Designated Places
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CGS	California Geological Survey
CH_4	Methane
CJUTCM	California Joint Utility Traffic Control Manual
CJUCTCC	California Joint Utility Traffic Control Committee
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent
CNPS	California Native Plant Society
CO_2	Carbon dioxide
CO_2e	Carbon dioxide emission rate
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CWA	Federal Clean Water Act
dB	Decibel

dBA	A-weighted decibel
DTSC	Department of Toxic Substance Control
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EOP	Emergency Operations Plan
EPRI	Electric Power Research Institute
ESA	Phase I Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FESA	Federal Endangered Species Act
FIRM	Federal Insurance Rate Maps
FMMP	Farmland Mapping and Monitoring Program
FTA	Federal Transit Administration
G.O.	General Order
GHG	Greenhouse Gas
HMI/PLC	Human Machine Interface/Programmable Logic Controller
IEEE	Institute of Electrical and Electronics Engineers
IOU	Investor Owned Utility
kcmil	Thousand circular mils
KOP	Key Observation Point
kV	Kilovolt
LAFCO	Local Agency Formation Commission
LDL	Larson Development Laboratories
Leq	Equivalent noise level
LOS	Level of service
LHMP	Local Hazard Mitigation Plan
Lmax	Maximum Noise Level
Lmin	Minimum Noise Level
LST	Localized Significance Thresholds
LUP	Linear Underground/Overhead Projects
LWS	Light Weight Steel
MCA	Medieval Climatic Anomaly
MEER	Mechanical and Electrical Equipment Room
MOU	Memorandum of Understanding
MRZ	Mineral Resource Zones

MSHCP	Western Riverside Multiple Species Habitat Conservation Plan
MVA	Megavolt Ampere
MVAR	Megavolts Ampere Reactive
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Communities Conservation Plan
NERC	North American Electric Reliability Corporation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRCS	National Resources Conservation Service
NRHP	National Register of Historical Places
O_3	Ozone
OPR	Office of Planning and Research
PEA	Proponent's Environmental Assessment
PCB	Polychlorinated Biphenyls
PM_{10}	Particulate matter measuring less than 10 microns
$PM_{2.5}$	Particulate matter measuring less than 2.5 microns
ppm	Parts per million
PPV	Peak Particle Velocity
PVC	Polyvinyl Chloride
RCFCD	Riverside County Flood Control District
RCFD	Riverside County Fire Department
RCIP	Riverside County Integrated Plan (General Plan)
RCRA	Resource Conservation and Recovery Act
RCTC	Riverside County Transportation Commission
ROW	Right-Of-Way
RPLI	Regional Paleontological Locality Inventory
RTA	Riverside Transit Agency
RWQCB	Regional Water Quality Control Board
SA-2	Station Automation 2 Systems
SAC	Stranded Aluminum Conductor
SARWQCB	Santa Ana Regional Water Quality Control Board
SBCM	San Bernardino County Museum
SCAB	South Coast Air Basin

SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SF_6	Sulfur hexafluoride
SJWA	San Jacinto Wildlife Area
SPCC	Spill Prevention Control and Countermeasure
SR	State Route
SVP	Society of Vertebrate Paleontologists
SWP	California State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TSP	Tubular Steel Pole
UBC	Uniform Building Code
USACE	US Army Corps of Engineers
USEPA	US Environmental Protection Agency
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service
VdB	Vibration Decibels
VMT	Vehicle Miles Traveled
WEAP	Worker Environmental Awareness Plan
WECC	Western Electricity Coordinating Corporation
WSJGB	Western San Jacinto Groundwater Basin

EXECUTIVE SUMMARY

The Proponent's Environmental Assessment (PEA) evaluates the potential environmental impacts of Southern California Edison Company's (SCE) proposed Lakeview Substation Project located in unincorporated Riverside County, more specifically the community of Lakeview. The purpose of this project is to serve the current and projected demand for electricity, and enhance reliability and system operational flexibility in the developing areas of Nuevo, Lakeview, and adjacent areas in unincorporated western Riverside County (Electrical Needs Area).

The Proposed Project has a planned operation date of June 2013 to ensure that reliable electrical service is available to serve customer electrical demand in the developing areas of Nuevo, Lakeview, and adjacent areas in unincorporated western Riverside County.

The Proposed Project would include the following major components:

- Construction of a new 115/12 kV substation (Lakeview Substation). Lakeview Substation would be an unattended, automated 56 MVA 115/12 kV low-profile substation

- Installation of two new 115 kV subtransmission source line segments to connect the proposed Lakeview Substation to the existing Valley-Moval 115 kV subtransmission line

  – One segment would be approximately 1.8 miles in length to form the new Valley-Lakeview 115 kV subtransmission line

  – One segment would be approximately 1.5 miles in length to form the new Lakeview-Moval 115 kV subtransmission line

- Construction of two new underground 12 kV distribution getaways

- Installation of telecommunications facilities at the proposed Lakeview Substation, inclusive of telecommunication cable (overhead and underground) to connect the proposed Lakeview Substation to the SCE telecommunications network, and upgrades to the telecommunications equipment at the various substations (described in Section 3.1.3 Telecommunications Description)

- Decommissioning of both Nuevo and Model Pole Top (Model P.T.) Substations

This PEA includes the information required by the California Public Utilities Commission's (CPUC) Proponent's Environmental Assessment (PEA) Guidelines (State of California Public Utilities Commission Information and Criteria List, Appendix B, Section V), as well as the CPUC's requirements for a Permit to Construct (PTC) pursuant to General Order 131-D (D.94-06-014, Appendix A, as modified by D.95-08-038). The CPUC requires applicants to provide this information for review in compliance with the mandates of the California Environmental Quality Act (CEQA). This PEA is designed to meet the above-mentioned CPUC requirements.

Following a discussion of the purpose and need for the project (Chapter 1), the alternatives (Chapter 2), and the project description (Chapter 3), this PEA evaluates the potential environmental impacts of the Proposed Project and the Alternative Substation Site and Subtransmission Source Line Route (Chapter 4). Potential impacts are assessed for all environmental factors contained in the most recent CEQA Environmental Checklist Form (Appendix A). With the implementation of Applicant Proposed Measures listed in Table ES.1, Applicant Proposed Measures, the PEA concludes that the majority of the potential environmental effects associated with the Proposed Project would be reduced to less than significant levels; however, impacts to Agriculture and Forestry Resources and Air Quality would remain significant and unavoidable.

A comparison of alternatives is described in Chapter 5. Cumulative impacts identified for the Proposed Project related to Agriculture and Forestry Resources and Air Quality are described in Chapter 6; however, no growth-inducing impacts were identified.

The names and titles of persons assisting in the preparation of this document are listed in Appendix B.

Table ES.1 Applicant Proposed Measures

Applicant Proposed Measure	Description
APM- Aesthetics- 1 Prepare a Landscaping Plan	SCE will prepare a landscaping plan consistent with Riverside County standards, as well as SCE standards to filter views of the substation for the surrounding community and other potential sensitive receptors.
APM- PA-1 Develop and Implement a Paleontological Monitoring Plan	SCE would monitor excavation of rock units having high potential to contain significant nonrenewable paleontological resources. SCE would develop a paleontological monitoring plan describing paleontological monitoring activities.
APM- Bio-1 Preconstruction surveys for Nesting Birds/Raptors	To minimize potential impacts to selected nesting special-status birds, raptors, or other MBTA bird species, planned vegetation clearing will take place during the non-breeding season (between September 1 and January 31) to the extent feasible. This will discourage the species from nesting within the work area. Existing trees, shrubs, or other vegetation that would provide suitable structure for nesting would be removed. If vegetation clearing must take place during nesting season (February 1–August 31), a biologist shall conduct pre-construction nesting bird surveys prior to clearing for the sites that have potential to support nesting birds/raptors. If the biologist finds an active nest within or adjacent to the construction area and determines that there may be impacts to the nest, s/he will delineate an appropriate buffer zone around the nest depending on the sensitivity of the species and the type of construction activity. Only construction activities (if any) approved by the biologist will take place within the buffer zone until the nest

	is vacated. If nests are found and cannot be avoided by the project activities, or if work is scheduled to take place near an active nest, SCE shall coordinate with the CDFG and USFWS and obtain written concurrence prior to moving the nest.
APM- Bio-2 Pre-Construction Surveys and Construction Monitoring	Pre-construction biological clearance surveys shall be performed at the Project Site to minimize impacts on special status wildlife. If special status species are present, biological monitors would be on site, as needed during project implementation in suitable habitat areas and shall aid crews in implementing avoidance measures during project construction. If adequate avoidance cannot be established, SCE shall consider enrollment in the MSHCP as a Participating Special Entity or shall coordinate with the USFWS and the CDFG for further guidance as appropriate. Any significant findings during pre-construction surveys would be added to the WEAP training described in Section 3.9 of Chapter 3.
APM-Bio-3 Stephen's Kangaroo Rat	A habitat assessment for Stephens' kangaroo rat shall be conducted by a biologist qualified to conduct Stephens' kangaroo rat Surveys along Segments One, Two and Three and the Proposed Telecommunications Route. If no potential occupied habitat is found during this assessment, then no further action is necessary. If potential for occupied habitat is found, protocol trapping surveys shall be conducted. The Proposed Telecommunications Route is within a Stephens' kangaroo rat fee area; therefore, if suitable habitat for this species is found, a fee shall be paid in lieu of further surveys (County of Riverside 1996).
APM-Bio-4 Riverside Fairy Shrimp	If Riverside fairy shrimp are found, SCE shall consider (1) avoidance measures, (2) enrollment in the MSHCP as a Participating Special Entity, or (3) approvals through the USFWS. Appropriate avoidance, minimization, and compensation measures may be required. Impacts to Riverside fairy shrimp habitat will be avoided to the extent feasible in the final Project Design. Habitat areas will be marked as "off limits" in construction plans and specifications. If significant impacts to habitat are unavoidable, focused surveys will need to be conducted prior to construction activities. Riverside fairy shrimp surveys require either a wet season survey, followed by a consecutive dry season survey, or two wet season surveys done within a five-year period (USFWS, 1996). If no Riverside fairy shrimp are found in this area during the focused surveys, no additional action is warranted.
APM-Bio-5 Burrowing Owl	Any active burrow found during survey efforts shall be mapped. If no active burrows are found, no further mitigation would be required. If nesting activity is present at an active burrow, the burrow shall be protected until nesting activity has ended. Nesting activity for burrowing owl in the region normally occurs between March and August. To protect the active burrow, the following restrictions to

	construction activities shall be required until the burrow is no longer active as determined by a biologist: (1) clearing limits shall be established within a 500-foot buffer around any active burrow, unless otherwise determined by a biologist and (2) access and surveying shall be restricted within 300 feet of any active burrow, unless otherwise determined by a biologist. Any encroachment into the buffer area around the active burrow shall only be allowed if the biologist determines that the proposed activity will not disturb the nest occupants. Construction can proceed when the biologist has determined that fledglings have left the nest. If an active burrow is observed during the non-nesting season, the nest site will be monitored by a biologist and, when the owl is away from the nest, the biologist will either actively or passively relocate the burrowing owl. The biologist will then remove the burrow so the burrowing owl cannot return to the burrow.
APM-Bio-6 Native or Special Status Vegetation and Special Status Plant Populations Avoidance	Potential impacts to native vegetation types, vegetation that may support special status species, and known populations of Special Status Plants will be avoided to the extent feasible in the final project design. Native vegetation and Special Status Plant populations will be marked as "off limits" in construction plans and specifications. If significant impacts to native vegetation and/or Special Status Plants are unavoidable, a biologist will be selected to prepare and implement a mitigation plan, which will include detailed descriptions of maintenance appropriate for the mitigation site, monitoring requirements, and annual report requirements, and will have the full authority to suspend any operation which is, in the biologist's opinion, not consistent with the mitigation plan. This plan will be submitted for review to the appropriate agencies.
APM-Bio-7 Avoidance of San Jacinto Valley Crownscale Populations	In order to avoid potential impacts to known populations of San Jacinto Valley crownscale populations, an Environmentally Sensitive Area (ESA) will be developed prior to construction to the extent feasible in the final Project Design (Figure 4.4-5). If significant impacts to San Jacinto Valley crownscale are unavoidable, a biologist will be selected to prepare and implement a mitigation plan, which will include detailed descriptions of maintenance appropriate for the mitigation site, monitoring requirements, and annual report requirements, and will have the full authority to suspend any operation which is, in the biologist's opinion, not consistent with the mitigation plan. This plan will be submitted for review to the appropriate agencies.

1.0 PROJECT PURPOSE AND NEED

Southern California Edison Company (SCE) proposes to construct the Lakeview Substation Project to maintain system reliability and serve projected electrical demand in the developing areas of Nuevo, Lakeview, and adjacent areas in unincorporated western Riverside County (Electrical Needs Area). The Lakeview Substation Project is planned to be operational by June 2013.

The Lakeview Substation Project includes the following elements:

- Construction of a new 115/12 kilovolt (kV) substation (Lakeview Substation). Lakeview Substation would be an unattended, automated 56 megavolt-ampere (MVA) 115/12 kV low-profile substation

- Installation of two new 115 kV subtransmission source line segments to connect the proposed Lakeview Substation to the existing Valley-Moval 115 kV subtransmission line

  – One segment would be approximately 1.8 miles in length to form the new Valley-Lakeview 115 kV subtransmission line

  – One segment would be approximately 1.5 miles in length to form the new Lakeview-Moval 115 kV subtransmission line

- Construction of two new underground 12 kV distribution getaways

- Installation of telecommunications facilities at the proposed Lakeview Substation, inclusive of telecommunication cable (overhead and underground) to connect the proposed Lakeview Substation to the SCE telecommunications network, and upgrades to the telecommunications equipment at the various substations (described in Section 3.1.3 Telecommunications Description)

- Decommissioning of both Nuevo and Model Pole Top (Model P.T.) Substations

The proposed project is planned to be operational in June 2013 to ensure that reliable electrical service is available to serve customer electrical demand.

1.1 Project Purpose

Under the rules, guidelines, and regulations of the Federal Energy Regulatory Commission (FERC), the North American Electric Reliability Corporation (NERC), the Western Electricity Coordinating Council (WECC), and the California Public Utilities Commission (CPUC), electrical transmission, subtransmission, and distribution systems must have sufficient capacity to maintain safe, reliable, and adequate service to customers. System safety and reliability must be maintained under normal conditions, when all facilities are in service, and also under abnormal conditions. Abnormal conditions result from equipment or line failures, maintenance outages, or outages that cannot be predicted or controlled due to weather, earthquakes, traffic accidents, and other unforeseeable events. The purpose of the Project is to ensure the availability of

safe and reliable electric service to meet customer electrical demand in the Electrical Needs Area.

1.2 Project Need

The Electrical Needs Area (Figure 1.1) for the Lakeview Substation Project is defined as the portion of unincorporated western Riverside County served by SCE's existing Nuevo Substation (33/12 kV) and temporary Model 33/12 kV P.T Substation. These substations currently provide electrical service to approximately 1,800 metered customers. In 2007, SCE projected that the capacity at Nuevo Substation would be exceeded in 2009 and a temporary substation was constructed (Model P.T.) to provide an interim means to serve the electrical demand in the area until a new substation project could be constructed to provide for the long-term capacity, reliability, and system operational flexibility needs of the Electrical Needs Area. The Lakeview Substation Project has a planned operating date of June 2013.

1.2.1 Meeting Electrical Demand

SCE's planning process is designed to ensure that the required capacity and operational flexibility are available to safely and reliably meet the projected peak electrical demands during periods of extreme heat under normal and abnormal conditions. Periods of extreme heat are defined as time periods when the temperature exceeds the 10-year average peak effective temperature and are termed "1-in-10-year heat storms." SCE adjusts the normal condition peak electrical demand to reflect the forecasted peak electrical demand during 1-in-10-year heat storm conditions. When the forecasted peak electrical demand is projected to exceed the maximum operating limits of the existing electrical facilities, a project is proposed to keep the electrical system within specified loading limits.

The amount of electrical power that can be delivered to the Electrical Needs Area is limited to the maximum amount of electrical demand that Nuevo Substation can serve before the maximum operating limits are exceeded. Currently, the capacity of Nuevo Substation is limited to 16.1 MVA under normal operating conditions. In 2007, SCE projected that the peak electrical demand during 1-in-10-year heat storm conditions would exceed the planned Maximum Operating Limit by 2.0 MVA in 2009. Consequently, SCE planned the construction of a temporary solution to the projected shortfall in transformer capacity. Model P.T. was constructed as an interim measure to meet the immediate capacity need in the Electrical Needs Area. The temporary Model P.T. Substation was constructed adjacent to Nuevo Substation and currently provides an additional 10 MVA of capacity and one 12 kV distribution circuit to the Electrical Needs Area.

Based on the historical electrical demands in 2007 and 2008, depicted in Table 1.1, Nuevo Substation would have been over its Maximum Operating Limit capacity in both 2007 and 2008 if 1-in-10-year heat storm conditions had occurred.

Table 1.1 and Table 1.2 reflect the capacity of Nuevo Substation, temporary Model P.T. Substation, the Proposed Lakeview Substation and the historical and forecasted peak electrical demand of the Electrical Needs Area. Once the proposed Lakeview Substation Project is constructed and energized, both Nuevo and Model P.T. Substations would be decommissioned and the substations removed.

Table 1.1 Electrical Needs Area Substation Historical Capacity and Projected Peak Demand

Year	Nuevo Planned Maximum Operating Limit (MVA)	Model P.T. Planned Maximum Operating Limit (MVA)	Proposed Lakeview Planned Maximum Operating Limit (MVA)	Total Planned Maximum Operating Limit (MVA)	Projected Peak Demand Normal Weather (MVA)	Projected Peak Demand 1-in-10 Year Heat Storm (MVA)
2005	16.1	0.0	0.0	16.1	9.8	10.7
2006	16.1	0.0	0.0	16.1	13.4	14.7
2007	16.1	0.0	0.0	16.1	15.1	16.5
2008	16.1	0.0	0.0	16.1	15.6	17.1
2009[1]	16.1	10.0	0.0	26.1	14.1	15.5

Notes:

[1] In 2009, SCE added 10 MVA of substation capacity to the Electrical Needs Area by constructing the temporary Model 33/12 kV Substation. Electrical demand in excess of the capacity of Nuevo Substation will be temporarily served by Model Substation.

Table 1.2 Electrical Needs Area Substation Planned Capacity and Projected Peak Demand

Year	Nuevo Planned Maximum Operating Limit (MVA)	Model P.T. Planned Maximum Operating Limit (MVA)	Proposed Lakeview Planned Maximum Operating Limit (MVA)	Total Planned Maximum Operating Limit (MVA)	Projected Peak Demand Normal Weather (MVA)	Projected Peak Demand 1-in-10 Year Heat Storm (MVA)
2010	16.1	10.0	0.0	26.1	17.3	18.9
2011	16.1	10.0	0.0	26.1	18.9	20.7
2012	16.1	10.0	0.0	26.1	20.6	22.5
2013[2]	0.0	0.0	72.8	72.8	22.7	24.9
2014	0.0	0.0	72.8	72.8	25.7	28.1
2015	0.0	0.0	72.8	72.8	30.9	33.9
2016	0.0	0.0	72.8	72.8	35.8	39.2
2017	0.0	0.0	72.8	72.8	40.9	44.8
2018	0.0	0.0	72.8	72.8	45.8	50.2
2019	0.0	0.0	72.8	72.8	50.7	55.5

Notes:

[2] In 2013, SCE's Lakeview Substation Project would become operational and SCE would retire the Nuevo and Model P.T. Substations.

1.2.2 Reliability and System Operational Flexibility

Currently, the Electrical Needs Area is served by Nuevo and Model P.T. Substations. These two substations are both 33/12 kV substations and each are served by a single 33 kV distribution source line and a single 33/12 kV transformer, respectively.

The reliability and system operational flexibility of the existing electrical system serving the Electrical Needs Area would be enhanced through the construction of the proposed Lakeview 115/12 kV Substation Project by:

- Increasing transformer capacity;
- Serving the substation from multiple source line:
- Increasing the number of 12 kV distribution circuits:
- Increasing the ability to transfer electrical demand between distribution substations under normal and abnormal conditions; and
- Increasing the ability to transfer load between distribution circuits under normal and abnormal conditions.

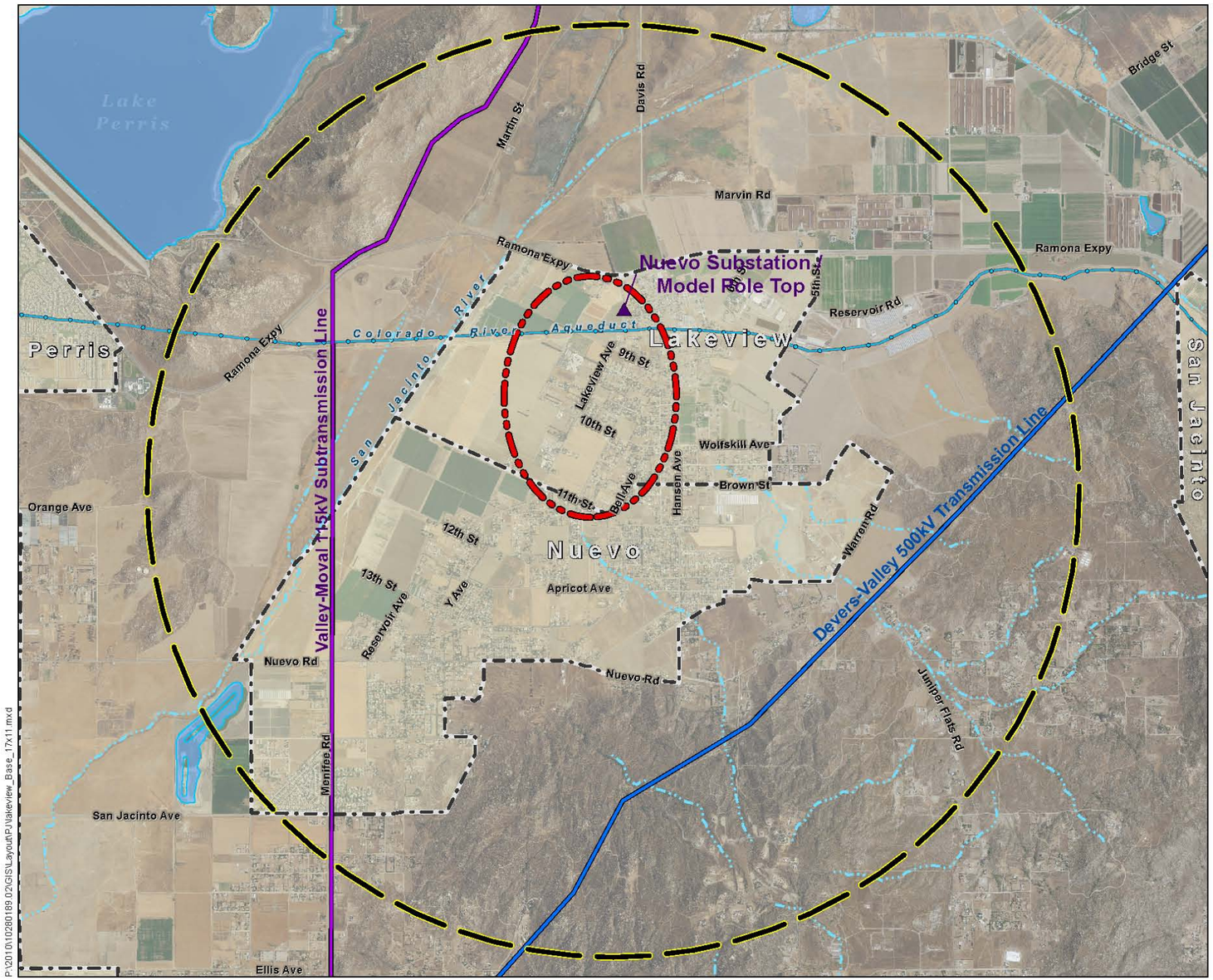
The capacity of Nuevo Substation is insufficient to reliably serve the existing and forecasted 1-in-10 year heat storm peak electrical demand within the Electrical Needs Area. In order to meet the current and forecasted electrical demand, in 2009 SCE constructed the temporary Model P.T. Substation as an interim measure until a new substation project could be constructed. Although construction of Model P.T. temporarily added 10 MVA of transformer capacity and one additional 12 kV distribution circuit, these facilities do not significantly improve reliability and system operational flexibility on neither a near-term nor long-term basis.

1.3 Project Objectives

SCE has defined the following objectives to meet Lakeview Substation Project's purpose and need as described below:

- Serve existing and long-term projected electrical demand requirements in the Electrical Needs Area beginning in mid-2013;
- Improve the reliability and system operational flexibility within the Electrical Needs Area; and
- Accomplish the above objectives while minimizing environmental impacts.

SCE considered these objectives in developing a reasonable range of alternatives to the Project and to its location. Chapter 2 describes the development process and the selection of alternatives for analysis in this Proponent's Environmental Assessment (PEA).



Lakeview Substation Project

Figure 1.1
Electrical Needs Area

Study Area for Potential Facility Location

Electrical Needs Area

Existing Features

- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities

Source:
NIAP, 2009; NavTeq, SCE, AECOM 2010

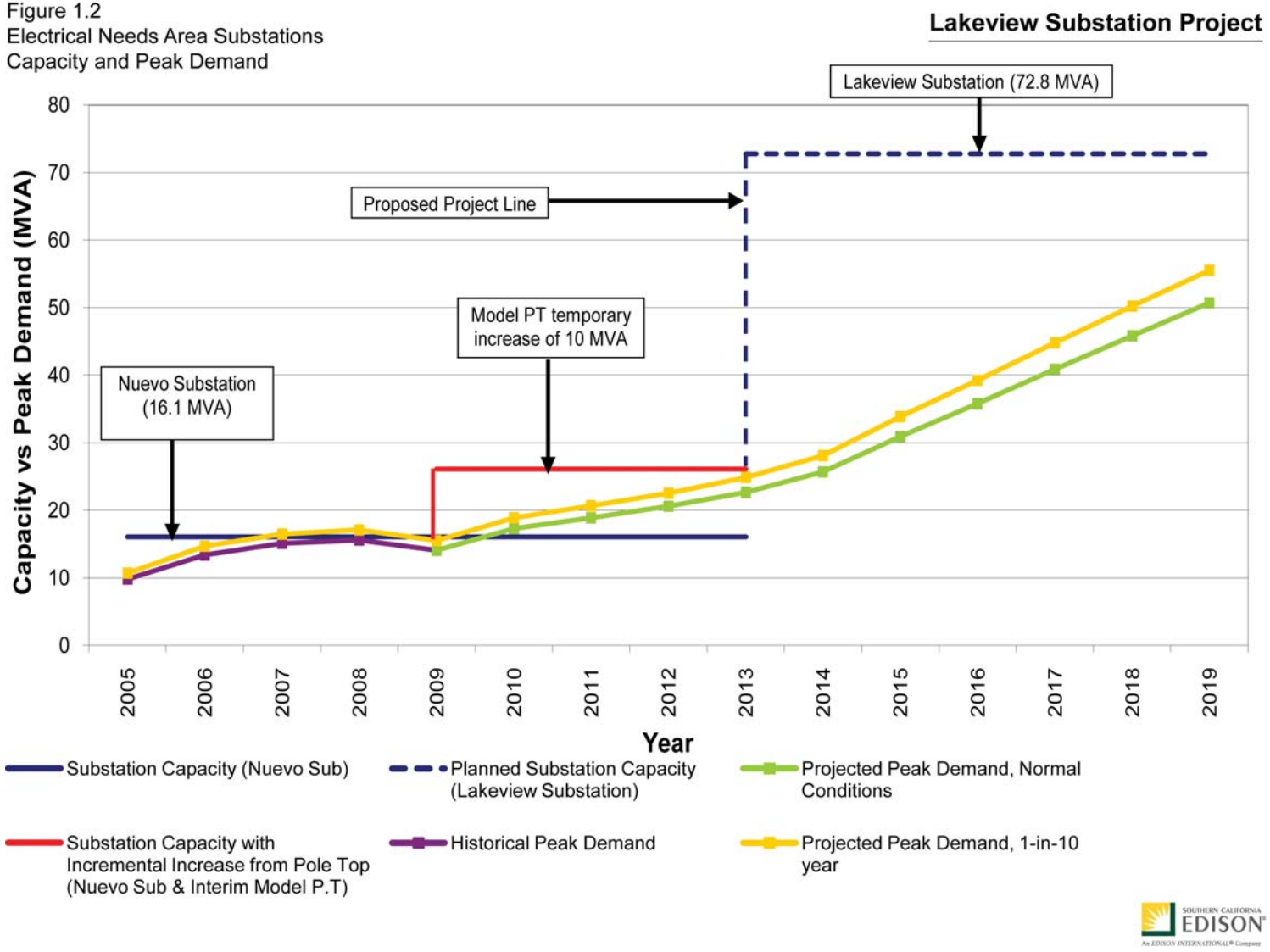
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3/30/2010

Figure 1.2
Electrical Needs Area Substations
Capacity and Peak Demand



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2.0 PROJECT ALTERNATIVES

The California Environmental Quality Act (CEQA) and CEQA Guidelines Section 15126.6(a) require consideration of a reasonable range of alternatives to the proposed 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 15126.6(d) requires that sufficient information about each alternative be included to allow meaningful evaluation, analysis, and comparison with the proposed project. In addition, CEQA Guidelines Section 15126.6(e) requires the evaluation of a "no project" alternative to compare the impacts of approving the proposed project with the impacts of not approving the proposed project (No Project Alternative).

The following sections describe the methodology for screening project site and route alternatives for their ability to meet project objectives. This chapter concludes with a brief description of the alternatives retained for analysis in this PEA.

2.1 Project Alternatives

The following sections provide information about how project alternatives are developed, evaluated, and selected.

2.1.1 Project Alternative Evaluation Methodology

SCE follows a four-step process to develop project alternatives. These steps are summarized below:

Step 1. Perform engineering analyses to determine whether modifying the existing electrical facilities would accommodate the forecasted peak electrical demand.

Step 2. If the forecasted electrical demand cannot be accommodated by modifying the existing electrical facilities, develop alternatives that incorporate feasible infrastructure upgrades or additions.

Step 3. Evaluate each project alternative in consideration of the following criteria:

- The extent to which an alternative would substantially meet project objectives, and
- The feasibility of an alternative considering capacity limits and the ability to upgrade existing utility facilities.

Step 4. If the alternative is not feasible then it is no longer considered. If it is feasible, the alternative is retained for full analysis in the PEA, as required by CPUC General Order 131-D.

If it is determined that new electrical facilities, upgrades, or additions are required, then siting alternatives are considered.

2.1.2 Project Alternatives Considered

SCE considered three project alternatives to determine which could meet the Project Objectives, listed below:

- Serve existing and long-term projected electrical demand requirements in the Electrical Needs Area beginning in mid-2013;
- Improve the reliability and system operational flexibility within the Electrical Needs Area; and
- Accomplish the above objectives while minimizing environmental impacts.

- Project Alternative 1. Lakeview 115/12 kV Substation Project. The construction of a new 115/12 kV unattended, automated 56 MVA low-profile substation, with an ultimate capacity of 112 MVA within the Electrical Needs Area. This project would also include the construction of two new 115 kV subtransmission source line segments to connect the proposed Lakeview Substation to the existing Valley-Moval 115 kV subtransmission line, two new 12 kV underground distribution getaways, and telecommunications facilities to connect the substation to SCE's existing telecommunication system. Project Alternative 1 would include the decommissioning of both Nuevo and Model P.T. Substations. It is projected that Project Alternative 1 at ultimate capacity would serve forecasted electrical demand beyond 2032.

- Project Alternative 2. New 33/12 kV Substation Project. The construction of a new 33/12 kV, unattended, automated 56 MVA low-profile substation, with an ultimate capacity of 56 MVA within the Electrical Needs Area. This project would also include the extension of one existing 33 kV distribution circuit and the construction of two new 33 kV source distribution circuits to connect to SCE's existing 115/33 kV system, two new 12 kV underground getaways, and telecommunications facilities to connect the substation to SCE's existing telecommunication system. Project Alternative 2 would include the decommissioning of both Nuevo and Model P.T. Substations. It is projected that Project Alternative 2 at ultimate capacity would serve forecasted electrical demand through 2022.

- Project Alternative 3. No Project Alternative. No action would be taken under the No Project Alternative.

2.1.2.1 Project Alternative 1. Lakeview 115/12 kV Substation Project

Project Alternative 1 proposes a new 115/12 kV unattended, automated, 56 MVA low-profile substation that would require an approximately three to six acres. The proposed Lakeview Substation would include the following elements:

- Installation of a 115 kV low-profile steel switchrack, two 115/12 kV 28 MVA transformers, a 12 kV low-profile steel switchrack, two 12 kV 4.8 Megavolt Amperes Reactive (MVAR) capacitor banks, and one 115 kV 46.8 MVAR capacitor bank;

- Construction of two new underground 12 kV distribution getaways;

- Removal of approximately 10 existing wood poles and replacement with eight new wood poles and two new Tubular Steel Poles (TSPs);

- An estimated 73 new wooden utility poles and 17 new TSPs would be installed to accommodate the two new 115 kV subtransmission source line segments (1.8 and 1.5 miles in length respectively) that would serve the proposed Lakeview Substation from the existing Valley-Moval 115 kV subtransmission line;

- Installation of telecommunications facilities at the proposed Lakeview Substation, including telecommunication cable (overhead and underground) to connect the proposed Lakeview Substation to the existing SCE telecommunications network, and upgrades to the telecommunications equipment at the various substations (described in Section 3.1.3 Telecommunications Description); and

- Decommissioning and removal of both Nuevo and Model P.T Substations.

Project Alternative 1 would provide the following benefits:

- Ability to serve existing and long-term projected electrical demand by adding an initial 56 MVA of transformer capacity, with the capability of being expanded to 112 MVA, to serve the Electrical Needs Area through 2032;

- Improve electrical service reliability within the Electrical Needs Area resulting from the construction of an automated substation that could be monitored and controlled remotely;

- Improve operational flexibility and reliability by providing the ability to transfer electrical demand between 12 kV distribution circuits to and from other distribution substations within the Electrical Needs Area; and

- Improve SCE customers' electrical service by constructing the new substation centrally located within the existing and future electrical needs of the Electrical Needs Area.

2.1.2.2 Project Alternative 2. A new 33/12 kV Substation Project

Project Alternative 2 proposes a new 33/12 kV unattended, automated 56 MVA substation that would utilize the same parcel of land as described for Project Alternative 1. Project Alternative 2 would include the following elements:

- Installation of a 33 kV low-profile steel switchrack, two 33/12 kV 28 MVA transformers, a 12 kV low-profile steel switchrack, and two 12 kV 4.8 MVAR capacitor banks;

- Three 33 kV source lines, one of which exists nearby and would be extended to the proposed 33/12 kV substation (approximately 0.5 miles in length) and two new lines (approximately 13 miles in length each) which would be constructed from the Nelson 115/33 kV Substation;

- Construction of two new underground 12 kV distribution getaways;

- Extension of two 33 kV switchrack positions at the Nelson 115/33 kV Substation;
- Installation of up to two new 33 kV distribution getaways at the Nelson 115/33 kV Substation;
- Installation of new telecommunication facilities to connect to the existing SCE telecommunication network as required; and
- Decommissioning and removal of both Nuevo and Model P.T. Substations.

Project Alternative 2 would provide the following benefits:

- Ability to serve existing and near-term projected electrical demand by adding a maximum of 56 MVA of transformer capacity to serve the Electrical Needs Area through 2022;
- Improve electrical service reliability within the Electrical Needs Area resulting from the construction of an automated substation that could be monitored and controlled remotely;
- Improve operational flexibility and reliability by providing the ability to transfer electrical demand between 12 kV distribution circuits to and from other distribution substations within the Electrical Needs Area; and
- Improve SCE customers' electrical service by constructing the new substation centrally located within the existing and future electrical needs of the Electrical Needs Area.

2.1.2.3 Project Alternative 3. No Project Alternative.

Project Alternative 3 would construct no additional facilities.

Under the No Project Alternative, no action would be taken. The No Project Alternative would create a high risk for the potential inability to serve electrical demand in the Electrical Needs Area.

There would be no electrical benefits to selecting Project Alternative 3.

2.1.3 Project Alternatives Eliminated from Further Consideration

Project Alternative 2, New 33/12 kV Substation Project, would not adequately meet the long-term projected electrical demand requirements in the Electrical Needs Area. Project Alternative 2 would provide only 56 MVA of additional transformer capacity to serve the Electrical Needs Area and would only be sufficient until 2022 when the electrical demand is expected to again exceed the capacity of the area, at which point another new substation project would be required.

Though Project Alternative 2 would increase the transformer capacity, reliability, and system operational flexibility of the Electrical Needs Area beyond that which exists today, the ultimate amount of added transformer capacity and distribution capacity would

not be comparable to that of the construction of a 115/12 kV substation. The significant length for the source lines in Project Alternative 2 (approximately 26 miles versus that of 3.3 miles for Project Alternative 1) would also require more construction than Project Alternative 1 and would therefore have higher costs associated with it as well.

In comparison to Project Alternative 1, Project Alternative 2 would only provide one half of the added capacity, would require significantly more source line construction and would only address the projected electrical demand of the Electrical Needs Area until 2022, at which time another substation project would be needed. Based on the previously stated reasons, Project Alternative 2, New 33/12 kV Substation Project, does not meet the project objectives and is eliminated from further consideration in this PEA.

Project Alternative 3, the No Project Alternative, is not a viable option because it would not allow SCE to provide safe and reliable electrical service to its customers in the Electrical Needs Area, and would not meet the project objectives. However, SCE would still bear the responsibility to serve customer electrical demand. For the reasons stated above, Project Alternative 3 is eliminated from further consideration in this PEA.

2.1.4 Project Alternative Recommendation

Project Alternative 1 is a long-term solution that would provide the required additional capacity to serve the electrical demand requirement within the Electrical Needs Area. This alternative also allows SCE to maintain reliability and system operational flexibility while minimizing impacts to the environment to the greatest extent possible. Therefore, SCE recommends Project Alternative 1, Lakeview Substation Project, as the preferred project alternative because it satisfies all the project objectives. This alternative is carried forward in the PEA as the Proposed Project.

2.2 Substation Site Alternatives

The following sections describe the evaluation of site alternatives and the selection of the preferred substation site and subtransmission source line routes.

2.2.1 Substation Site Evaluation Methodology

In order to meet the project objectives as defined in Chapter 1 (refer to Section 1.3), a Substation Study Area (shown in Chapter 1, Figure 1.1, Electrical Needs Area) was determined. The placement of a substation within this Substation Study Area allows SCE to increase transformer capacity in the Electrical Needs Area, and to transfer electrical demand between distribution circuits and the existing substations located near the Electrical Needs Area. The Substation Study Area provides the geographic framework for identifying potential substation sites. A new substation operating within the Substation Study Area would maximize electrical benefits and satisfy the purpose and need for the project. The substation site was selected using the following basic factors:

- The substation should be in an area where existing and future electrical demand could be efficiently and effectively served within the Electrical Needs Area;

- The substation should be located in an area where it would maximize system reliability and operational flexibility with adjacent substations and circuits; and

- The substation should be located in proximity to existing subtransmission source lines that have sufficient capacity to serve the substation.

After a review of potential sites located within the Substation Study Area, SCE selected two potential substation location alternatives and potential subtransmission source line segments that would connect the substation to the existing Valley-Moval 115 kV subtransmission line. These alternatives are shown on Figure 2.1, Alternative Substation Sites and Subtransmission Source Line Routes.

2.2.2 Substation Site Alternatives Considered

Each substation site would have a similar substation design and specifications. However, each site would have different substation configurations due to specific characteristics of each site.

2.2.2.1 Site Alternative A

Site Alternative A is located on an approximately 5.4-acre portion of a 36.2-acre privately owned vacant parcel that is currently being used for agricultural activities. The parcel is located at the southwest corner of Reservoir Avenue and 10th Street, in the community of Lakeview, within unincorporated Riverside County, California. The parcel is bounded on all sides by privately owned parcels that are currently used for agricultural activities. SCE would establish vehicular access to Site Alternative A from 10th Street.

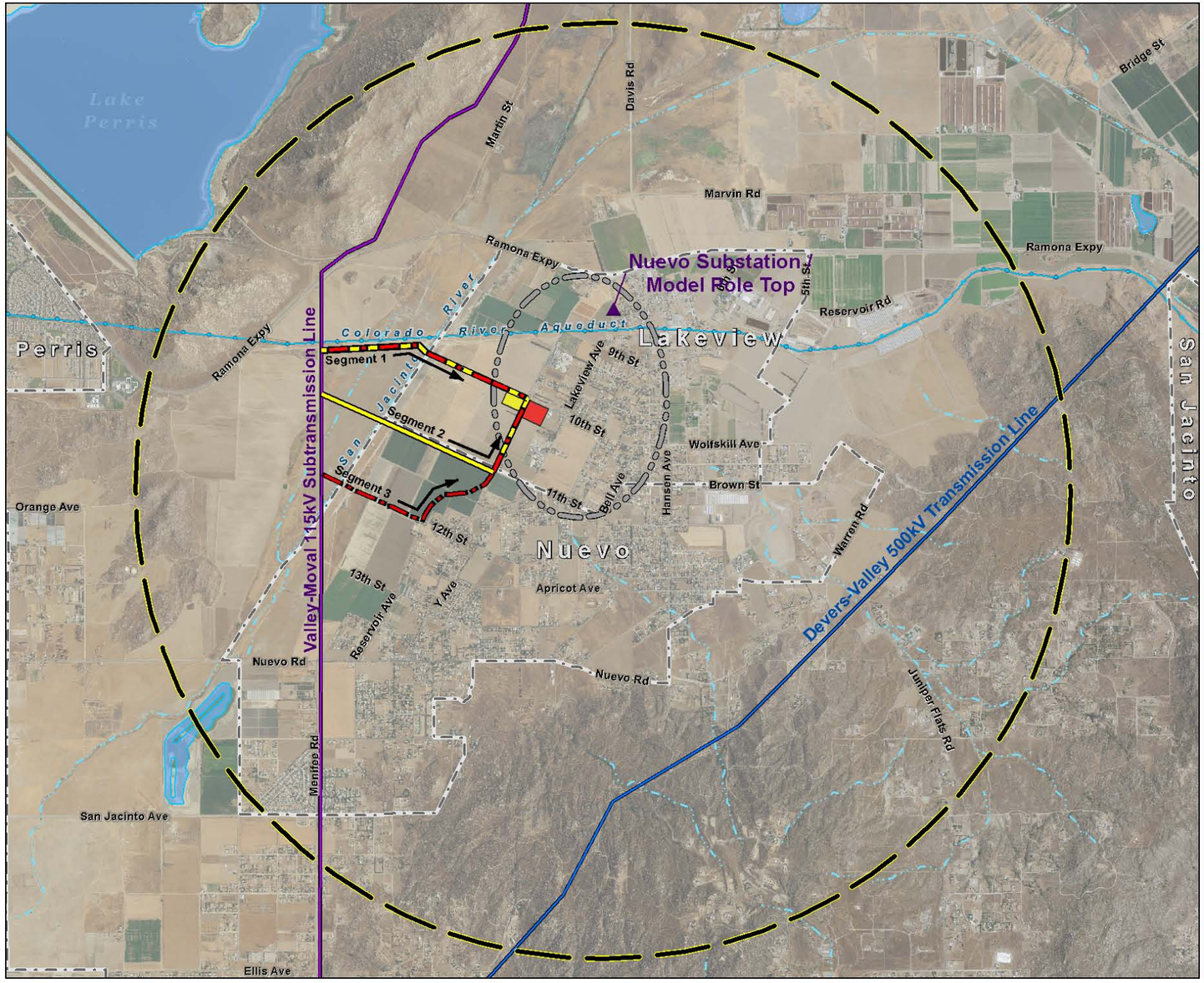
2.2.2.2 Site Alternative B

Site Alternative B is located on an approximately 6-acre portion of an 11.8-acre privately owned parcel that is currently being used for agricultural activities. The parcel is located across the street from Alternative A, at the southeast corner of Reservoir Avenue and 10th Street, in the community of Lakeview, within unincorporated Riverside County, California. The parcel is bounded on all sides by privately owned parcels with agricultural activities to the south, east and west and with single family residential usage to the east and north. SCE would establish vehicular access to Site Alternative A from 10th Street.

2.2.3 Substation Site Alternative Recommendation

Both substation site alternatives meet the proposed project objectives and would be suitable locations. Both Site Alternative A and Site Alternative B are currently being used for agricultural activities. Although Site Alternative B could accommodate the substation, the owner of the parcel is not interested in selling the property at this time.

For this reason, Site Alternative A was selected as the proposed site.



Lakeview Substation Project

Figure 2.1
Alternative Substation Site & Subtransmission Source Line Route

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Subtransmission Source Line Common Segment for both Alternative 1 & 2
- Proposed Substation Site
- Alternative Substation Site
- Study Area
- Electrical Needs Area

Existing Features

- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities

Source:
NAIP 2009, NavTeq, SCE, AECOM 2010

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2.3 Subtransmission Line Route Alternatives Considered

The Valley-Moval 115 kV Subtransmission Line is the nearest 115 kV subtransmission line to both Site Alternative A and Site Alternative B (see Figure 2.1, Proposed Project and Alternatives). SCE identified three 115 kV subtransmission source line segments that would accommodate the connection of the substation to the Valley-Moval 115 kV subtransmission line.

Subtransmission Source Line Segment 1 would connect to the Valley-Moval 115 kV subtransmission line south of the Colorado River Aqueduct. The new 115 kV subtransmission facilities would then extend east, paralleling the Colorado River Aqueduct until it spans the San Jacinto River and intersects and follows 10th Street.[1] The subtransmission facilities would then extend southeast along 10th Street before entering the proposed substation property near the corner of 10th Street and Reservoir Avenue. A new access road would be required to construct and maintain the subtransmission facilities. New right-of-way and easement rights would be required for the new subtransmission facilities and access road. Subtransmission Line Segment 1 would be approximately 1.5 miles in length.

Subtransmission Source Line Segment 2 would connect to the Valley-Moval 115 kV subtransmission line south of Subtransmission Source Line Segment 1. The new 115 kV subtransmission facilities would then extend southeast, spanning the San Jacinto River, before reaching 11th Street.[2] The new facilities would then follow 11th Street to the intersection with Reservoir Avenue[3] extending north before entering the proposed substation property. Subtransmission Line Segment 2 would be approximately 1.8 miles in length.

Subtransmission Source Line Segment 3 would connect to the Valley-Moval 115 kV subtransmission line south of Subtransmission Source Line Segment 2. The 115 kV subtransmission facilities would then extend southeast, spanning the San Jacinto River, before reaching 12th Street. The new 115 kV subtransmission facilities would then follow 12th Street to the intersection with Reservoir Avenue extending north before entering the proposed substation property. Subtransmission Line Segment 3 would be approximately 1.9 miles in length.

The proposed substation site and its alternative are within close proximity to each other, therefore the three 115 kV subtransmission source line segments are suitable for both Site Alternative A and Site Alternative B.

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[1] According to Assessor's Map Book 426 Page 180 MB 10/22 Nuevo Land Co. Tract No. 4 (1970), 10th Street is recorded as 50-foot wide street. The Circulation Element of the County of Riverside General Plan designates a portion of 10th Street as a Major Street with an ultimate right of way of 118 feet. Currently, 10th Street, is not constructed west of Reservoir Avenue, however it is likely that 10th Street would be expanded to its ultimate planned width in the future.

[2] According to Assessor's Map Book 426 Page 180 MB 10/22 Nuevo Land Co. Tract No. 4 (1970), 11th Street is recorded as 50-foot wide street. Currently, 11th Street, is not constructed to its ultimate right-of-way, however future expansion of 11th Street is likely.

[3] The Circulation Element of the County of Riverside General Plan designates Reservoir Avenue as an Urban Arterial with an ultimate right-of-way of 152 feet. Currently, the portion of Reservoir Avenue between 10th Street and 12th Street is not constructed; however it is likely that Reservoir Avenue would be expanded to its ultimate width in the future.

2.3.1.1 Subtransmission Line Route Alternative 1

Subtransmission Source Line Route Alternative 1 combines Subtransmission Source Line Segment 1 with Subtransmission Source Line Segment 2. Subtransmission Line Route Alternative 1 would be approximately 3.3 miles in length.

2.3.1.2 Subtransmission Source Line Route Alternative 2

Subtransmission Source Line Route Alternative 2 combines Subtransmission Source Line Segment 1 with Subtransmission Source Line Segment 3. Subtransmission Source Line Route Alternative 2 would be approximately 3.4 miles in length.

2.3.2 Subtransmission Source Line Route Recommendation

Each Subtransmission Source Line Route Alternative has the ability to serve the proposed substation. However, Subtransmission Source Line Route Alternative 1 is the preferred route because it would be a more direct route to the substation site.

For these reasons, Subtransmission Source Line Route Alternative 1 was selected as the preferred route.

2.4 Proposed Project

SCE proposes to construct the Lakeview 115/12 kV Substation Project on Site Alternative A and utilize Subtransmission Source Line Route Alternative 1 (Proposed Project). The Proposed Project meets the project objectives and is described in detail in Chapter 3, Project Description.

Site Alternative B and Subtransmission Source Line Route Alternative 2 are evaluated in this PEA as an alternative to the Proposed Project.

3.0 PROJECT DESCRIPTION

SCE proposes to construct the Proposed Project on a 5.4-acre parcel in unincorporated Riverside County, more specifically the community of Lakeview. The Proposed Project would include the following components:

- Construction of a new 115/12 kV substation (Lakeview Substation). Lakeview Substation would be an unattended, automated 56 MVA 115/12 kV low-profile substation

- Installation of two new 115 kV subtransmission source line segments to connect the proposed Lakeview Substation to the existing Valley-Moval 115 kV subtransmission line

  – One segment would be approximately 1.8 miles in length to form the new Valley-Lakeview 115 kV subtransmission line

  – One segment would be approximately 1.5 miles in length to form the new Lakeview-Moval 115 kV subtransmission line

- Construction of two new underground 12 kV distribution getaways

- Installation of telecommunications facilities at the proposed Lakeview Substation, inclusive of telecommunication cable (overhead and underground) to connect the proposed Lakeview Substation to the SCE telecommunications network, and upgrades to the telecommunications equipment at the various substations (described in Section 3.1.3 Telecommunications Description)

- Decommissioning of both Nuevo and Model Pole Top (Model P.T.) Substations

The Proposed Project components listed above are described in more detail below. The project description is based on planning level assumptions. Exact details would be determined following completion of final engineering, identification of field conditions, availability of labor, material, and equipment, and compliance with applicable environmental and permitting requirements.

3.1 Proposed Project Components

3.1.1 Lakeview Substation Description

The Lakeview Substation would be a new 115/12 kV unattended, automated 56 MVA low-profile substation. The substation capacity would have the potential to expand to 112 MVA as necessary. The dimensions of the substation would be approximately 330 feet by 345 feet. The property limits would be approximately 452 feet by 525 feet. The substation would encompass approximately 2.7 acres of a 5.4-acre parcel located in unincorporated Riverside County. The remaining 2.7 acres of the proposed site would include allowances for future street improvements and widening, street set-backs, safety buffers, and landscaping. Acquisition of the substation site would be required for the new substation facility.

The substation components are described below and Figure 3.1 provides a proposed substation layout.

3.1.1.1 115 kV Switchrack

The proposed 115 kV low-profile steel switchrack would be up to 36 feet high, 100 feet long, and 240 feet wide. The 115 kV switchrack would consist of eight 30-foot-wide positions:

- two for source lines,
- two for transformer banks,
- one for a bus tie between the operating and transfer buses,
- one for a 115 kV capacitor bank, and
- two would be vacant.

The operating and transfer buses would each be 240 feet long, and consist of one 1590 kcmil (thousand circular mils) Aluminum Conductor Steel Reinforced (ACSR) for each of the three electrical phases.

3.1.1.2 115 kV Circuit Breakers and Disconnect Switches

The two line positions and two transformer bank positions would each be equipped with a circuit breaker and three group-operated disconnect switches. The capacitor bank would be equipped with a circuit breaker and one group-operated disconnect switch. The bus tie position would be equipped with a circuit breaker and two group-operated disconnect switches.

3.1.1.3 115/12 kV Transformers

Transformation would consist of two 28 MVA, 115/12 kV transformers each equipped with group-operated isolating disconnect switches on the high voltage and low voltage side, surge arrestors, and neutral current transformers. The transformer area would be approximately 34.5 feet high, 80 feet long, and 52 feet wide.

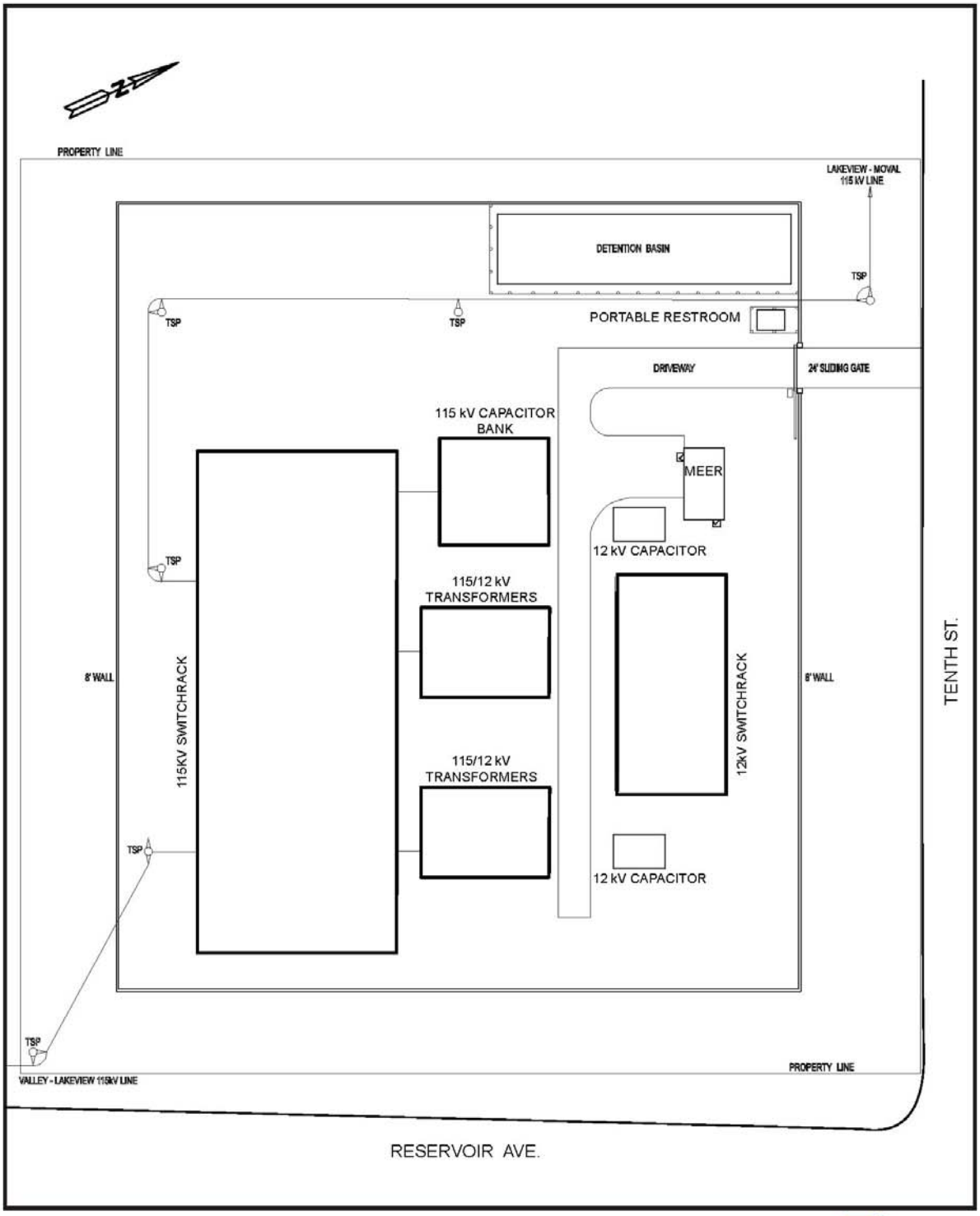
3.1.1.4 12 kV Switchrack

The 12 kV low-profile steel switchrack would be approximately 15 feet high, 34 feet long, and 108 feet wide. The 12 kV switchrack would initially consist of 12 positions with the potential to expand to 20 positions in a wrap-around arrangement. The initial steel structure installation would include 12 positions consisting of:

- six for feed lines,
- two for transformer banks,
- one for a bus tie between the operating bus and transfer bus, and
- three would be vacant.

LAKEVIEW SUBSTATION PROJECT **FIGURE 3.1**

Southern California Edison **PROPOSED PROJECT SUBSTATION LAYOUT** (NOT TO SCALE)



3.1.1.5 Capacitor Banks

There would be a total of three capacitor banks installed at the substation. Two would be 12 kV, 4.8 megavolts ampere reactive (MVAR) capacitor banks. Each of these capacitor bank enclosures would be approximately 17 feet high, 17 feet long, and 13 feet wide. The third would be a 115 kV, 46.8 MVAR capacitor bank with an enclosure that would be approximately 35 feet high, 73 feet long, and 50 feet wide.

3.1.1.6 Mechanical and Electrical Equipment Room (MEER)

A MEER is a prefabricated structure that is typically made of steel. The MEER typically has a light tan or beige roof and side walls. The roofline, wall joints, and doorway may have brown trim. A MEER would be erected and equipped with two air-conditioning units (HVAC), a temperature and humidity sensor, a DC paralleling box and distribution panel, a single-phase AC panel, two 19-inch telecom racks, a battery charger and associated batteries, nine Station Automation 2 Systems (SA-2) 19-inch racks, and Human Machine Interface/Programmable Logic Controller (HMI/PLC). Control cable trenches would be installed to connect the MEER to the 115 kV and the 12 kV switchracks. The MEER dimensions would be approximately 11 feet tall, 36 feet long, and 20 feet wide.

3.1.1.7 Restroom

The Lakeview Substation would be equipped with a restroom. Currently, there is no sewer available at the site, therefore a portable chemical unit would be placed within the substation perimeter wall, and maintained by an outside service company.

3.1.1.8 Substation Access

Access to the substation would be provided via the existing, unimproved 10th Street. SCE would pave the southerly portion of the 10th Street right-of-way (ROW) up to approximately 24 feet in width and approximately 400 feet in length beginning at the intersection of 10th Street and Reservoir Avenue to a connection with the substation entrance driveway. The substation entrance would have a 24-foot wide asphalt cement-paved driveway that would extend approximately 70 feet from 10th Street to the substation entry gate. The automated substation entry gate would be approximately eight feet high and 24 feet wide. In addition, a four-foot-wide walk gate would be installed within the substation wall for personnel access into the site.

3.1.1.9 Substation Drainage and Ground Surface Improvements

The substation project site is relatively flat with minor sloping to the west in a downward direction. The substation site is at an approximate elevation of 1,460 feet above mean sea level (amsl). Due to placement of semi-permeable and impervious material associated with development of the substation site, storm water runoff from the substation site would flow to the west. If required by the County of Riverside as part of the final drainage plan, SCE would include a detention basin within the enclosed substation to accommodate on-site stormwater filtration prior to discharge. Prior to substation construction, SCE would obtain a grading permit from the County of Riverside, at which time a final site drainage plan would be determined.

Table 3.1 Substation Ground Improvement Materials and Volumes

Element	Material	Approximate Surface Area (ft^2)	Approximate Volume (yd^3)
Site Fill (import)	Soil	235,000	18,000
Waste Removal (export)	Soil/Vegetation	235,000	10,000
Replacement fill (import)	Soil	235,000	12,000
Substation Equipment Foundations	Concrete	2,000	180
Equipment, wall foundation, duct banks, cable trench excavations*	Soil	85,000	450
Cable Trenches**	Concrete	1,900	15
115 kV Bus Enclosures	Asphalt concrete	5,200	63
Internal Driveway	Asphalt concrete Class II aggregate base	8,600 8,600	105 160
External Driveway	Asphalt concrete Class II aggregate base	11,200 11,200	140 210
Substation Rock Surfacing	Rock, nominal 1 to 1-1/2 inch per SCE Standard	85,000	1,050
Block Wall Foundation	Concrete	3,000	250
Distribution Getaway/Vaults	Soil/Vegetation (Export	252	0.05
Distribution Duct Banks	Soil/Vegetation (Export)	1,700	315

Notes:

* Excavation "spoils" would be permanently placed on site during the below-ground construction phase.

** Standard cable trench elements are factory-fabricated, delivered to the site, and installed by crane. Intersections are cast-in-place concrete.

*** Distribution getaways would consist of two new underground vaults that would likely be installed underground outside the substation walls on either the SCE substation property, private property, or in franchise

Based on the anticipated volume of hazardous liquid materials, such as mineral oil, in use at the site being in excess of 1,320 gallons, a Spill Prevention and Control Countermeasures (SPCC) Plan would be required (in accordance with 40 C.F.R. Parts 112.1-112.7). Typical SPCC secondary containment features include curbs and berms designed and installed to contain spills, should they occur. These features would be part of SCE's final engineering design for the Proposed Project.

3.1.1.10 Substation Lighting

Lighting at the proposed Lakeview Substation would consist of high-pressure sodium, low intensity lights located in the switchyards, around the transformer banks, and in areas of the yard where operating and maintenance activities may take place during evening hours for emergency/scheduled work. Maintenance lights would be controlled

by a manual switch and would normally be in the "off" position. The lights would be directed downward, and shielded to reduce glare outside the facility. A beacon light, indicating the operation of the rolling gate, would automatically turn on once the gate opens and turn off when the gate is closed.

3.1.1.11 Substation Perimeter

The proposed substation would be enclosed on four sides by an eight-foot-high perimeter wall. The wall typically would be constructed of light colored decorative blocks. A band of at least three strands of barbed wire would be affixed near the top of the perimeter wall inside of the substation and would not be visible from the outside.

Landscaping around the proposed Lakeview Substation would be designed to filter views for the surrounding community and other potential sensitive receptors. Landscaping and irrigation would be established around the full perimeter of the substation after the perimeter wall is constructed and water service is established. Prior to commencement of the substation construction, SCE would develop an appropriate landscaping plan consistent with Riverside County standards, including Ordinance 859: Establishing Water Efficient Landscape Requirements. A landscaping and wall-design plan would be submitted for review by the local jurisdiction.

3.1.1.12 Distribution Getaway

The initial distribution getaways would consist of two new underground vaults that would likely be installed underground outside the substation walls on either the SCE substation property, private property, or in franchise on 10th Street and Reservoir Street. The first getaway would exit the substation property boundary to the north-east, towards 10th Street, approximately 50-75 feet into a new vault. The second getaway would exit the substation property boundary to the south-east, towards Reservoir Street, approximately 50-75 feet into a new vault. Precise vault locations cannot be determined without performing underground utility look-ups and final engineering. The two vaults would also be connected by a duct bank that would be up to approximately 900 feet in length.

Within the proposed substation project, distribution circuits would be placed in an underground conduit system. At ultimate build out, the proposed substation could accommodate 16- 12 kV distribution circuits. Additional electrical distribution circuits would be constructed from the proposed substation to areas of demand on an as-needed basis and with consideration of the following guidelines:

- The location of the current load growth

- Existing electrical distribution facilities in the area

- The location of roads and existing SCE rights-of-way

The exact location and routing of each of these proposed 12 kV distribution circuits have yet to be determined. These 12 kV distribution circuits cannot be designed at this time due to the uncertainty of where load relief will be needed and where future load growth will precisely occur in addition to unforeseen changes in the physical and environmental condition of the surrounding area. Additionally, detailed design of the circuit routes requires the most complete and comprehensive details that can be provided by other

utilities regarding their existing and planned infrastructure in the area. The locations of these facilities will impact the ultimate electrical distribution line routes. This information must be provided as close to the operating date as possible, to minimize design conflicts and construction delays due to additional changes. The detailed design of the initial 12 kV distribution circuits would be completed approximately 12 months prior to the operating date of the Proposed Project.

3.1.2 Subtransmission Source Line Description

The new 115 kV subtransmission source line routes consist of two independent source line segments that would connect to the existing Valley- Moval 115 kV transmission line, which would supply power to the new substation, as shown in Figure 3.2 Subtransmission Source Line Route Description.

Approximately 73 new wood poles and 17 new Tubular Steel Poles (TSPs) would be installed to accommodate the two new 115 kV subtransmission source line segments that would feed the proposed Lakeview Substation from the existing Valley-Moval 115 kV subtransmission line.

The removal of approximately ten existing subtransmission wood poles and replacement with eight new subtransmission wood poles and two new TSPs would be done to accommodate the installation of the two new subtransmission source line segments.

Segment One would connect to the existing Valley-Moval 115 kV subtransmission line south of the Colorado River Aqueduct. The new 115 kV subtransmission facilities would then extend east paralleling the Colorado River Aqueduct until it spans the San Jacinto River and intersects and follows the future planned 10th Street. The facilities would then extend southeast along 10th Street until entering the substation property near the corner of 10th Street and Reservoir Avenue. A new access road would be required to construct and maintain the subtransmission facilities. Subtransmission Source Line Segment One is approximately 1.5 miles long.

Segment Two would connect to the existing Valley-Moval 115 kV subtransmission line south of Segment One. The new 115 kV subtransmission facilities would then extend southeast, spanning the San Jacinto River, before reaching 11th Street. The new facilities would then follow 11th Street to the intersection with Reservoir Avenue, extending north before entering the proposed substation property. A new access road would be required to construct and maintain the subtransmission facilities. Subtransmission Source Line Segment Two is approximately 1.8 miles long.

New ROW and easement rights would be required for the new subtransmission facilities and new access roads.

The subtransmission segments of the proposed project would utilize both wood poles and tubular steel poles (TSPs). Each structure would support, at a minimum, three 60-inch polymer post insulators and six 48 inch-suspension insulators and 954 kcmil Stranded Aluminum Conductor (SAC). The dimensions of the proposed pole types are shown in Figure 3.3 Subtransmission Structures and summarized in Table 3.2, Typical Subtransmission Structure Dimensions. Because the Proposed Project is located in a raptor concentration area, all 115 kV subtransmission structures would be designed

consistent with the Suggested Practices for Raptor Protection on Power Lines: the State of the Art in 2006.[1]

Table 3.2 Typical Subtransmission Structure Dimensions

Pole Type	Approximate Diameter	Approximate Height Above Ground	Approximate Auger Hole Depth	Approximate Auger Diameter
Wood	1 to 3 feet	61 to 84 feet	9 to 11 feet	2 to 3 feet
Tubular Steel Pole (TSP)	2 to 4 feet	70 to 85 feet	Not applicable	Not applicable
TSP Concrete Foundation	5 to 8 feet	Up to 2 feet	20 to 40 feet	5 to 8 feet

TSPs utilized for the Proposed Project would be approximately two to four feet in diameter and extend 70 feet to 85 feet above ground. The TSPs would be attached to concrete foundations that would be approximately five to eight feet in diameter and would extend underground approximately 20 to 40 feet with up to two feet of concrete visible above ground. TSPs are typically used:

- Where site limits or restrictions prohibit guy and anchor installations;
- Where strength or height of a wood or light weight steel pole are exceeded;
- Where TSPs are a condition of the easement; or
- Where the site is subject to extreme or severe environmental conditions such as damage from fire, birds, insects, or weather.

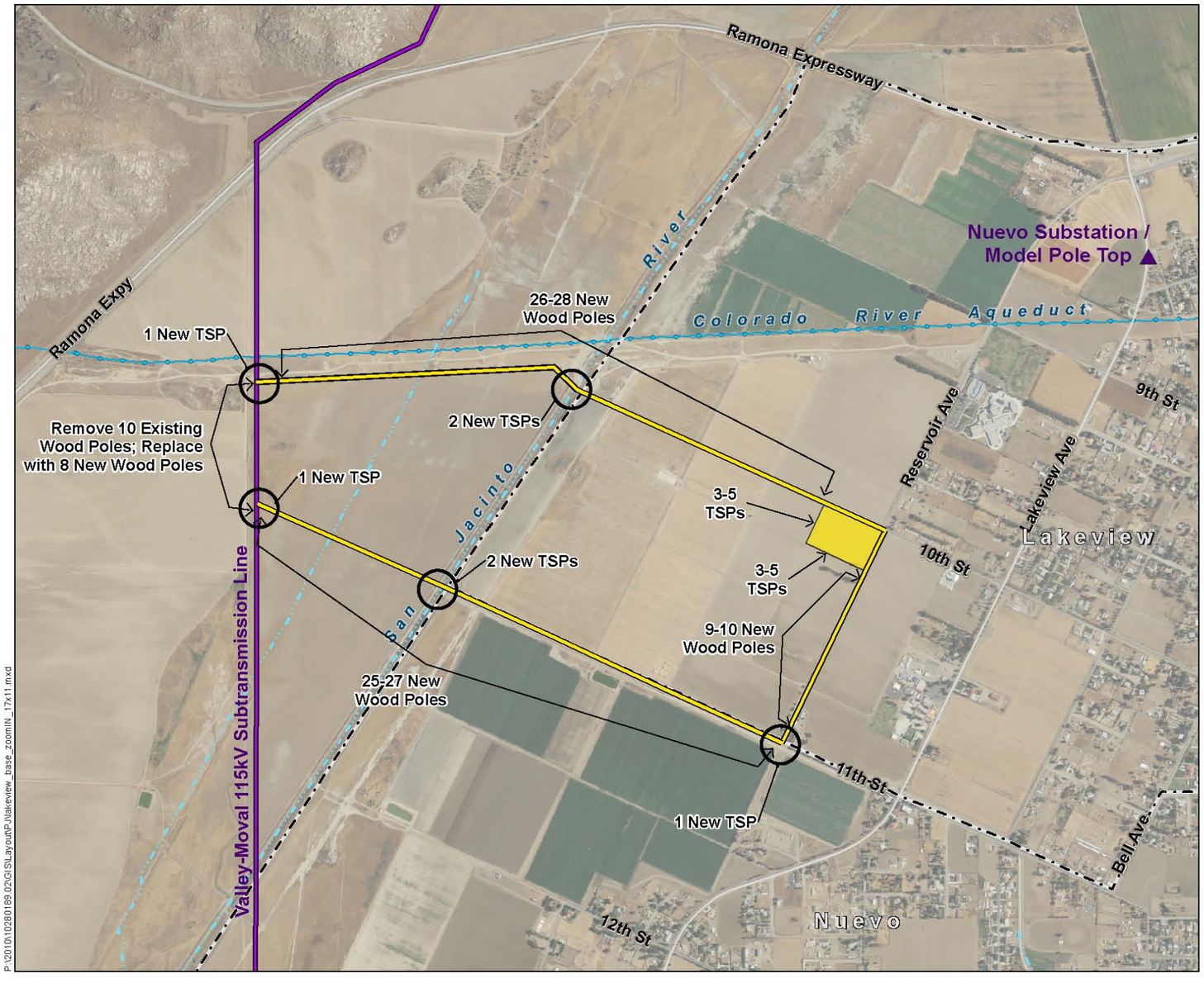
Wood poles utilized for the Proposed Project would be direct buried (to a depth of approximately seven to nine feet below the ground surface) and extend approximately 61 to 84 feet above the ground. The diameter of the wood poles would be approximately one to three feet.

3.1.3 Telecommunications Description

Electrical equipment at the Lakeview Substation would be monitored through SCE's existing telecommunications system. New telecommunications infrastructure would connect the Lakeview Substation to nearby substations. The new telecommunication infrastructure would provide protective relaying, data transmission, and telephone services for the Lakeview Substation and associated facilities.

The new telecommunications infrastructure would include additions and modifications to the existing system. Two new diverse fiber optic cable routes would connect the

[1] Suggested Practices for Raptor Protection on Power Lines: the State of the Art in 2006 published by the Edison Electric Institute and the Avian Power Line Interaction Committee in collaboration with the Raptor Research Foundation. This document can be found at http://www.Aplic.org/SuggestedPractices2006(LR).pdf



Lakeview Substation Project

Figure 3.2
Subtransmission Source Line Route Description

Subtransmission Source Line Route Alternative 1 (Proposed Route)

Site Alternative A (Proposed Site)

Existing Features

Substation

Subtransmission Line

Cities/Communities

Source:
NIAP, 2009; NavTeq, SCE, AECOM 2010

0 1,000 2,000 3,000 Feet

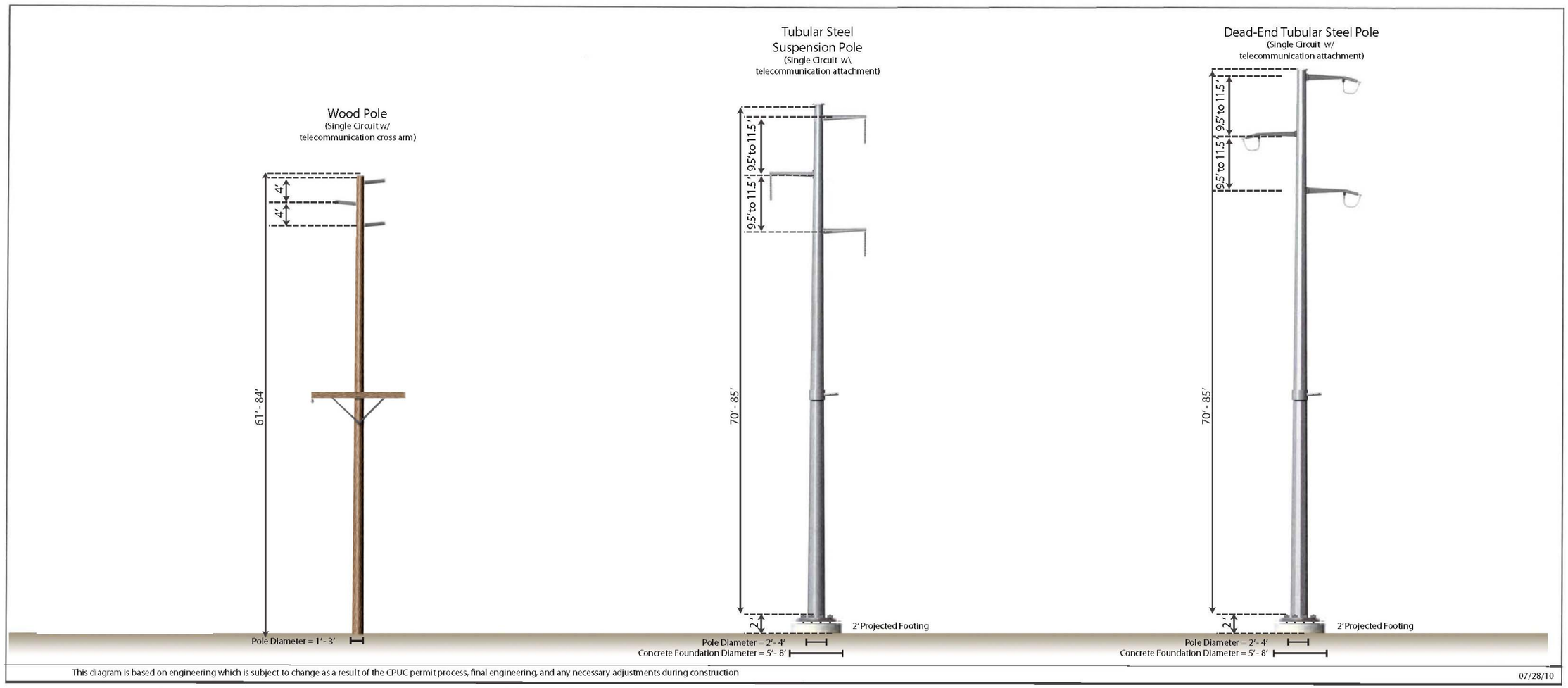


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FIGURE 3.3
SUBTRANSMISSION STRUCTURES



This diagram is based on engineering which is subject to change as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction

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Lakeview Substation to the existing Bunker-Nelson fiber optic cable and the third new fiber optic cable route would connect the Moval Substation to the existing Bunker-Nelson fiber optic cable. The connection points with the Bunker-Nelson fiber optic cable are each located approximately one mile north of the proposed substation. Figure 3.4 Proposed Telecommunications Route details the proposed fiber optic cable routes.

The fiber optic cable is approximately 5/8 inches in diameter and is made of fiberglass and polyvinyl chloride (PVC) jacket. Cable would be located within both overhead and underground facilities.

The proposed fiber optic cable routes are described as follows:

- The first fiber optic cable route would exit the Lakeview Substation to the west. From inside the substation, originating at the MEER to a pull box in the northwest corner of the substation, cable would be placed in a new underground duct bank for approximately 100 feet to the substation perimeter. The cable would then continue outside the substation, in new underground duct bank, for approximately 250 feet within the proposed utility ROW along the future extension of 10th Street. The cable would rise on the first wood subtransmission line pole. In an overhead position, the fiber optic cable would then continue approximately 7,300 feet on the new Subtransmission Source Line Segment One along 10th Street and across the San Jacinto River until it meets with the existing Valley-Moval Subtransmission Line Right of Way. The cable would then continue north approximately 2,000 feet along the existing 115 kV Valley-Moval Subtransmission Line until it reaches the Ramona Expressway, approximately 0.25 miles west of Bernasconi Road where it connects to the Bunker-Nelson fiber optic cable. The entire route is approximately 9,600 feet.

- The second fiber optic cable route would exit the Lakeview Substation to the east. From inside the substation, cable would be placed in a new underground duct bank for approximately 150 feet to the substation perimeter. The cable would then continue outside the substation in new underground duct banks and extend for approximately 1,450 feet along Tenth Street to Lakeview Avenue. The cable would rise up a wood distribution pole on the corner of Tenth and Lakeview. In an overhead position, the fiber optic cable would continue on existing distribution poles north along Lakeview Avenue for approximately 2,700 feet to the existing Bunker Nelson fiber cable. The entire route is approximately 4,700 feet.

- The third fiber optic cable will exit the Moval Substation to the south. From inside the substation, cable would be placed in new underground duct banks for approximately 100 feet to the substation perimeter. The cable would then continue underground outside the substation for approximately 2,400 feet south on the east side of Moreno Beach Drive. The cable would rise up on a pole approximately 200 feet south of Alessandro Boulevard on the west side of Moreno Beach Drive. In an overhead position, the cable would continue south to south-east on the existing structures of the 115 kV Valley-Moval Subtransmission Line for approximately 45,300 feet, until it crosses Ramona Expressway, approximately 0.25 miles west of Bernasconi Road where it would connect to the existing Bunker Nelson fiber cable. The entire route is approximately 47,800 feet.

SCE may need to rehabilitate the existing access road for the portions of the proposed telecommunications route that travel along the existing structures of the 115 kV Valley-Moval Subtransmission Line. See section 3.2.3.2 Access Roads and Site Preparation for a description of potential activities associated with access road rehabilitation. See Figure 3.4 Proposed Telecommunications route, for an illustration of the location of potential access road rehabilitation.

New optical communications equipment would be installed at the proposed Lakeview Substation and the following existing substations: Valley Substation, Cajalco Substation, Alessandro Substation, Moval Substation and Bunker Substation. Upgrades to existing optical communications equipment would occur at the following existing substations: Valley Substation, Eastside Substation, Stetson Substation, Mayberry Substation and Nelson Substation. All new communications equipment installations and upgrades at the existing substations would occur within the existing MEER; therefore, no additional ground disturbance is associated with this proposed telecommunications work.

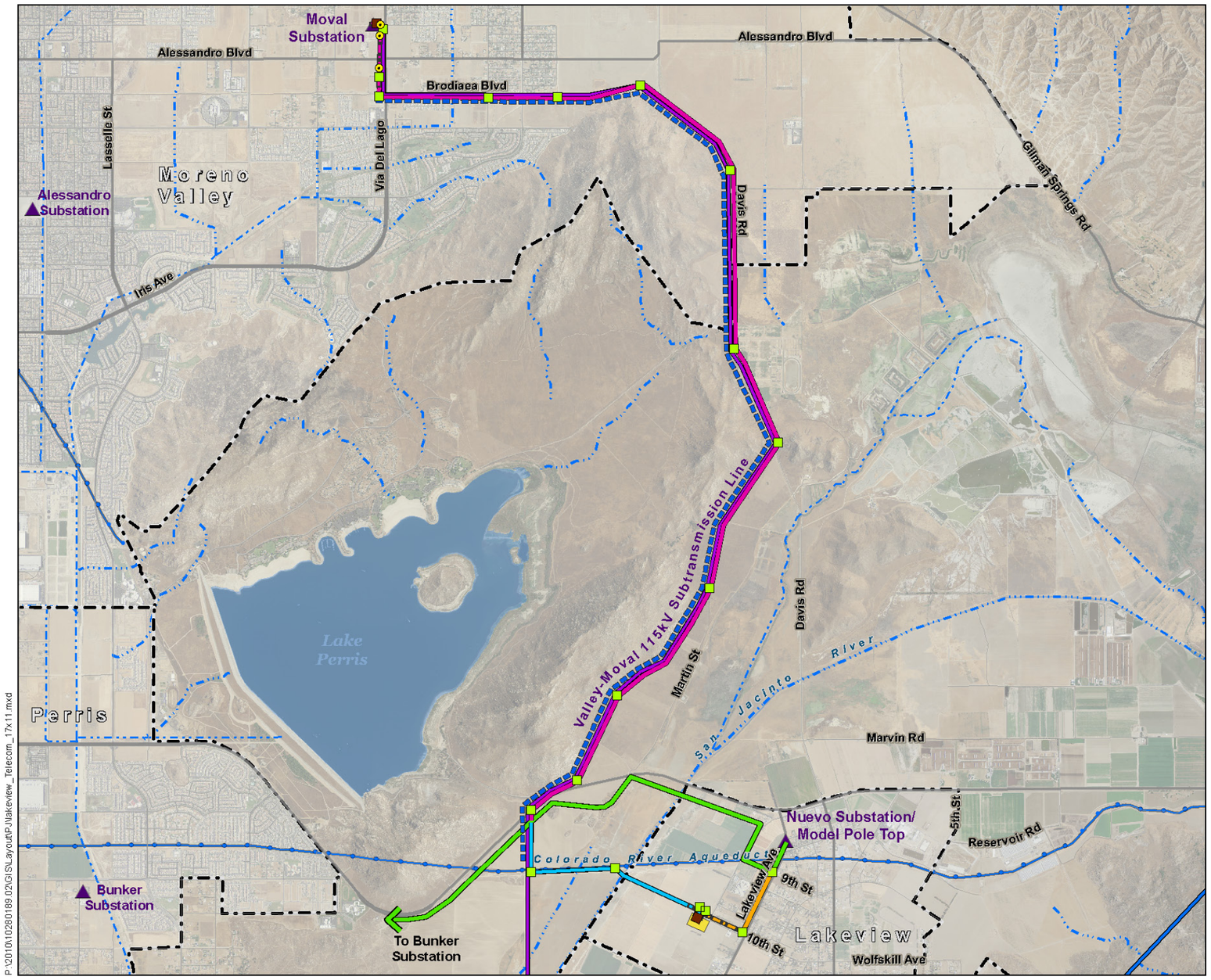
3.1.4 Nuevo Substation and Model Pole Top (Model P.T.) Decommissioning

The Proposed Project would include the decommissioning of both Nuevo Substation and Model Pole Top. Nuevo 33/12 kV Substation is located near the corner of Lakeview Avenue and Palm Drive. The decommissioning of Nuevo and Model Pole Top would result in a disturbance to approximately 0.7 acres. Nuevo Substation would be retired once the proposed Lakeview Substation becomes operational.

Facilities at Nuevo Substation include a 33/12 kV transformer, two 33 kV circuit breakers, two 12 kV circuit breakers, three metering transformers, two oil filled station, light and power potential transformers, one remote terminal unit/USAT system, 10 wood poles and associated equipment (disconnects, insulators, surge arrestors, cross arms). The transformer and associated equipment contains approximately 13,556 gallons of oil. In addition to the equipment at Nuevo Substation there would be approximately 20 tons of Asphalt SPCC berm, 40 tons of Crushed Rock, 30 tons of concrete foundations, and a chain link fence that would be removed.

Model P.T. 33/12 kV Substation, is a temporary pole top located at the corner of Lakeview Avenue and East Lakeview Avenue. Model Pole Top would be retired once the proposed Lakeview Substation and related facilities become operational.

Underground facilities at Model P.T. include two 33/12 kV transformers, one 33 kV padmounted switch, one 33 kV vacuum fault interrupter, one 12 kV padmounted switch, one 12 kV padmounted gas switch, one 12 kV padmounted remote automatic reclosure, and one 33 kV voltage regulator. Overhead facilities at Model P.T. include eight wood poles and associated equipment (remote control switches, transformers, cross arms, lightening arrestors, control cabinets, insulators, riser, pin and glass, disconnects, down guys). The switches contain approximately 85 pounds of SF6 gas. The transformer, regulator and associated equipment contains approximately 3,929 gallons of oil. In addition to the underground and overhead facilities at Model P.T. there would be one 6 foot by 12 foot by 7 foot manhole, one 7 foot by 8 foot concrete pad with a 4 foot by 7 foot slab box, two 10 foot by 12 foot slab boxes, two 8 foot by 10 foot slab boxes, two 6 foot by 8 foot (6 inch) slab boxes, ground rods, eight rail road ties, perimeter chain link fence, gravel, asphalt and concrete that would be removed from the site.



Lakeview Substation Project

Figure 3.4
Proposed Telecommunications Route

Proposed Fiber Optic Cable Routes

Overhead / Underground

- Proposed Segment 1
- Proposed Segment 2
- Proposed Segment 3
- Pull Box
- Pull and Tension Sites
- Manhole
- Potential Rehabilitated Access Road
- Proposed Substation Site

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities

Sources: NAIP 2009, NavTeq, SCE, AECOM 2010

0 1 2Miles



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3.2 Proposed Project Construction Plan

Construction of the Proposed Project would include activities associated with land surveying, replacement of existing poles, installation of new subtransmission structures, substation site construction, and telecommunications installation. In addition, construction support activities, such as the establishment of one or more marshalling yards and the development of access roads extending to construction sites, would be required.

3.2.1.1 Storm Water Pollution Prevention Plan

Construction of the Proposed Project would disturb a surface area greater than one acre. Therefore, SCE would be required to obtain a Statewide Construction General Permit (Order No. 2009-0009-DWQ), and as needed a National Pollution Discharge Elimination System (NPDES) permit from the Santa Ana Regional Water Quality Resources Control Board. To acquire this permit, SCE would prepare a Storm Water Pollution Prevention Plan (SWPPP) inclusive of project information, design features, monitoring and reporting procedures, as well as Best Management Practices (BMP's). Commonly used BMP's are stormwater runoff quality control measures (boundary protection), dewatering procedures, spill reporting, and concrete waste management. The SWPPP would be based on final engineering design and would include all project components.

3.2.1.2 Dust Control

During construction, water trucks and other Best Available Control Measures would be used to minimize the quantity of fugitive dust created by construction, per the South Coast Air Quality Management District Rule 403-Fugitive Dust.

3.2.1.3 Marshalling Yard

Construction of the Proposed Project would require the establishment of temporary marshalling yards. SCE anticipates using the following locations as marshalling yards for the Proposed Project: the Proposed Lakeview Substation project site; a portion of the parcel adjacent to the Proposed Lakeview Substation location; Valley Substation and/or a portion of the adjacent Transmission material yard; and the SCE Menifee Service Center (Figure 3.5, Lakeview Proposed Marshalling Yards). The potential marshalling yard locations offer up to five acres of space and are previously disturbed sites. Table 3.3 lists the proposed marshalling yard locations of each yard. Preparation of the marshalling yard would include the application of road base or crushed rock, depending on existing ground conditions, and installation of perimeter fencing. Land disturbed at the marshalling yard would be restored to pre construction conditions or the landowner's requirements following completion of construction for the Proposed Project.

Materials commonly staged at the substation construction marshalling yard would include, but not be limited to, construction trailers, portable sanitation facilities, electrical equipment such as circuit breakers, disconnect switches, lightning arrestors, transformers, capacitor banks, reactor banks and vacuum switches, steel beams, rebar, foundation cages, conduit and grounding, insulators, pot heads, conductor and cable reels, pull boxes and line hardware.

Table 3.3 Potential Marshalling Yard Locations

Name	Location	Condition	Approx. Area
No. 1	Proposed Lakeview Substation	Previously Disturbed	2-5 Acres
No. 2	SCE-Menifee Service Center	Previously Disturbed	2-5 Acres
No. 3	Valley Substation and/or a portion of the adjacent Transmission material yard	Previously Disturbed	1 Acre
No. 4	Adjacent to Proposed Lakeview Substation	Previously Disturbed	2-5 Acres

Materials commonly staged at the subtransmission construction marshalling yard would include, but not be limited to, construction trailers, portable sanitation facilities, steel/wood poles, conductor/wire reels, signage, consumables (such as fuel[2] and joint compound), and BMP materials (straw wattles, gravel, sandbags, and silt fences).

Both, the substation and subtransmission marshalling yards may be used as a carpool meeting location for work crews.

Materials associated with construction efforts would be delivered by truck to the established marshalling yards. TSPs and wood subtransmission poles would likely be transported by flatbed truck to their prospective surveyed location for installation. As an alternative, they may be delivered to a marshalling yard.

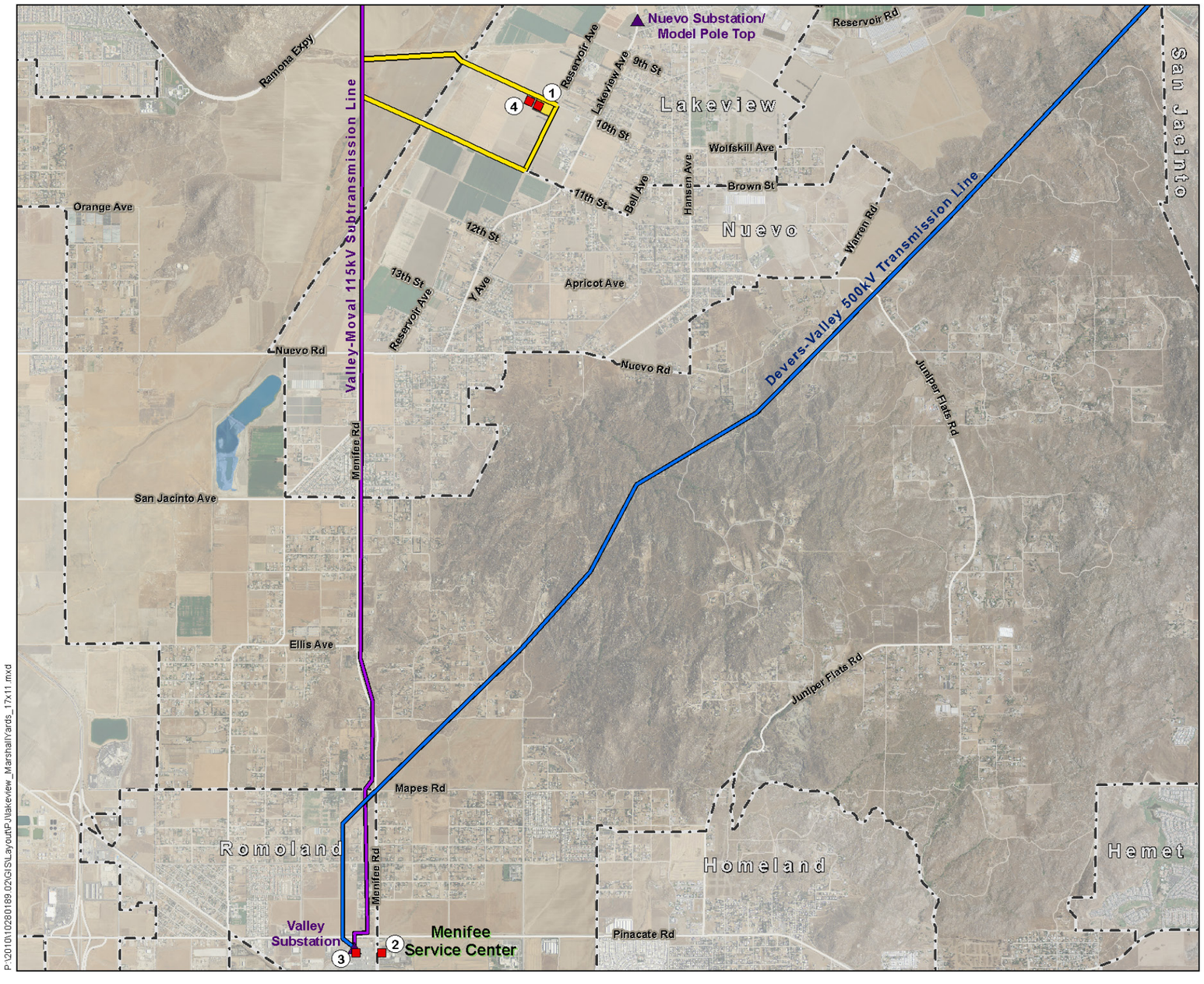
3.2.1.4 Staging Area/Laydown Area

Laydown areas serve as a temporary staging location for subtransmission equipment and/or materials. Laydown areas would be located along the proposed subtransmission source line segments within SCE ROW or franchise. Once they leave the marshalling yard, materials are delivered to pole or wire stringing locations within the field. Common materials located within the laydown areas would include, but are not limited to, TSPs, wood poles, re-bar cages, and wire stringing equipment and conductor reels. The specific activity would determine the laydown area size. Approximate dimensions for laydown areas can be found in sections 3.2.3.3. Tubular Steel Pole Installation, 3.2.3.4 Wood Pole Installation, and 3.2.3.5 Conductor/Wire Stringing. Land disturbance in these areas is temporary.

3.2.1.5 Guard Structures

Guard structures are temporary facilities that would typically be installed at transportation, flood control and utility crossings. These structures are designed to stop the movement of a conductor should it momentarily drop below a conventional stringing height. Typical guard structures are standard wood poles 60 to 80 feet tall, however temporary netting could be installed to protect some types of under-built infrastructure or specifically equipped boom type trucks with heavy outriggers may be used. There are typically two to four guard poles installed on either side of a crossing to prevent the conductor from dropping.

[2] Potential fuel storage at the marshalling yards would consist of small quantities (approximately five-gallon containers, not to exceed three containers) to power generators and/or small power tools.



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Lakeview Substation Project

Figure 3.5
Lakeview Proposed Marshalling Yards

- Marshalling Yards (not to scale)
- (1) Proposed Lakeview Substation
- (2) Menifee Service Center
- (3) Valley Substation and/or a portion of the adjacent Transmission material yard
- (4) Adjacent to Proposed Lakeview Substation

Subtransmission Source Line Route Alternative 1 (Proposed Route)

Site Alternative A (Proposed Site)

Existing Features

- Substation
- Transmission Line
- Subtransmission Line
- Cities/Communities

Sources: NAIP 2009, NavTeq, SCE, AECOM 2010

0 1 2 Miles



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SCE estimated eight guard structures would need to be constructed along the proposed route.[3]

For highway and open channel aqueduct crossings, SCE would work closely with the applicable jurisdiction to secure the necessary permits to string conductor across the applicable infrastructure.

3.2.1.6 Traffic Control

Construction activities completed within public street ROWs may require the use of a traffic control service and all potential lane closures would be conducted consistent with local ordinances. Commonly used traffic control measures are consistent with those published in the California Joint Utility Traffic Control Manual, 2010 (CJUTCM). Generally, materials associated with construction efforts would be delivered by truck to the established marshalling yard(s). However, wood poles and other materials may have direct job site delivery. Delivery activities requiring major street use would be scheduled to occur during off peak traffic hours whenever possible. Some deliveries, such as concrete, would occur during peak hours when footing work is being performed.

3.2.1.7 Construction Work Hours

Construction efforts for the Proposed Project would occur in accordance with accepted construction industry standards. Construction activities would generally be scheduled during daylight hours, more specifically 6:00am to 6:00pm (June to September) and 7:00am to 6:00pm (October to May).[4] In the event construction activities needed to occur on different days or hours, SCE would obtain variances as necessary from appropriate jurisdictions where the work would take place.

3.2.2 Lakeview Substation Construction

The following section describes the construction activities associated with installing the components of the Lakeview Substation for the Proposed Project.

3.2.2.1 Site Preparation and Grading

The substation site would be prepared by clearing existing vegetation within the boundaries of the proposed project site. Once vegetation clearance is completed, the site would be graded in accordance with approved grading plans and a temporary chain link fence would be installed around the substation perimeter. As previously discussed, the substation site would serve as a marshalling yard location for substation construction activities. Therefore, a construction trailer, security guard trailer, construction equipment, and electrical equipment would be located at the site.

[3] The number of guard structures is a preliminary estimate, as the types of guard structures that would be required for crossings and the number of crossings necessary would be field verified during construction.

[4] County of Riverside Ordinance No. 847 Regulating Noise, retrieved from http://www.clerkoftheboard.co.riverside.ca.us/ords/800/847.pdf

3.2.2.2 Below-Grade Construction

After the substation site is graded, below-grade facilities would be installed. Below-grade facilities include a ground grid, cable trenches, equipment foundations, conduits, duct banks, utilities, detention basin and the footings for the substation perimeter wall. The design of the ground grid would be based on soil resistivity measurements collected during the geotechnical investigation.

3.2.2.3 Above-Grade Construction

Above-grade installation of substation facilities such as buses, capacitors, switchracks, disconnect switches, circuit breakers, transformers, steel support structures, perimeter wall, restroom facilities, and the MEER would commence after the below-grade structures are in place.

3.2.3 115 kV Subtransmission Source Line Segments Installation

The following sections describe the construction activities associated with installing the 115 kV Subtransmission Source Lines for the Proposed Project.

3.2.3.1 Survey

Construction activities would begin with the survey of the 115 kV subtransmission source line segments. The survey crew would stake the pole (TSP and wood) locations, including reference points and centerline hubs. The survey crew would include the limits of the grading for pole excavations.

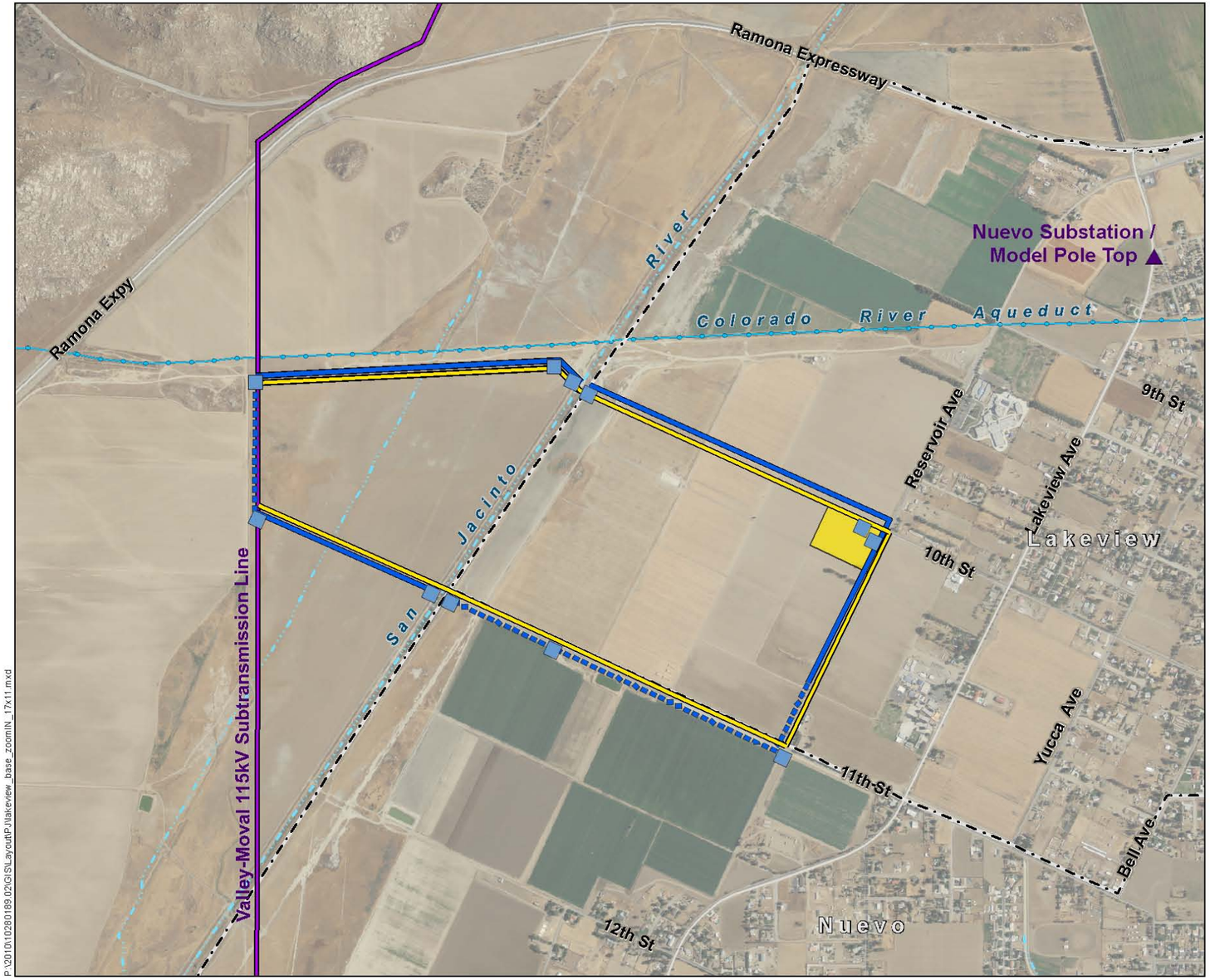
3.2.3.2 Access Roads and Site Preparation

Access roads parallel subtransmission source line segments following the pole ROW. Where available, existing access roads would be used, however it may be necessary to rehabilitate some areas of the existing access roads in order to accommodate construction activities. Figure 3.6 provides proposed access road locations for subtransmission and Figure 3.4 provides proposed access road locations for telecommunications. Potential rehabilitation activities may include, grading and repair of access roads including vegetation clearance and grubbing, blade-grading to remove surface irregularities, re-compaction of the surface, and ensuring the minimum drivable width of 14 feet (preferably with an additional two feet of shoulder on each side, depending upon field construction).

Portions of the new subtransmission source line segments would require new access roads. Up to 3.5 miles of new access road would need to be constructed resulting in a disturbance of approximately 8.0 acres. Construction activities for new access roads include the following:

- Road alignments would be cleared and grubbed of vegetation, blade-graded to remove surface irregularities, and re-compacted.

- Roads would be a minimum of 14 feet in width (preferably with an additional two feet of shoulder on each side, depending upon field construction), but roads may be wider depending on final engineering.



Lakeview Substation Project

Figure 3.6
Proposed Pull and Tension Sites and Access Roads

Subtransmission Source Line Route Alternative 1 (Proposed Route)

Site Alternative A (Proposed Site)

Pull and Tension Sites
(not to scale)

New Access Road

Potential Rehabilitated Access Road

Existing Features

Substation

Subtransmission Line

Cities/Communities

Source:
NAIP, 2009; NavTeq, SCE, AECOM 2010

0 1,000 2,000 3,000 Feet



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- Road gradients would be leveled so that any sustained grade would not exceed 12 percent, however approximately 14 percent would be permitted if grades do not exceed 40 feet in length and are located more than 50 feet from other excessive grades or any curves.

- Approximately 6,100 feet of new access road along 10th Street and approximately 4,700 feet of new access road along 11th Street would require an aggregate road base. Typical construction for an aggregate road base would start with excavating the road at least 18 inches. 10-inches of soil would be restored and compacted to 95 percent density establishing the subgrade. Then, an eight-inch aggregate road base would be placed and compacted to at least 95 percent relative density over the subgrade.

Any excess excavated material from grading the access roads would be properly disposed of offsite**.**

Approximately 4,000 cubic yards of aggregate base would need to be imported for construction of the new access roads proposed along 10th Street and 11th Street. At the time of construction, the aggregate base would be imported from an approved site.

3.2.3.3 Tubular Steel Pole Installation

The Proposed Project would require the construction of approximately 17 tubular steel poles (TSP's). The location of the TSP's would be graded and/or cleared to provide a reasonably level surface free of vegetation for footing construction.

Construction of each TSP would require a single-drilled, poured-in-place concrete footing that would form the structure foundation. The drilling of the hole is accomplished using truck-or track-mounted excavators with various diameter augers to match the diameter requirements of the structure.[5] Typically, TSPs require an excavated hole of five to eight feet in diameter with an average depth of 20 to 40 feet (approximately 50 cubic yards of soil removal). Excavated material will be distributed at each structure site to backfill excavations of removed poles or in the rehabilitation of existing access roads or disposed of offsite in accordance with applicable laws. Alternatively, excavated material may be disposed of at an authorized off-site disposal facility. For the Lakeview Substation Project, disposal facilities within a 30-mile radius would be utilized. There are three waste disposal facilities within Riverside County that are located within 30 miles of the Proposed Project.[6]

Following excavation of the foundation footings, steel-reinforced cages would be set and survey positioning would be verified. Steel-reinforced cages would be pre-assembled by the manufacturer and delivered to the TSP locations by flatbed truck.

For ease of construction, TSPs may consist of a separate base and top section. Each section would be transported to the pole location, where it would be placed on the ground within what is referred to as the laydown area (typically 200 feet by 100 feet where available). Depending on what structures already exist in the field, the top section

[5] Prior to drilling for foundations, SCE or the Contractor would contact Underground Service Alert to identify any underground utilities in the construction zone.

[6] Information retrieved from the Non-Hazardous Soil/Concrete Disposal Facilities List dated 4-15-2009 prepared by SCE.

of the TSP may be framed by the construction crew, with pre-fabricated arm vangs, steel arms, and mounting plates prior to assemblage to the base section. If there are clearance concerns, the TSP would be set and the insulators and hardware attached after installation. A crane would be used to place the base section of the TSP onto the concrete foundation where it would be bolted to the foundation.

3.2.3.4 Wood Pole Installation

The Proposed Project would require the installation of approximately 73 wood poles. Wood poles would be installed directly into the soil within bored holes that are approximately 1 to 3 feet in diameter and 9 to 11 feet deep. These holes may be excavated with backhoe equipment in lieu of an auger to expedite installation. Wood pole installation typically requires the use of a line truck with a boom. Wood poles that are set into place are backfilled using bore spoils (excavated material from hole drilling). In the event that bore spoils are not suitable for backfill, imported clean fill material would be used. Excavated material will be distributed at each structure site to backfill excavations of removed poles or in the rehabilitation of existing access roads, or disposed of offsite in accordance with applicable laws.

Installation of new poles to replace existing poles would occur within existing line ROW areas and would be installed as close as possible to the existing poles' locations. The new replacement poles would require excavations that would result in surface disturbance to set the poles as described above.

3.2.3.5 Conductor/Wire Stringing

Conductor stringing activities would be in accordance with SCE specifications and similar to process methods detailed in the IEEE Standard 524-2003 (Guide to the Installation of Overhead Transmission Line Conductors).

Safety devices such as traveling grounds, guard structures, and radio-equipped public safety vehicles would be utilized during conductor stringing activities.

Conductor stringing includes all activities associated with the installation of the wire onto the wood poles and TSPs. Conductors would be installed on the 115kV polymer insulator assemblies attached directly to the pole or attached to each cross arm. These activities typically include the installation of primary conductors, vibration dampeners, weights, and post, suspension and dead-end hardware assemblies for the entire length of the proposed subtransmission route. Insulators and stringing sheaves (rollers or travelers) are also attached as part of the conductor installation efforts during wire-stringing activities. Advanced planning would then determine circuit outages, pulling times and safety protocols needed for ensuring that safe and quick installation of wire is accomplished.

Each stringing operation would include one puller positioned at one end and one tensioner and wire reel stand truck positioned at the other end. Splicing sites would be strategically located to support the stringing operations and would include specialized support equipment such as skidders and wire crimping equipment. Permanent splices are formed once the conductor is strung through the rollers located on each structure. For stringing equipment that cannot be positioned at either side of a dead-end

subtransmission structure, field snubs (i.e., anchoring and dead-end hardware) would be temporarily installed to sag conductor wire to the correct tension.

The puller, tensioner, and splicing set-up locations associated with the Proposed Project would be temporary and the land would be restored to its previous condition following completion of pulling and splicing activities. The final number and locations of the puller, tensioner, and splicing sites will be determined during final engineering. Figure 3.6 illustrates the anticipated pull and tension sites based on current preliminary design.

The following five steps describe typical wire-stringing activities:

- Step 1: Determine the locations of wire pulls and wire-pull equipment set-up positions.

- Step 2: Sock Line, Threading: A bucket truck/manlift would be used to install a lightweight sock line. The sock line would be threaded through the wire rollers in order to engage a camlock 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 wire pull.

- Step 3: Pulling: The sock line would be used to pull in the wire-pulling rope. The wire-pulling rope would be attached to the conductor using a swivel joint to prevent damage to the conductor and to allow the conductor to rotate freely to prevent complications from twisting as the conductor unwinds off the reel.

- Step 4: Splicing, Sagging, and Dead-ending: After the conductor is pulled in, any required 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.

- Step 5: Clipping-in: After the wire is dead-ended, the wire would be attached to all tangent structures.

Wire pulls are the length of any given continuous wire installation between two selected points along the line. Wire pull locations are selected, where possible, based on availability of dead-end structures at the ends of each pull and the geometry of the line as affected by points of inflection, terrain, and suitability of stringing and splicing equipment setups. Typically, wire pulls are located approximately every 6,000 feet on flat terrain or less in rugged terrain. Generally, pulling locations and equipment set-ups would be in direct line with the direction of the overhead conductors and established a distance approximately three times the pole height away from the adjacent structure. Final pulling sites would be determined during final engineering. The dimensions of the area needed for the wire stringing set-ups associated with wire installation are variable and depend upon terrain. These activities generally require an area of approximately 50 feet wide by 100 feet in length.

3.2.3.6 Removal of Existing Poles

Prior to removal of existing poles, the existing subtransmission lines, distribution lines and telecommunication lines (where applicable) will be transferred to the new poles. All

remaining subtransmission, distribution and telecommunication lines that are not reused by SCE would be removed and delivered to a facility for recycling. Depending on the type, condition and original chemical treatment, the wood poles removed could be reused by SCE for other purposes, disposed of in a Class I hazardous waste landfill, or disposed of in the lined portion of a Regional Water Quality Control Board (RWQCB) certified municipal landfill.

The existing wood poles would be completely removed once the subtransmission, distribution and telecommunication lines are transferred to the new poles. The removal would consist of the above and below-ground portions of the pole. The holes left from removing the poles would be backfilled with fill that may be available as a result of the excavation for new poles and using imported fill as needed.

3.2.3.7 Energizing 115 kV Subtransmission Source Lines

Energizing the new source lines is the final step in completing the 115 kV subtransmission construction. The existing Valley-Moval 115 kV subtransmission line would be de-energized in order to connect the new 115 kV subtransmission source line segments. To reduce the need for electric service outages, de-energizing and reconnecting the existing subtransmission lines to the new poles may occur at night when electrical demand is low. Once the connection is complete, the existing subtransmission line would be returned to service (re-energized).

3.2.4 Telecommunications Construction

The fiber optic system construction would include the installation of overhead facilities, underground facilities, and new or upgraded telecommunications equipment. The fiber optic system facilities and equipment would be installed within the Lakeview Substation, various other existing substations (Please refer to Section 3.1.3 for exact substations), and along existing and new subtransmission and distribution lines. All new communications equipment installations and upgrades at the existing substations would occur within the existing MEER, therefore no additional ground disturbance is associated with this work.

Overhead telecommunications facilities would be installed by attaching cable to structures in a manner similar to that described for subtransmission wire stringing (Section 3.2.3.5). Figure 3.4 provides locations for proposed pull and tension sites for the overhead portions of the telecommunications route. Final pulling sites would be determined during final engineering.

Underground telecommunications facilities would be installed in new duct banks which include pull boxes and manholes, in Lakeview Substation, on 10th Street outside of Lakeview Substation, in Moval Substation and on Moreno Beach Drive outside of Moval Substation.

Duct banks are installed in a backhoe-excavated trench approximately 18 inches wide and 36 inches deep. Five-inch PVC conduit would be placed in the open trench, covered with slurry, and then covered with back-filled material and compacted. One 3’ x 5’ x 3’ concrete pull box would be installed near the northwest corner of Lakeview Substation approximately 20 feet south of the north perimeter wall. One 3’ x 5’ x 3’ concrete pull box would be installed near the southeast section of Moval Substation approximately 40 feet

west of the east perimeter wall. Outside Moval Substation, one 4' x 4' x 5' concrete manhole would be installed near the east side of Moreno Beach Drive, approximately 465 feet south of Cottonwood Avenue, one 4' x 4' x 5' concrete manhole would be installed near the east side of Moreno Beach Drive, approximately 368 feet south of Bay Street, and one 4' x 4' x 5' concrete manhole would be installed near the east side of Moreno Beach Drive, approximately 205 feet south of Allessandro Boulevard.

3.2.5 Nuevo Substation and Model Pole Top (Model P.T.) Decommissioning Construction

Decommissioning Nuevo Substation would include both electrical and civil work. Electrical work would begin with de-energizing the existing lines coming in and going out of the substation and then declaring the substation officially out of service by the local operations center. Oil filled equipment would be de-energized and removed from the site along with the circuit breakers, potential transformers and metering transformers. Station cabinets would be removed, primary conductor would be cut loose from the source poles and secondary wiring within below grade conduits would be removed, all of which would be disposed of offsite. All associated equipment (disconnects, insulators, surge arrestors, cross arms) would be removed and disposed of offsite. Lastly, the wood poles would be removed from below grade, cut to a length for discarding and hauled offsite.

The civil work for decommissioning Nuevo Substation would include ground disturbance commencing with the removal of all crushed rock and the asphalt SPCC burm. Excavation would then follow with removal of the below-ground grid network and below grade conduits. Removal of the station chain link perimeter fence would then follow suit. Lastly re-compaction of the site would be necessary and the site would be brought to rough grade for drainage purposes. For the above mentioned activities, it does not appear that any import or export would be necessary.

Decommissioning Model P.T. would include opening two pole mounted circuit breakers to de-energize the Oliver 33 kV distribution line and the Brinkley 12 kV distribution line. The voltage regulator, transformers switches, and automated reclosures would be removed from the site and returned to surplus for potential reconditioning and reuse on the SCE distribution system. Then cable would be removed from underground and conductor would be removed from overhead structures. All associated equipment (remote control switches, transformers, cross arms, lightening arrestors, control cabinets, insulators, riser, pin and glass, disconnects, down guys) would be removed and disposed of offsite or reused. The wood poles would be removed from below grade and hauled offsite.

The civil work for decommissioning Model P.T. would include ground disturbance commencing with the removal of all gravel and asphalt. Excavation would then follow with removal of the concrete pad, slab boxes and man hole. Removal of the station chain link perimeter fence would then follow suit. Lastly re-compaction of the site would be necessary and the site would be brought to rough grade for drainage purposes. For the above mentioned activities, approximately 260 cubic yards of dirt would be excavated in order to remove the underground facilities. It is anticipated that the removed dirt would be used for backfill of the excavated portions of the site, however there may be the need for minimal amounts of dirt to be imported to the site. All import and export quantities would be determined at the time of removal.

Equipment containing mineral oil would be evaluated at the time of decommissioning of Nuevo Substation and Model Pole Top. SCE can either refurbish/rebuild a piece of equipment or process for disposal based upon the condition of the equipment or the need to retain for future use. Prior to any work being performed, a pre-job walk will be performed to determine equipment condition, safety and logistical issues. Part or the evaluation process is to determine if the equipment will need to be classified as PCB (polychlorinated biphenyls) or PCB contaminated. These samples may be collected during the pre-job walk. Processing of the equipment can include shipping intact to an SCE or SCE authorized disposal facility or draining and removal of any mineral oil in the field.

3.2.6 Post-Construction Cleanup

SCE would restore all areas that are temporarily disturbed by the proposed project activities once construction is complete. Restoration areas could be inclusive of but not limited to, some access roads, material staging yards, pull and tension sites, splicing sites and pull box locations. Activities associated with restoration of these areas would include restoring original contours and reseeding (with native seed mix), to the extent feasible. All construction materials and debris would be removed from the area and recycled or properly disposed of offsite.

3.3 Land Acquisition

SCE acquired 5.4 acres of land to site the Lakeview Substation. SCE would need approximately 20.6 acres of new ROW for the subtransmission source line segments. SCE generally purchases easements from property owners for subtransmission line ROW and access road ROW. SCE would acquire a 30-foot-wide easement for the entire Subtransmission Source Line Segment 1 and entire portion of Subtransmission Source Line Segment 2.

3.4 Land Disturbance

Land disturbance for the Proposed Project would include surface modifications for the installation of access roads, 115 kV subtransmission lines, telecommunication lines and the substation. It is estimated that the total permanent land disturbance for the Proposed Project would be 33.85 acres. It is estimated that the Proposed Project would temporarily disturb 65.12-68.15 acres. The estimated amount of land disturbance for each project feature is summarized in Table 3.4.

3.5 Hazardous Materials

Construction of the Proposed Project would require the limited use of hazardous materials, such as fuels, lubricants, and cleaning solvents. All hazardous materials would be stored, handled and used in accordance with applicable regulations. Material Safety Data Sheets would be made available at the construction site for all crew workers.

The SWPPP prepared for the Proposed Project would provide the locations for storage of hazardous materials during construction, as well as protective measures, notifications,

Table 3.4 Estimated Land Disturbance

Project Feature	Number of Sites	Disturbed Acreage Calculation (L x W)	Acreage Disturbed during Construction	Acres to be Restored	Acres Permanently Disturbed
Substation Construction					
Substation	1	450' x 525'	5.4	0	5.4
Distribution Construction					
Getaway Duct Bank #1	1	60' x 1.7'	0.002	0.0	0.002
Getaway Duct Bank #2	1	40' x 1.7'	0.002	0.0	0.002
Connector Duct Bank	1	900' x 1.7'	0.04	0.0	0.04
Getaway Vaults 7' x 18' x 8'	2	18' x 7'	0.006	0.0	0.006
Nuevo and Model P.T. Decommissioning					
Nuevo and Model P.T. Parcel	1	294' x 125' x 330	0.68	0.0	0.68
115 kV Subtransmission Source Lines Construction					
Guard Structure	8	50' x75'	0.7	0.7	0.0
Removal of Existing Wood Poles*	10	50' x 50'	0.6	0.6	0.0
Construction of New TSP's**	17	200' x 100'	7.8	6.8	1.0
Construction of New Subtransmission Wood Poles**	73	150' x 75'	18.9	15.2	3.7
115 kV Conductor Stringing Setup Area-Puller***	4	200' x 100'	1.8	1.8	0.0
115 kV Conductor Stringing Setup Area-Tensioner***	4	200' x 100'	1.8	1.8	0.0
115 kV Conductor Splicing Setup Area***	4	150' x 100'	1.4	1.4	0.0
New Access Roads****	3	Linear miles x 14' wide	5.1.	0.0	5.1
Rehabilitation of Existing Access Roads	1.2	Linear miles x 14' wide	Up to 2.0	0.0	Up to 2.0
Material and Equipment Staging Area	1	2.00 to 5.00 acres	2.0-5.0	2.0-5.0	0.0

Project Feature	Number of Sites	Disturbed Acreage Calculation (L x W)	Acreage Disturbed during Construction	Acres to be Restored	Acres Permanently Disturbed
Telecommunications Construction					
Underground Duct Banks	3	18" x 500' 18" x 2000' 18" x 1450'	0.15	0.0	0.15
Pull Boxes and Manholes	5	**30' x 30'**	**0.02**	**0.0**	**0.02**
Material and Equipment Staging Area	1	1 acre	1.0	1.0	0.0
Rehabilitation of Existing Access Roads	8	Linear miles x 14'	7.75	0.0	7.75
Total Estimated			**65.12-68.15**	**31.3-34.3**	**33.85**

Notes:

* Includes the removal of existing conductor, teardown of existing structure and removal of wood poles.

** Includes structure assembly, erection and conductor installation. Inclusive of a portion of the ROW within 25' of the TSP and within 10' of the Wood Poles to remain cleared of vegetation. Permanently disturbed areas for TSP's is 0.06 acres and Wood Poles is 0.05 acres.

*** Based on 6,000' conductor reel lengths, number of circuits, and current preliminary design.

**** Based on the length of the road in miles multiplied by the access road width of 14'

and cleanup requirements for any incidental spills or other potential releases of hazardous materials.

3.6 Waste Management

Construction of the Proposed Project would result in the generation of various waste materials that can be recycled and salvaged. Waste items and materials would be collected by construction crews and separated into roll off boxes at the materials staging area. All waste materials that are not recycled would be categorized by SCE in order to assure appropriate final disposal. Non-hazardous waste would be transported to local waste management facilities. There are three waste management facilities located within 30 miles from the substation location[7].

Soil excavated for the Proposed Project would either be used as fill or disposed of offsite at an appropriately licensed facility.

3.7 Geotechnical Studies

SCE has conducted an initial geotechnical evaluation and would conduct further geotechnical studies of the substation site and the subtransmission source line segments prior to the start of construction. The geotechnical studies would include an evaluation of the water table depth, evidence of faulting, liquefaction potential, physical

[7] Information retrieved from the Non-Hazardous Soil/Concrete Disposal Facilities List dated 4-15-2009 prepared by SCE.

properties of subsurface soils, soil resistivity, slope stability, and the presence of hazardous materials.

3.8 Environmental Surveys

SCE has conducted an initial biological evaluation and would conduct further focused environmental surveys after project approval, but prior to the start of construction. Surveys would identify and/or address any potential sensitive biological and cultural resources in the vicinity of the Proposed Project, including the subtransmission source line routes, telecommunications routes, wire stringing locations, access roads, and marshalling yard(s). Where feasible, the information gathered from these surveys may be used to finalize project design in order to avoid sensitive resources, or to minimize the potential impact to sensitive resources from project-related activities. The results of these surveys would also determine the extent to which environmental specialist construction monitors would be required.

The following environmental surveys would occur prior to construction:

- Burrowing Owl. Protocol level surveys for burrowing owls would be conducted at the proposed Lakeview Substation and alternative substation site as well as the transmission line route and the alternative transmission line route. In addition to protocol level surveys, preconstruction clearance surveys for this species would be conducted two weeks prior to construction.

- Nesting Bird. If the project is scheduled to be constructed during the nesting season (February 15- September 15), a qualified Biologist will survey construction areas for active nests. If active nests are identified, construction activities will not occur within 200 feet of the active nest.

If sensitive biological resources are identified in preconstruction surveys, minimization or avoidance measures will be implemented. If avoidance is not feasible, SCE will work with the appropriate agencies to determine the mitigation measures that would reduce potential impacts to sensitive biological resources.

3.9 Worker Environmental Awareness Training

Prior to construction, a Worker Environmental Awareness Plan (WEAP) would be developed based on the final engineered design, the results of pre-construction surveys, and a list of mitigation measures, if any, developed by the CPUC to mitigate significant environmental effects of the Proposed Project. A presentation would be prepared by SCE and shown to all site personnel prior to the commencement of work. A record of all trained personnel would be kept with the construction foreman.

In addition to instruction on compliance with any additional site-specific biological or cultural resource protective measures and project mitigation measures developed after the pre-construction surveys, all construction personnel would also receive the following:

- A list of phone numbers of SCE environmental specialist personnel associated with the Proposed Project (archaeologist, biologist, environmental compliance coordinator, and regional spill response coordinator)

- Instruction on the South Coast Air Quality Management District Fugitive Dust and Ozone Precursor Control Measures

- Direction that site vehicles must be properly muffled

- Instruction on what typical cultural resources look like, and instruction that if discovered during construction, work is to be suspended in the vicinity of any find and the site foreman and archaeologist or environmental compliance coordinator is to be contacted for further direction

- Instruction on what typical biological resources look like, and instruction that if discovered during construction, work is to be suspended in the vicinity of any find and the site foreman and biologist or environmental compliance coordinator is to be contacted for further direction

- Instruction on the individual responsibilities under the Clean Water Act, the project SWPPP, site-specific BMP's, and the location of Material Safety Data Sheets for the project

- Instructions to notify the foreman and regional spill response coordinator in case of a hazardous materials spill or leaks from equipment, or upon the discovery of soil or groundwater contamination

- A copy of the truck routes to be used for material delivery

- 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.

3.10 Construction Equipment and Personnel

The estimated elements, materials and number of personnel and equipment required for construction of the Proposed Project are summarized in Table 3.5, Construction Equipment and Workforce Estimates.

Construction would be performed by either SCE construction crews or contractors. If SCE transmission and telecommunications construction crews are used they would be based at one of the SCE local facilities, such as the Menifee Service Center. Contractor construction personnel would be managed by SCE construction management personnel. SCE anticipates a total of approximately 40 construction personnel working on any given day. SCE anticipates that crews would work concurrently whenever possible; however, the estimated deployment and number of crew members would be dependent upon local jurisdiction permitting, material availability, and construction scheduling.

In general, construction efforts would occur in accordance with accepted construction industry standards.

Table 3.5 Construction Equipment and Workforce Estimates

Activity and Number of Personnel	Number of Work Days	Equipment and Quantity	Duration of Use (Hours)	Fuel Type
Substation Construction				
Survey (2 people)	10	2-Survey Trucks	8	Gasoline
Grading (15 people)	90	1-Dozer 2-Loader 1-Scraper 1-Grader 1-Water Truck 2-4X4 Backhoe 1-4X4 Tamper 1-Tool Truck 1-Pickup 4X4	4 4 3 3 2 2 2 2 2	Diesel Diesel Diesel Diesel Diesel Diesel Diesel Gasoline Gasoline
Civil (10 people)	60	1-Excavator 1-Foundation Auger 2-Backhoe 1-Dump truck 1-Skip Loader 1-Water Truck 2-Bobcat Skid Steer 1-Forklift 1-17 ton Crane 1-Tool Truck	4 5 3 2 3 3 3 4 2 hours/day for 45 days 3	Diesel Diesel Diesel Diesel Diesel Diesel Diesel Propane Diesel Gasoline
MEER (4 people)	20	1-Carry-all Truck 1-Stake Truck	3 2	Gasoline Gasoline
Electrical (10 people)	70	2-Scissor Lifts 2-Manlifts 1-Reach Manlift 1-15 ton Crane 1-Tool Trailer 2-Crew Trucks	3 3 4 3 3 2	Propane Propane Propane Diesel Gasoline
Wiring (5 people)	25	1-Manlift 1-Tool Trailer	4 3	Propane
Transformers (6 people)	30	1-Crane 1-Forklift 2-Crew Trucks 1-Low Bed Truck	6 6 2 4	Diesel Propane Gasoline Gasoline
Maintenance Crew Equipment Check (2 people)	30	2-Maintenance Trucks	4	Gasoline
Testing (2 people)	80	1-Crew Truck	3	Gasoline
Fencing (4 people)	10	1-Bobcat 1-Flatbed Truck 1-Crewcab Truck	8 2 4	Diesel Gasoline Gasoline
Asphalting (6 people)	15	2-Paving Roller 1-Asphalt Paver 1-Stake Truck 1-Tractor	4 4 4 3	Diesel Diesel Gasoline Diesel

Activity and Number of Personnel	Number of Work Days	Equipment and Quantity	Duration of Use (Hours)	Fuel Type
		1-Dump Truck 2-Crew Trucks 1-Asphalt Curb Machine	3 2 3	Diesel Gasoline Diesel
Landscaping (6 people)	15	1-Tractor 1-Dump Truck	6 3	Diesel Diesel
Irrigation – On-Site (7 people)	20	1 – Bobcat 1 – Power Trencher 1 – Crew Truck	8 8 8	Diesel Diesel Gasoline
Distribution Construction				
Civil	18	1- Backhoes 1- Dump Trucks 1- Roller 1- Delivery Truck (vault & pull box) 1- Cement Trucks	8 8 8 8 8	Diesel Diesel Diesel Diesel Diesel
Electrical	42	1- Rodder Truck 1- Cable Dolly 1- Reel truck 1- Linetruck 1- Troubleman Truck 1- Boom truck 1- Foreman truck	8 8 8 8 8 8 8	Diesel Diesel Diesel Diesel Diesel Diesel Gasoline
Nuevo Substation Decommissioning				
Civil (5 people)	5	1-Backhoe 2-Dump trucks 1-Water Truck 1-Bobcat Skid Steer 1-Tool Truck	40 20 20 30 10	Diesel Diesel Diesel Diesel Gasoline
Electrical (5 people)	7	2-Manlifts 1-15 ton Crane 1-Tool Trailer 2-Crew Trucks	60 40 5 2	Gasoline Diesel Gasoline Gasoline
Maintenance Crew Equipment Check (2 people)	2	1-Maintenance Truck	4	Gasoline
Testing (2 people)	2	1-Crew Truck	4	Gasoline
Model P.T. Substation Decommissioning				
Civil (5 people)	4	1- Backhoes 1- Dump Trucks 1- Flat bed Truck 1- Foreman truck	8 8 8 8	Gasoline Diesel Diesel Diesel
Electrical (5 people)	22	1- Wire Dolly 1- Linetruck 1- Troubleman Truck 1- Boom truck 1- Foreman truck 1- Crane 1- Flatbed 1- Pumper/tanker truck	8 8 8 8 8 8 8 8	Gasoline Diesel Diesel Diesel Gasoline Diesel Diesel Diesel

Activity and Number of Personnel	Number of Work Days	Equipment and Quantity	Duration of Use (Hours)	Fuel Type
115 kV Subtransmission Construction				
Survey (2 People)	5	½ Ton Pick Up Truck, 4x4	8	Gasoline
Marshalling Yard (4 People)	Duration of Project	1 Ton Crew Cab, 4x4 30 Ton Crane Truck 10,000lb Rough Terrain Fork Lift Truck, Semi, Tractor	2 2 5 1	Diesel Diesel Diesel Diesel
Right of Way Clearing (5 People)	14	1 Ton Crew Cab, 4x4 Road Grader Water Truck Backhoe/Front Loader Track Type Dozer Lowboy Truck/Trailer	8 6 8 6 6 4	Diesel Diesel Diesel Diesel Diesel Diesel
Roads & Landing Work (5 People)	20	1 Ton Crew Cab, 4x4 Road Grader Water Truck Backhoe/Front Loader Drum Type Compactor Track Type Dozer Excavator Lowboy Truck/Trailer	2 4 8 6 4 6 6 2	Diesel Diesel Diesel Diesel Diesel Diesel Diesel Diesel
Guard Structure Installation (6 People)	2	¾ Ton Pick Up Truck, 4x4 1 Ton Crew Cab Flat Bed, 4x4 Compressor Trailer Auger Truck Extendable Flat Bed Pole Truck 30 Ton Crane Truck 80 ft. Hydraulic Manlift/Bucket Truck Backhoe/Front Loader	6 6 6 6 6 8 4 6	Diesel Diesel Diesel Diesel Diesel Diesel Diesel Diesel
Remove Existing Wood Poles (6 People)	1	1 Ton Crew Cab, 4x4 10,000lb Rough Terrain Forklift 30 Ton Crane Truck Compressor Trailer Flat Bed Truck/Trailer Backhoe/Front Loader	5 4 6 6 8 6	Diesel Diesel Diesel Diesel Diesel Diesel
Install TSP Foundation (7 People)	34	1 Ton Crew Cab Flat Bed, 4x4 30 Ton Crane Truck Backhoe/Front Loader Auger Truck 4,000 Gallon Water Truck 10 cu. yd. Dump Truck 10 cu. yd. Concrete Mixer Truck	2 5 8 8 8 8 5	Diesel Diesel Diesel Diesel Diesel Diesel Diesel

Activity and Number of Personnel	Number of Work Days	Equipment and Quantity	Duration of Use (Hours)	Fuel Type
Install Subtransmission Wood Poles	19	¾ Ton Pick Up Truck, 4x4	5	Diesel
		1 Ton Crew Cab Flat Bed, 4x4	5	Diesel
(8 People)		Compressor Trailer	5	Diesel
		80 Ton Rough Terrain Crane	6	Diesel
		Backhoe/Front Loader	6	Diesel
Steel Pole Haul	5	¾ Ton Pick Up Truck, 4x4	5	Diesel
(4 People)		80 Ton Rough Terrain Crane	6	Diesel
		40’ Flat Bed Truck/ Trailer	8	Diesel
Steel Pole Assembly	6	¾ Ton Pick Up Truck, 4x4	5	Diesel
(8 People)		1 Ton Crew Cab Flat Bed, 4x4	5	Diesel
		Compressor Trailer	5	Diesel
		80 Ton Rough Terrain Crane	6	Diesel
Steel Pole Erection	6	¾ Ton Pick Up Truck , 4x4	5	Diesel
(8 People)		1 Ton Crew Cab Flat Bed, 4x4	5	Diesel
		Compressor Trailer	5	Diesel
		80 Ton Rough Terrain Crane	6	Diesel
Install Conductor	10	¾ Ton Pick Up Truck, 4x4	8	Diesel
(16 People)		1 Ton Crew Cab Flat Bed, 4x4	8	Diesel
		Wire Truck/Trailer	2	Diesel
		Dump Truck (trash)	2	Diesel
		Bucket Truck	8	Diesel
		22 Ton Manitex	8	Diesel
		Splicing Rig	2	Diesel
		Splicing Lab	2	Diesel
		3 Drum Straw Line Puller	6	Diesel
		Static Truck/Tensioner	6	Diesel
Guard Structure Removal	2	¾ Ton Pick Up Truck, 4x4	6	Diesel
(6 People)		1 Ton Crew Cab Flat Bed, 4x4	6	Diesel
		Compressor Trailer	6	Diesel
		Extendable Flat Bed Pole Truck	6	Diesel
		30 Ton Crane Truck 80 ft. Hydraulic	8	Diesel
		Manlift/Bucket Truck	4	Diesel
		Backhoe/Front Loader	6	Diesel

Activity and Number of Personnel	Number of Work Days	Equipment and Quantity	Duration of Use (Hours)	Fuel Type
Restoration (7 People)	4	1 Ton Crew Cab, 4x4 Road Grader Water Truck Backhoe/Front Loader Drum Type Compactor Truck Type Dozer Lowboy Truck/Trailer	2 6 8 6 6 6 3	Diesel Diesel Diesel Diesel Diesel Diesel Diesel
Telecommunications Construction				
Control Building Communications Room (4 people)	10 1	2- Van 1- Crew Truck	1 1	Gasoline Diesel
Overhead Cable Installation (6 people)	44	2- Bucket Trucks 1- Splice Lab Truck 1- Crew Truck	8 8 8	Diesel Diesel Diesel
Underground Facility Installation (6 people)	20	2- Crew Trucks 1- Backhoe 1- Flat Bed Truck 1- Stake Bed Truck 1- Concrete Mixer	8 8 2 8 8	Diesel Diesel Diesel Diesel Diesel
Underground Cable Installation (6 people)	6	2- Reel Trucks 1- Splice Lab Truck 1- Crew Truck	8 8 8	Diesel Diesel Diesel
Optical Systems at Other Locations (6 People)	12	6- Vans	2	Gasoline
Roads & Landing Work (5 People)	16	1 Ton Crew Cab, 4x4 Road Grader Water Truck Backhoe/Front Loader Drum Type Compactor Track Type Dozer Excavator Lowboy Truck/Trailer	2 4 8 6 4 6 6 2	Diesel Diesel Diesel Diesel Diesel Diesel Diesel Diesel

3.11 Construction Schedule

SCE anticipates that construction of the Proposed Project would take approximately 12 months. Construction would commence following CPUC approval, final engineering, and procurement activities.

3.12 Project Operation

Lakeview Substation would be unattended, and electrical equipment within the substation would be remotely monitored and controlled by an automated system from SCE's Valley Switching Center. SCE personnel would visit for electrical switching and routine maintenance purposes. Routine maintenance would include equipment testing, monitoring, and repair. SCE personnel would generally visit the substation three to four times per month.

The new 115 kV subtransmission lines would be maintained in a manner consistent with CPUC General Order 165. Normal operation of the 115 kV subtransmission lines would be controlled remotely through SCE control systems. SCE maintains an inspection frequency of the energized subtransmission overhead facilities a minimum of once per year via ground and/or aerial observation. Maintenance would occur as needed and would include activities such as repairing conductors, replacing insulators, replacing poles, and access road maintenance.

4.0 ENVIRONMENTAL IMPACT ASSESSMENT

This section examines the potential environmental impacts of the Proposed Project and alternatives. The analysis of each resource category begins with an examination of the existing physical setting (baseline conditions as determined pursuant to Section 15125(a) of the CEQA Guidelines) that may be affected by the Proposed Project. The effects of the Proposed Project are defined as changes to the environmental setting that are attributable to project construction and operation.

Significance criteria are identified for each environmental issue area. The significance criteria serve as a benchmark for determining if a project would result in a significant adverse environmental impact when evaluated against the baseline. According to the 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…" If significant impacts are identified, feasible Mitigation Measures are formulated to eliminate or reduce the level of the impacts and focus on the protection of sensitive resources.

CEQA Guidelines Section 15126.4(a)(3) states that mitigation measures are not required for effects which are not found to be significant. Therefore, where an impact is less than significant no mitigation measures have been proposed. In addition, compliance with laws, regulations, ordinances, and standards designed to reduce impacts to less than significant levels are not considered mitigation measures under CEQA. Where potentially adverse impacts may occur, SCE has proposed Applicant Proposed Measures (APMs) to minimize the environmental impacts.

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4.1 Aesthetics

This section examines the aesthetic nature of the Proposed Project area in order to determine how the Proposed Project would affect the visual character of the existing landscape. This chapter analyzes whether the project would alter the perceived visual character of the environment and cause visual impacts. Alternatives to the Proposed Project are also discussed.

4.1.1 Environmental Setting

Regional Setting

Aesthetic resources are generally defined as the natural and built features of the landscape that can be seen. Landforms, water, and vegetation patterns are among the natural landscape features that define an area's visual character, whereas buildings, roads and other structures reflect human modifications to the landscape. These natural and built landscape features are considered aesthetic resources that contribute to the public's experience and appreciation of the environment.

Riverside County encompasses 7,400 square miles from the Colorado River to within 14 miles of the Pacific Ocean (ESA, 2010). The western portion of the County is separated from the eastern portion by the San Jacinto and Santa Rosa Mountains. Several man-made lakes are located in the western portion of the County, including Lake Matthews, Lake Perris, Lake Skinner, Vail Lake, and Diamond Valley Lake. These lakes provide water storage and recreational uses. In recent years, the County has experienced substantial urbanization that has altered the regional character from a rural, inland desert area, to one of the major population centers of Southern California.

The dominant topographic features in the vicinity of the Proposed Project include the Bernasconi Hills southeast of Lake Perris and Mt. Russell to the north. The San Jacinto River corridor and adjacent agricultural lands are also prominent features in the landscape. The closest highway to the Proposed Project area is the Ramona Expressway, which is a County Eligible Scenic Highway.

Scenic highways are designated to preserve motorists' views of distinctive natural characteristics that are not typical of other areas in the County. The intent of scenic highway policies is to conserve significant scenic resources along scenic highways for future generations and to manage development along these highways and corridors so that it will not detract from the area's natural characteristics.

Proposed Project Area Setting

The Lakeview/Nuevo area is located in the central portion of western Riverside County and is bordered primarily by the City of Perris and the Lake Perris State Recreation Area to the west, Moreno Valley to the north, the cities of Hemet and San Jacinto to the east, and the Highway 74/79 region to the south (LSA Associates, 2000). The Lakeview/Nuevo area consists of three unincorporated communities: Lakeview, Nuevo, and Juniper Flats.

The Lakeview/Nuevo area contains a wide variety of geographic features, from low-lying valley floors to rolling hills and rocky, mountainous terrain, including large prominent rock outcroppings. Development around the area is primarily large lot rural residential, along with a small number of public facilities and scant commercial development. Large single-family residential lots can be found on many of the hillsides within the Lakeview/Nuevo area, affording many residents views of the surrounding valleys and mountains, including the Lakeview Mountains, Bernasconi Hills and the San Jacinto Wildlife Area. The community of Nuevo is located between the San Jacinto River on the west and the foothills of the Lakeview Mountains on the east (Riverside County, Undated).

Starting from Interstate 215 in the Perris Valley area, west of Lakeview/Nuevo, the Ramona Expressway runs in an east-west direction through the northern portion of the area, traveling eastward through the City of San Jacinto and terminating at Highway 74 in East Hemet. Driving along this roadway affords users views of the terrain of the Lakeview/Nuevo area.

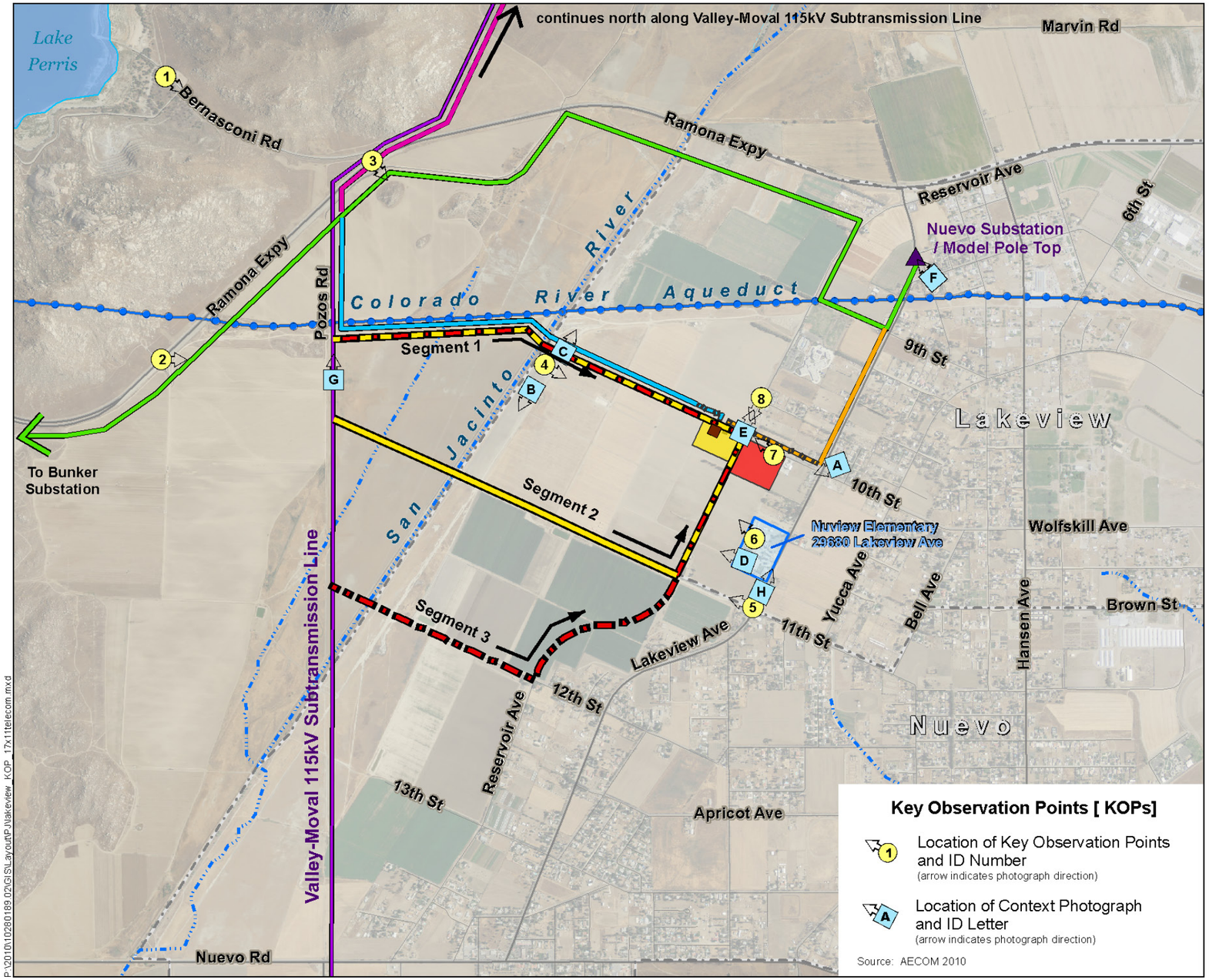
A scenic vista is a view of an area that is visually or aesthetically pleasing. Components of scenic vistas typically include scenic quality, high viewer sensitivity levels, and accessibility. The Lakeview/Nuevo area affords views of various scenic vistas of the natural and human-modified landscape. In the Proposed Project Area, views of surrounding mountains and rock outcroppings are backdrops to visually unobstructed areas of flat, expansive agricultural lands and groupings of mature trees. The color, texture and form of these natural and human-modified landscape features visually contrast, yet often complement each other. The brown tones of the dry rock outcroppings and mountain ranges contrast with the green, irrigated valley floor.

The Proposed Project Area also presents views of an eclectic mix of rural residential homes, scattered businesses and community facilities, and infrastructure that characterize the Lakeview/Nuevo community.

Visual Context and Key Observation Points

Photo documentation of the Proposed Project area was carried out in order to help convey an understanding of its existing visual character. Context photographs were taken from a variety of publicly accessible locations throughout the Proposed Project area, displaying a representative cross-section of Lakeview/Nuevo's existing visual character. Figure 4.1-1 documents the locations from which the context photographs were taken. The photographs include images of residential streets, agricultural and recreational areas, and can be seen in Figures 4.1-2 through 4.1-5.

Other photographs were selected to establish Key Observation Points (KOPs) for the purpose of performing a visual simulation analysis. The KOPs are located in publicly accessible areas with views of the Proposed Project area. These locations show views from the Ramona Expressway, San Jacinto River trail, the entrance leading to the Lake Perris State Recreation Area, a school parking lot, and local streets and intersections. Visual simulations were prepared for views from KOP locations, illustrating the potential visual effects of the Proposed Project's facilities on viewers at these locations. The visual simulations present computer-generated, photo-realistic images of the Proposed Project's facilities as they would appear from each KOP. Figure 4.1-1 identifies the location of the KOPs used in the visual simulation analysis. The "before project" and "after project" images of the Proposed Project Area are shown in Figures 4.1-6a through 4.1-13b.



Lakeview Substation Project

Fig. 4.1-1
Locations of Key Observation Points (KOPs) and Context Photographs

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

- Pull box

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities

Source: NAIP, 2009; NavTeq, SCE, AECOM 2010

0 1,000 2,000 3,000 4,000
Feet



SOUTHERN CALIFORNIA EDISON

5/27/2010



A: Nuview Library



B: San Jacinto River Corridor

Figure 4.1-2 Context Photos A and B



C: San Jacinto River Corridor



D: Agricultural Land and Bernasconi Hills

Figure 4.1-3 Context Photos C and D



E: Reservoir Avenue and 10th Street Residences



F: Nuevo Substation

Figure 4.1-4 Context Photos E and F



G: Subtransmission Line along Pozos Road



H: Lakeview Avenue near Nuview Elementary School

Figure 4.1-5 Context Photos G and H

Proponent's Environmental Assessment
LAKEVIEW SUBSTATION PROJECT

KOP 1
Viewshed from Bernasconi Road



Figure 4.1-6a KOP 1 – Existing View from Bernasconi Road near entrance to Lake Perris State Recreation Area, looking southeast



Figure 4.1-6b KOP 1 – Simulated View from Bernasconi Road near entrance to Lake Perris State Recreation Area, looking southeast

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LAKEVIEW SUBSTATION PROJECT

KOP 2
Viewshed from Ramona Expressway



Figure 4.1-7a KOP 2 – Existing View from Ramona Expressway, looking east



Figure 4.1-7b KOP 2 – Simulated View from Ramona Expressway, looking east

Proponent's Environmental Assessment
LAKEVIEW SUBSTATION PROJECT

KOP 3
Viewshed from Ramona Expressway



Figure 4.1-8a KOP 3 – Existing View from Ramona Expressway (at intersection of Bernasconi Road), looking southeast



Figure 4.1-8b KOP 3 – Simulated View from Ramona Expressway (at intersection of Bernasconi Road), looking southeast

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KOP 4
Viewshed from San Jacinto River



Figure 4.1-9a KOP 4 – Existing View from informal recreational trail along San Jacinto River, facing east

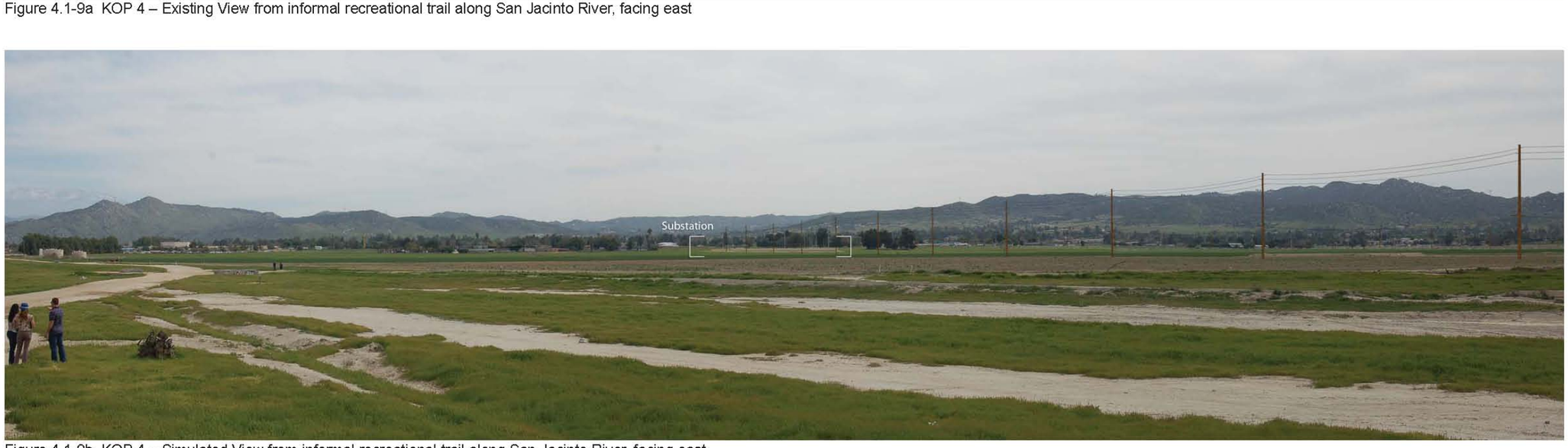


Figure 4.1-9b KOP 4 – Simulated View from informal recreational trail along San Jacinto River, facing east

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LAKEVIEW SUBSTATION PROJECT

KOP 5
View from Lakeview Avenue/11th Street Intersection



Figure 4.1-10a KOP 5 – Existing View from Lakeview Avenue/11th Street Intersection, looking west



Figure 4.1-10b KOP 5 – Simulated View from Lakeview Avenue/11th Street Intersection, looking west

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LAKEVIEW SUBSTATION PROJECT

KOP 6
View from Nuview Elementary School



Figure 4.1-11a KOP 6 – Existing View from Nuview Elementary School, looking northwest



Figure 4.1-11b KOP 6 – Simulated View from Nuview Elementary School, looking northwest

Proponent's Environmental Assessment
LAKEVIEW SUBSTATION PROJECT

KOP 7
View from 10th Street



Figure 4.1-12a KOP 7 – Existing View traveling west along 10th Street

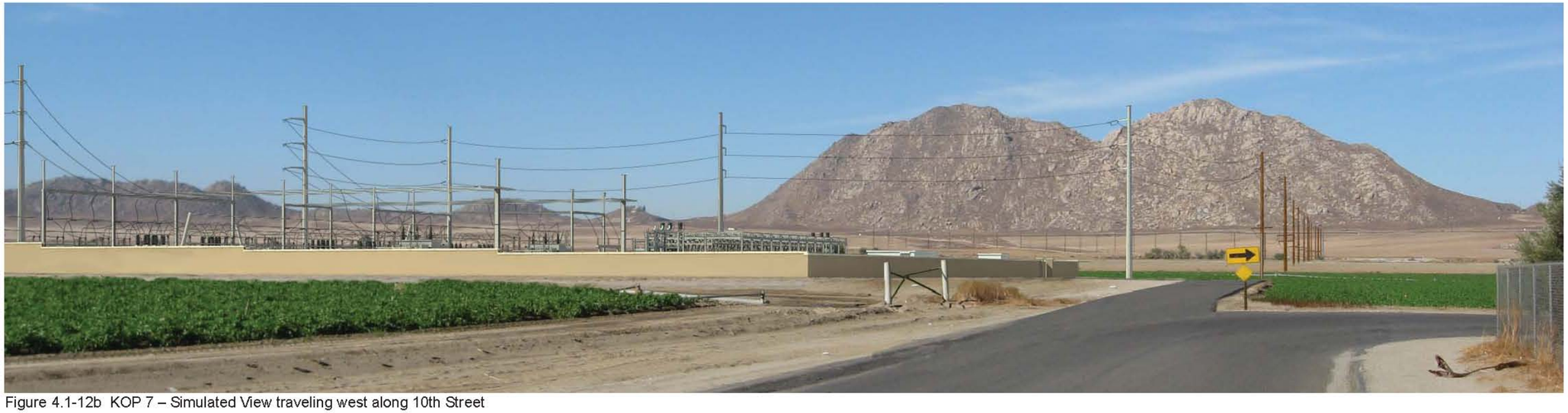


Figure 4.1-12b KOP 7 – Simulated View traveling west along 10th Street

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LAKEVIEW SUBSTATION PROJECT

KOP 8
View from Reservoir Avenue



Figure 4.1-13a KOP 8: Existing View traveling south on Reservoir Avenue



Figure 4.1-13b KOP 8 – Simulated View traveling south on Reservoir Avenue

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4.1.2 Regulatory Setting

There are no federal or state regulations, other than the California Environmental Quality Act (CEQA), related to aesthetics and visual resources that apply to the Proposed Project.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) has sole and exclusive jurisdiction over the siting and design of the project because the CPUC regulates and authorizes the construction of investor-owned public utility (IOU) facilities. Although such projects are exempt from local land use and zoning regulations and permitting, General Order No. 131-D, Section III.C requires "the utility to communicate with, and obtain the input of, local authorities regarding land-use matters and obtain any non-discretionary local permits." As part of its environmental review process, SCE considered aesthetic resource policies from the County of Riverside General Plan and the Lakeview/Nuevo Area Plan.

County of Riverside General Plan

Multipurpose Open Space Element

Scenic Resources

Scenic resources are an important quality of life component for residents of Riverside County (Riverside County, 2003a). In general, scenic resources include areas that are visible to the general public and are considered visually attractive. In addition to scenic corridors described below, scenic resources include natural landmarks and prominent or unusual features of the landscape. For example, Santa Rosa National Monument includes mountains or other natural features with high scenic value. Scenic backdrops include hillsides and ridges that rise above urban or rural areas or highways. Scenic vistas are points, accessible to the general public, that provide a view of the countryside. The following policies intend to protect these resources and ensure that future development enhances them. The following Multipurpose Open Space Element policy is relevant to the Proposed Project's aesthetic considerations:

Policy OS 21.1 Identify and conserve the skylines, view corridors, and outstanding scenic vistas within Riverside County.

Scenic Corridors

Many roadway corridors in Riverside County traverse its scenic resources. Enhancing aesthetic experiences for residents and visitors to the County promotes tourism, which is important to the County's overall economic future. Enhancement and preservation of the County's scenic resources will require careful application of scenic highway standards along Official Scenic Routes.

State and County Eligible and Designated Scenic Highways are included and mapped in the General Plan, as well as in the Area Plans where scenic corridors are located. The following Multipurpose Open Space Element policies to protect and maintain resources

in corridors along scenic highways are relevant to the Proposed Project's aesthetic considerations:

Policy OS 22.1 Design developments within designated scenic highway corridors to balance the objectives of maintaining scenic resources with accommodating compatible land uses.

Policy OS 22.3 Encourage joint efforts among federal, state, and county agencies, and citizen groups to ensure compatible development within scenic corridors.

Policy OS 22.4 Impose conditions on development within scenic highway corridors requiring dedication of scenic easements consistent with the Scenic Highways Plan, when it is necessary to preserve unique or special visual features.

Land Use Element

Riverside County contains abundant natural visual resources, including low-lying valleys, mountain ranges, rock formations, rivers, and lakes (Riverside County, 2003b). These features are often enjoyed via the County's many roadways. Due to the visual significance of many of these areas, several roadways have been officially recognized as either Eligible or Designated State or County Scenic Highways. These roadways are depicted in the Circulation Element as well as within each of the 19 area plans, where applicable. The intent of the Land Use Element policies is to conserve significant scenic resources along designated scenic highways for future generations and to manage development along scenic highways and corridors so as not to detract from the area's scenic quality. The following Land Use Element policies are relevant to the Proposed Project's aesthetic considerations:

Policy LU 13.1 Preserve and protect outstanding scenic vistas and visual features for the enjoyment of the traveling public.

Policy LU 13.3 Ensure that the design and appearance of new landscaping, structures, equipment, signs, or grading within Designated and Eligible State and County Scenic Highway corridors are compatible with the surrounding scenic setting or environment.

Policy LU 13.5 Require new or relocated electric or communication distribution lines, which would be visible from Designated and Eligible State and County Scenic Highways, to be placed underground.

Policy LU 13.8 Avoid the blocking of public views by solid walls.

Circulation Element

Many corridors in Riverside County traverse its scenic resources (Riverside County, 2003c). Enhancing aesthetic experiences for residents and visitors to the County has a significant role in promoting tourism, which is important to the County's overall economic future. Due to the visual significance of some of these areas within the County, several roadways have been officially recognized as either Eligible or Designated State or County Scenic Highways. Enhancement and preservation of the County's scenic resources will require careful application of scenic highway standards along Official Scenic Routes. The following Circulation Element policies are relevant to the Proposed Project's aesthetic considerations:

Policy C 19.1 Preserve scenic routes that have exceptional or unique visual features in accordance with Caltrans' Scenic Highways Plan.

Policy C 25.2 Locate new and relocated utilities underground when possible. All remaining utilities shall be located or screened in a manner that minimizes their visibility by the public.

Mount Palomar Nighttime Lighting Policy

The Proposed Project area falls within the Mount Palomar Nighttime Lighting Policy Area. The Mount Palomar Observatory is located in San Diego County approximately 34 miles from the Proposed Project (Google Earth Website, 2010). The observatory requires unique nighttime lighting standards in order to allow the night sky to be viewed clearly. All areas within a 15 to 45 mile "Ring Analysis" area of the observatory must conform with the nighttime lighting regulations that apply to Zone B in the County of Riverside General Plan (ESA, 2010). The Proposed Project must adhere to the lighting requirements of Riverside County Ordinance No. 655 for standards that are intended to limit light leakage and spillage that may interfere with the operations of the Mount Palomar Observatory. The ordinance lists permitted lighting fixtures and uses. The ordinance also requires that temporary uses of lights for construction obtain approval from the County.

Lakeview/Nuevo Area Plan

The Ramona Expressway is identified as a County Eligible Scenic Highway in the Lakeview/Nuevo Area Plan (Riverside County, Undated). The Ramona Expressway serves as a major entrance to Lake Perris, one of the County's most important recreation areas. It passes the Bernasconi Hills, San Jacinto River, Mystic Lake corridor, San Jacinto Wildlife Area, and agricultural land, and provides a link with the Pines-to-Palms Highway, which is a State Designated Scenic Highway. The following Lakeview/Nuevo Area Plan policy is relevant to the Proposed Project's aesthetic considerations:

Policy LNAP 10.1 Protect the scenic highways in the Lakeview/Nuevo planning area from change that would diminish the aesthetic value of views of the Bernasconi Hills, the San Jacinto River, the Mystic Lake Corridor, and the San Jacinto Wildlife Area in accordance with the Scenic Highways section of the General Plan Land Use, Multipurpose Open Space, and Circulation Elements.

4.1.3 Significance Criteria

The significance criteria for assessing the impacts to aesthetics come from the CEQA Environmental Checklist. According to the CEQA Checklist, a project would cause a potentially significant impact 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

- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area

4.1.4 Impact Analysis

The visual analysis was based on:

- Local planning documents
- Field observations of the Proposed Project area conducted in October 2009 and March 2010
- Ground-level photographs
- Key Observation Points
- Computer-generated, photo realistic visual simulations of the Proposed Project
- Assessing the magnitude of the changes to the existing visual baseline posed by the Proposed Project

The study was designed to respond to the CEQA Guidelines, Appendix G for visual impact analysis, which emphasize the protection of established scenic resources and existing visual characteristics of a project area.

Consideration was given to the following factors in determining the extent and implications of the visual changes:

- Specific changes in the landscape's visual composition, character, and any specially valued qualities
- The visual context (what surrounds the Proposed Project area)
- The extent to which the affected environment contains places or features that have been designated in government plans for visual protection or special consideration
- The effects on landscapes visible from public viewpoints

The visual analysis focuses on the Proposed Substation and Subtransmission Source Line Route, as these would be entirely new structures in the landscape. The Proposed Telecommunication components would be co-located on existing poles or underground (see Chapter 3, section 3.1.2 Telecommunications Description for proposed overhead and underground locations) and thus would have minimal visual impact. They are not discussed further in this analysis.

No Impact

Implementation of the Proposed Project would result in no impact for the following CEQA criterion during construction and operation:

Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

There would be no impact to designated state scenic highways, as there are none in the Proposed Project area.

Construction Impacts

Construction of the Proposed Project has the potential to result in impacts for the following CEQA criteria:

Would the project have a substantial adverse effect on a scenic vista?

While there are no officially designated scenic vista points in the Proposed Project area, the Ramona Expressway is designated as a local scenic highway by Riverside County. As shown in Figure 4.1-7b, KOP – Simulated View from Ramona Expressway, looking east, construction activities at the Proposed Substation would be barely visible in the distance from the Ramona Expressway. Construction activities associated with the Proposed Subtransmission Source Line would be more visible because of the closer proximity, but still would not be highly prominent in the landscape. However, construction of the Proposed Project is only expected to last approximately 12 months, and visual impacts from construction activities (e.g., installation of equipment, movement of supplies, presence of trucks and work crews) would be temporary. Thus the visual impacts on the Ramona Expressway resulting from Proposed Project construction activities would be less than significant.

Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Visual impacts of construction activities would vary, depending on proximity of the viewer. However, construction of the Proposed Project is expected to last approximately 12 months. Visual impacts from construction activities would be temporary, and therefore less than significant.

Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Under normal circumstances, construction of the Proposed Project would occur during daylight hours over the course of approximately 12 months. However, there is a possibility that construction would occur at night, and temporary artificial illumination would be required. Lighting would be used to protect the safety of the construction workers, but lights would be oriented to minimize their effect on any nearby receptors and the Mount Palomar Observatory.[1] Although the Proposed Project Area is located

[1] Ordinance No. 655, An Ordinance of the County of Riverside Regulating Light Pollution.

within the 45-mile "Ring Analysis" area for impacts to Mount Palomar Observatory, extensive nighttime lighting is not anticipated or proposed during construction, and impacts would be less than significant.

Operation Impacts

Operation of the Proposed Project has the potential to result in impacts for the following CEQA criteria:

Would the project have a substantial adverse effect on a scenic vista?

While there are no officially designated scenic vista points in the Proposed Project area, the Ramona Expressway is identified as a local scenic highway by Riverside County. As shown in Figure 4.1-7b, KOP 2 – Simulated View from Ramona Expressway, looking east, the Proposed Substation would be barely visible in the distance from the Ramona Expressway. The Proposed Subtransmission Source Line would be more visible because of the closer proximity to the Expressway, but still would not be highly prominent in the landscape. The Subtransmission Source Line would not obstruct the views of the valley or mountain ranges in the distance. The visual impact would be less than significant.

Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Implementation of the Proposed Project would result in construction of a new electrical substation and associated transmission lines on a site previously used for agricultural purposes and undeveloped open space (i.e., the San Jacinto River Corridor). The terrain of the area is open and flat, and is surrounded in the distance by rock outcroppings and mountains. The area immediately south and east of the Proposed Project area is characterized by a rural community development pattern.

The Proposed Project would introduce new features (Proposed Substation and Proposed Subtransmission Source Lines) into the Proposed Project area that would result in different levels of change to existing views, depending on their proximity. Visual simulations were produced to facilitate this analysis and represent a range of viewpoints in the area.

Figure 4.1-6, KOP 1 – View from Bernasconi Road near entrance to Lake Perris State Recreation Area

While the Proposed Substation would be barely noticeable, the Proposed Subtransmission Source Lines would moderately degrade the view of the valley from this elevated location, as the new lines, in addition to a number of existing transmission lines, would further clutter the view of the valley landscape below.

Figure 4.1-7 KOP 2 and Figure 4.1-8 KOP 3 – Views from Ramona Expressway

As shown in these two KOPs, the Proposed Substation would be barely visible in the distance from the Ramona Expressway. The Proposed Subtransmission Source Line would be more visible because of the closer proximity to the Expressway, but still would not be highly prominent in the landscape. The Subtransmission Source

Line would not block the views of the valley or mountain ranges in the distance. The visual impact would be less than significant.

Figure 4.1-9 KOP 4 View from Informal Recreational Trail along San Jacinto River

The San Jacinto River corridor is used as an informal recreational trail, and is essentially dry, contributing little or no flow. Visual impacts would be mainly localized where the Proposed Subtransmission Source Lines would cross the river. However, it would not obstruct views of the surrounding mountains. The Proposed Substation would not significantly degrade the visual character of the river corridor, as it would have a low profile and would sit close to existing buildings. Overall, the visual impact on the San Jacinto River corridor would be less than significant. (It should be noted that the Riverside County Lakeview/Nuevo Area Plan [2003b and d] discusses proposals to channelize the river to provide for flood control and future development of the area. Paved multiuse trails are also envisioned on both sides of the river in this future scenario.)

Figure 4.1-10 KOP 5 View from Lakeview Avenue / 11th Street Intersection

The Proposed Project would have a less than significant visual impact from this local street intersection. Existing infrastructure, tree groupings, irrigated agricultural land, and the Bernasconi Hills remain the dominant features from this viewpoint.

Figure 4.1-11 KOP 6 View from Nuview Elementary School

The view from this elementary school, located at the edge of town, is dominated and characterized by the wide open agricultural lands in the foreground and the Bernasconi Hills in the background. While those would remain the dominant elements in the landscape, the Proposed Project elements would have the effect of creating clutter in the landscape, detracting from the stark simplicity of the view. However, the existing bus parking yard and chain link fence also detract. Overall, the visual impact is less-than-significant.

Figures 4.1-12 and 4.1-13 KOPs 7 and 8 – Views from 10th Street and Reservoir Avenue

As shown in these two visual simulations, as seen from close range, the Proposed Project would substantially degrade the existing visual character of the site (i.e., by residents across the street and by people traveling on 10th Street and Reservoir Avenue). The intersection of Reservoir Avenue and 10th Street is not highly traveled. Furthermore, most people passing through the area experience these views from a vehicle and pass by this area in a short amount of time. Although the Proposed Project is visually prominent when viewed from close range, it still does not block out views of the Bernasconi Hills. The low profile design of the substation equipment and perimeter wall are intended to minimize visual impacts. Similarly, locating the Proposed Substation at the outer edge of town helps minimize visual impacts on the local community by not placing it in the center of town. When seen up close the visual impact of the Proposed Substation and Subtransmission Source Line is substantial and has the potential to cause a significant impact, however SCE

proposes to implement APM Aesthetics 1, seen below, to mitigate the potential impact to less than significant.

Applicant Proposed Measure Aesthetics 1: SCE will prepare a landscaping plan consistent with Riverside County standards, as well as SCE standards, to filter views of the substation for the surrounding community and other potential sensitive receptors.

With implementation of APM Aesthetics 1, the visual impact at close range would be less than significant.

Part of the Proposed Project would involve decommissioning the existing Nuevo Substation and Model Pole Top (a photograph of this facility is shown in a context photograph; please see figure 4.1-4F). This action would result in removal of existing electrical equipment/infrastructure that would no longer be needed once the Proposed Project is implemented. Removal of this material would leave the Nuevo Substation site in a less developed state, thereby rendering more visually compatible with its immediate surroundings. This would be a beneficial impact of the Proposed Project.

Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

The Proposed Subtransmission Source Lines would not require lighting, and therefore, would not cause impacts from light or glare. Lighting at the proposed Lakeview Substation would consist of high-pressure sodium lights located in the switchyards, around the transformer banks, and in areas of the yard where operating and maintenance activities may take place during evening hours for emergency/scheduled work. Maintenance lights would be controlled by a manual switch and would normally be in the "off" position. A beacon light, indicating the operation of the rolling gate, would automatically turn on once the gate opens and turn off when the gate is closed. Given that the Proposed Lakeview Substation would be an unstaffed facility (i.e., no permanent on-site personnel), lighting at the site during operation would be minimal, if any, and would be directed downward and shielded to reduce glare outside the facility. During occasional maintenance or emergencies at night, maintenance lights would manually be turned on, but would be used only temporarily.

Thus, operation of the Proposed Substation would not create a new source of substantial light or glare, nor would it adversely affect use of the Mount Palomar Observatory, which is located approximately 34 miles away. Impacts would be less than significant.

4.1.5 Applicant Proposed Measures

SCE proposed the following APM to minimize impacts to aesthetics.

Applicant Proposed Measure Aesthetics 1: Landscaping Plan

SCE will prepare a landscaping plan consistent with Riverside County standards, as well as SCE standards, to filter views of the substation for the surrounding community and other potential sensitive receptors.

4.1.6 Alternative Substation Site

The Alternative Substation Site is located on an approximately six-acre portion of an 11.83-acre privately owned parcel that is currently being used for agricultural activities. The parcel is located across Reservoir Avenue from the Proposed Substation Site, at the southeast corner of Reservoir Avenue and 10th Street. The visual character of the Alternative Substation Site is very similar to that of the Proposed Project Area.

The Alternative Substation Site is geographically very close to the Proposed Substation Site. Therefore, the visual effect of placing the substation on the Alternative Substation Site would differ minimally compared to the visual effect that would result from its establishment at the Proposed Substation Site. In addition, the substation's design would remain largely the same whether it is located at the Proposed Substation Site or the Alternative Substation Site. For these reasons, visual impact determinations associated with the Proposed Project would similarly apply to the Alternative Substation Site. Impacts would be potentially significant when seen up close from 10th Street and Reservoir Avenue.

4.1.7 Alternative Subtransmission Source Line Route

Though the Alternative Subtransmission Source Line's physical specifications would be the same as those of the Proposed Subtransmission Source Line (poles of equal height, similar spacing between poles, etc.), the alternative route would result in an overall larger area coverage by the project's facilities. By comparison, the Proposed Project's facilities would be more narrowly dispersed, resulting a smaller "visual footprint". Therefore, the Alternative Subtransmission Source Line Route is not preferable to the Proposed Subtransmission Source Line Route alignments. Although Alternative Subtransmission Source Line Route is not preferable to the Proposed Project, impacts would still be less than significant.

4.1.8 References

Environmental Science Associates (ESA). 2010. Perris Dam Remediation Program Environmental Impact Report. January 2010.

Google Earth. 2010. Distance Calculation from Nuevo to Mount Palomar Observatory. [online] http://earth.google.com/ [cited March 2010].

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Riverside County. 2003c. County of Riverside General Plan: Circulation Element. [online] http://www.rctlma.org/genplan/content/gp/chapter04.html#TOC2_6 [cited March 2010].

Riverside County. 2003d. Riverside County Integrated Project, Lakeview/Nuevo Area Plan. [online] http://www.rctlma.org/genplan/content/ap2/lnap.html [cited March 2010].

4.2 Agriculture and Forestry Resources

This section describes the agricultural and forestry resources in the area of the Proposed Project and analyzes the potential impacts from construction and operation of the Proposed Project, the Alternative Substation Site and Alternative Subtransmission Source Line Route.

4.2.1 Environmental Setting

Agriculture remains a strong component in Riverside County's economy and competes successfully in the global agricultural market. According to the annual Riverside County Crop Report, agricultural production accounted for an estimated $1,268,589,900 in 2008. The primary agricultural products produced in Riverside County include nursery stock, milk, eggs, table grapes, and hay. Nursery stock is the number one crop produced in Riverside County (Riverside County, 2008a). In addition to cultivated areas, there are an estimated 111,695 acres used as grazing lands (CDC, 2006).

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 has modified the classifications for Prime Farmland and Farmland of Statewide Importance by including the requirement that these lands be irrigated (CDC, 2006).

Approximately 23 percent of the land in Riverside County is classified as Farmland by the California Department of Conservation. The categories comprising the Farmland classification are summarized in Table 4.2.1, Summary of Farmland in Riverside County.

Table 4.2.1 Summary of Farmland in Riverside County

Category	Inventoried Acreage in Riverside County	Percent of Total Acreage in Riverside County
Prime Farmland	128,505	6.6
Farmland of Statewide Importance	46,916	2.4
Unique Farmland	37,949	1.9
Farmland of Local Importance	231,085	11.9
Important Farmland TOTAL	444,455	22.9

Source: CDC, 2006

State-designated farmlands noted in the project area are based on the California Department of Conservation (CDC) Farmland Mapping and Monitoring Program (FMMP) (CDC, 2007a), as shown in Figure 4.2-1, Farmland & Agricultural Preserves.

Proposed Substation Site

The Proposed Project Study Area and surrounding region include both farm and built-up/developed lands. The parcel of land where the Proposed Substation Site would be located is currently designated by the CDC FMMP as Prime Farmland. Prime Farmland is defined by the CDC as having been used for irrigated agricultural production at some time during the four years prior to the Important Farmland Map date. Irrigated land use is determined by FMMP staff by analyzing current aerial photos, local comment letters, and related GIS data, supplemented with field verification. Prime Farmland also meets specific soil requirements as defined by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS).

The Proposed Substation Site is located on a 5.4-acre portion of a 36.2-acre parcel that was previously used for agricultural activities, although it is designated by the County of Riverside General Plan as Medium Density Residential (MDR). This parcel was formerly privately owned; however, Southern California Edison (SCE) purchased and now owns the 5.4-acre portion of the property. A site visit has confirmed that the Proposed Substation Site is no longer actively used for agricultural production. Additional information concerning land use is provided in Section 4.10, Land Use and Planning.

The Proposed Substation Site is located within the Lakeview Area Zoning District of Riverside County and is designated as Rural Residential (R-R), which allows for public utility use. Additional information regarding zoning is provided in Section 4.10, Land Use and Planning. Lands zoned for agriculture, and other uses, are shown in Figure 4.2-2, Zoning.

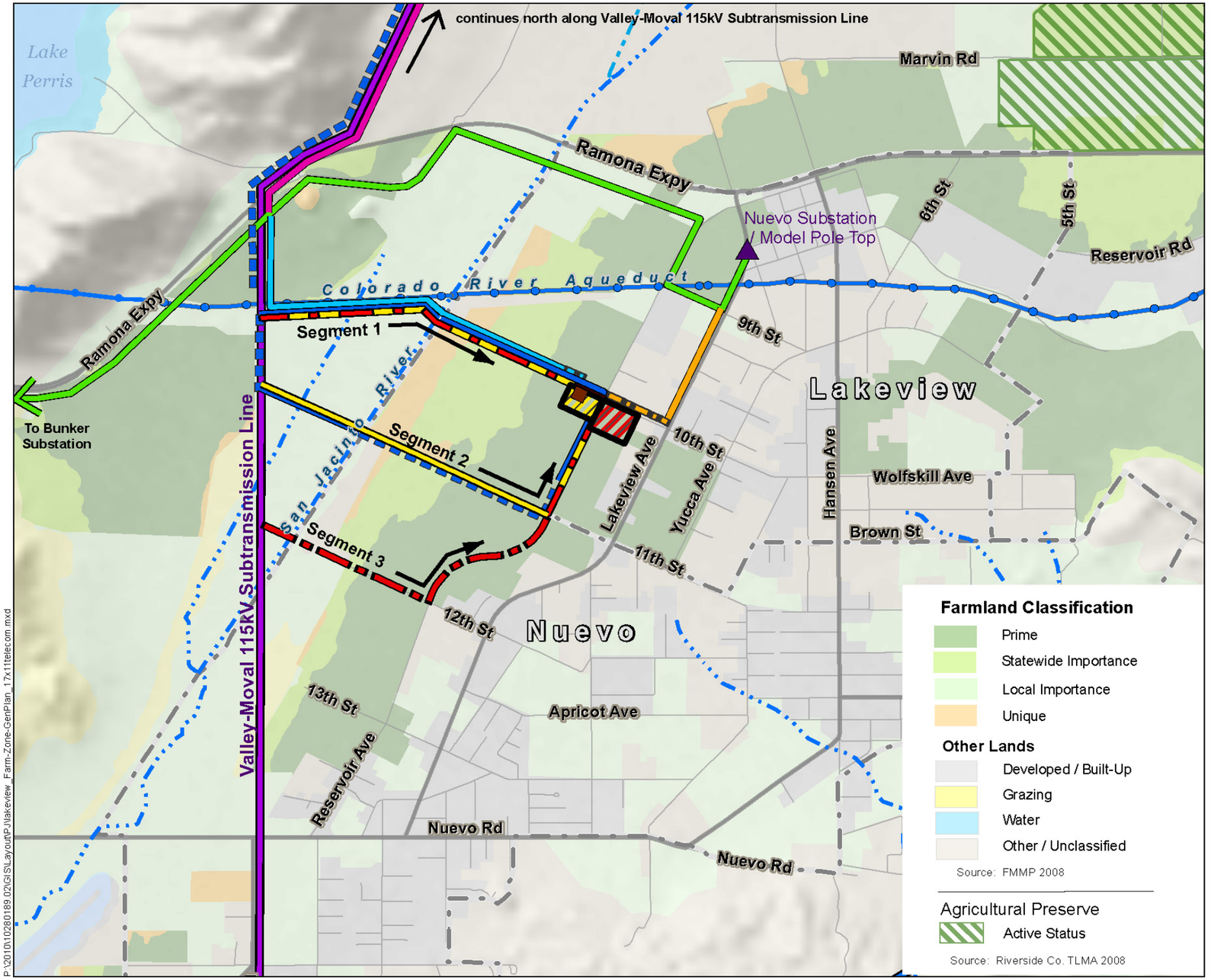
Proposed Subtransmission Source Line Route Segment One

The Proposed Subtransmission Source Line Route Segment One traverses approximately 1.5 miles of land and crosses lands identified by the FMMP as Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland. No portion of Segment One would cross lands in agricultural preserve status.

The Proposed Subtransmission Source Line Route Segment One travels through the Lakeview Area Zoning District of Riverside County, including lands designated as Rural Residential (R-R) and Residential Agriculture (R-A) (Riverside County, 2007). Additional information on zoning is provided in Section 4.10, Land Use and Planning.

Proposed Subtransmission Source Line Route Segment Two

The Proposed Subtransmission Source Line Route Segment Two traverses approximately 1.8 miles of land and crosses lands identified by the FMMP as Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland. No portion of Segment Two would cross lands in agricultural preserve status and Segment Two traverses the same types of zoning designations as Segment One.



Lakeview Substation Project

Figure 4.2-1
Farmland & Agricultural Preserves

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

- Pull box
- New Access Road
- Potential Rehabilitated Access Road

Existing Features

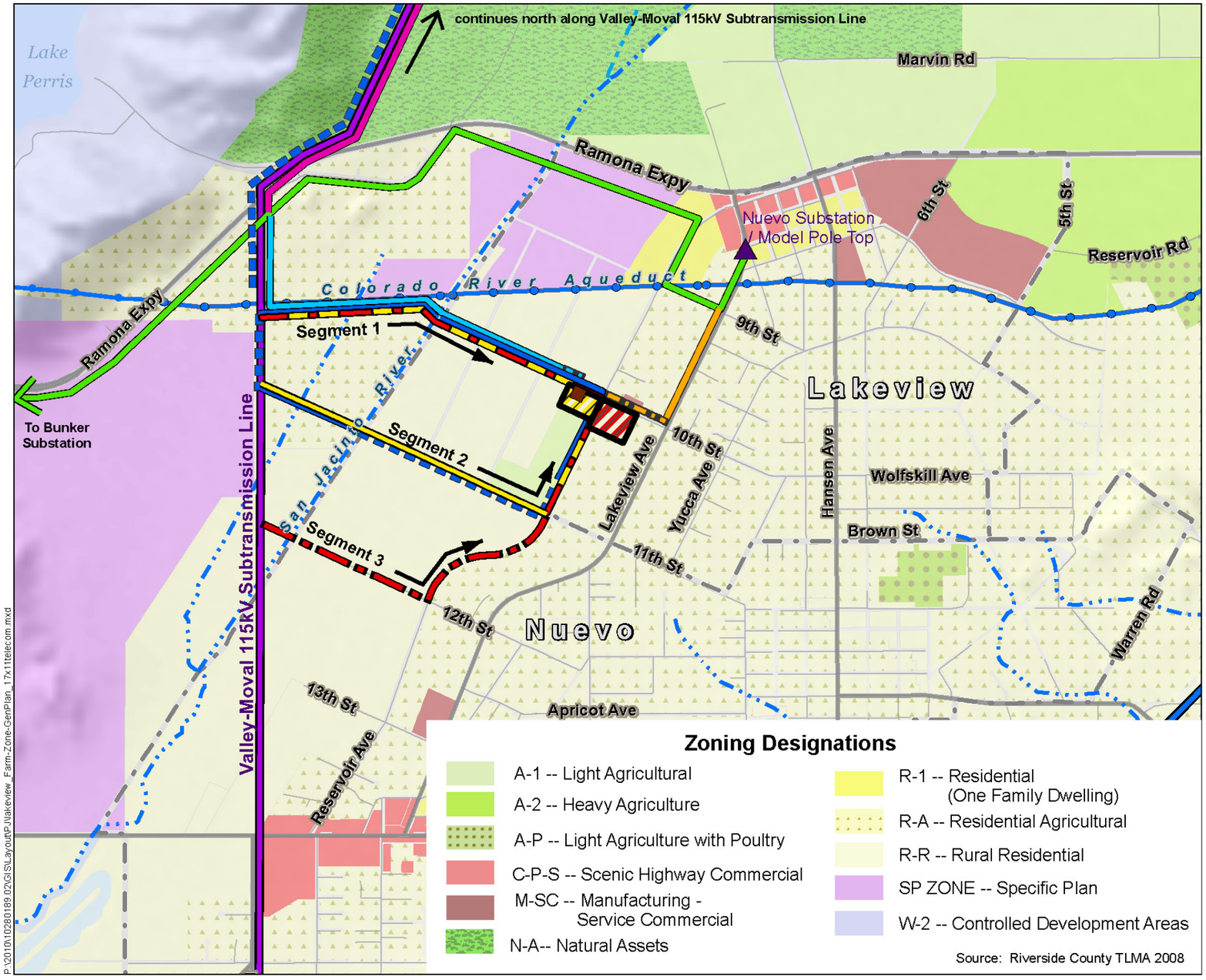
- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities

Sources: NavTeq, SCE, AECOM 2010

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5/27/2010



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Lakeview Substation Project

Figure 4.2-2
Zoning

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead / Underground

- Proposed Segment 1
- Proposed Segment 2
- Proposed Segment 3
- Pull box

- New Access Road
- Potential Rehabilitated Access Road

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities

Sources: NavTeq, SCE, AECOM 2010

0 2,000 4,000 6,000 Feet



SOUTHERN CALIFORNIA EDISON

5/27/2010

Please refer to Figure 4.2-1, Farmland & Agricultural Preserves, which shows the alignments for the Proposed Subtransmission Source Line Route, Segments One and Two, and the types of farmland they traverse.

Telecommunication Facilities

Facilities related to telecommunications will also be constructed as part of the Proposed Project including duct banks, pull boxes and manholes). These facilities will be located within the proposed substation site footprint.

Farmland Disturbance

Land disturbance for the Proposed Project would include surface modifications for the installation of access roads, 115 kV subtransmission lines, telecommunication lines and the substation. It is estimated that the total permanent land disturbance for the Proposed Project would be approximately 33 acres. It is estimated that the Proposed Project would temporarily disturb approximately 64 to 67 acres of land.

Of this total number of acres of land disturbed in the Project Area, approximately 13.5 acres would be farmland. The estimated amount of farmland disturbance for each project feature is summarized in Table 4.2.2, Estimated Disturbed Farmland. The calculations used to estimate farmland disturbance are approximate and are based on the following methodology:

- Mapping of the Proposed Substation Site, access roads, subtransmission source line routes and telecommunications route

- The assumption that the distribution of source line poles are evenly placed along the entire transmission corridor (exact pole placement will not be determined until final engineering)

- GIS analysis of AECOM-digitized data from sketches provided by SCE of both new access roads and potentially rehabilitated access roads. It was assumed the three segments of new access roads totaled approximately 11,572.4 feet (2.2 miles). Based on an assumed 14-foot road width, the three segments of new access roads totaled approximately 3.6 acres. All numbers are approximate.

Forest Land Classification

Forest land is land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. Timberland is land, other than land owned by the federal government and land designated by the State Board of Forestry as experimental forest land, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products (Redwood City, 2010). There is currently no forest land or timberland located within the Proposed Project area.

Table 4.2.2 Estimated Disturbed Farmland

Project Feature / Farmland Category	Acres Permanently Disturbed as a result of the Proposed Project
Substation Construction	
Prime Farmland	5.4
Farmland of Statewide Importance	-
Unique Farmland	-
Farmland of Local Importance	-
Farmland Disturbed TOTAL for Substation Construction	**5.4**
Access Roads	
Prime Farmland	1.1
Farmland of Statewide Importance	0.5
Unique Farmland	0.1
Farmland of Local Importance	1.9
Farmland Disturbed TOTAL for Access Road Construction	**3.6**
Subtransmission Source Line Poles	
Prime Farmland	1.8
Farmland of Statewide Importance	0.8
Unique Farmland	0.2
Farmland of Local Importance	1.7
Farmland Disturbed TOTAL for Subtransmission Source Lines	4.5
Farmland Disturbed TOTAL for the Proposed Project	**13.5**

Source: SCE, AECOM

4.2.2 Regulatory Setting

State Plans, Policies, Regulations and Laws

This section describes the relevant goals and policies relating to land use (including applicable regulations for agriculture) for the jurisdictional state agencies.

California Land Conservation Act (Williamson Act)

The California Land Conservation Act of 1965, also known as the Williamson Act, is designed to preserve agricultural and open space lands by discouraging their premature and unnecessary conversion to urban uses (CDC, 2007b). The Act creates an arrangement whereby private landowner's contract with counties and cities to voluntarily restrict their land to agricultural and compatible open-space uses. In return, Williamson Act contracts offer tax incentives by ensuring that land would be assessed for its agricultural productivity rather than its highest and best use. Contracts run for a period of ten years; however, some jurisdictions exercise the option of making them long term, up to twenty years. Contracts are automatically renewed unless the landowner files for non-renewal or petitions for cancellation. Williamson Act contracts can be divided into the following categories: Prime Agricultural Land, Non-Prime Agricultural Land, Open Space Easement, Built Up Land, and Agricultural Land in Non-Renewal.

Section 51238 of the Williamson Act indicates that, unless local organizations declare otherwise, the erection, construction, alteration, or maintenance of gas, electric, water, or communication facilities are compatible with Williamson Act contracts.

Chapter 12.16 of the Riverside County Zoning Code provides the regulatory framework for agricultural preserves. A list of compatible uses is provided in section 12.16.030(A) and include gas, electric, water, and communication utility facilities, and public service facilities of like nature operated by a public agency or mutual water company.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) has sole and exclusive jurisdiction over the siting and design of the project because it authorizes the construction and maintenance of investor-owned public utility (IOU) facilities. Although such projects are exempt from local land use and zoning regulations and permitting, General Order No. 131-D, Section III.C requires "the utility to communicate with, and obtain the input of, local authorities regarding land-use matters and obtain any non-discretionary local permits." As part of its environmental review process, SCE considered local and state land use plans and policies, and local land use priorities and concerns.

California Farmland Mapping and Monitoring Program

The CDC, under the Division of Land Resource Protection, has established the FMMP which monitors the conversion of the state's farmland to and from agricultural use. The FMMP map series identifies eight classifications and uses a minimum mapping unit size of 10 acres. The FMMP also produces a biannual report on the amount of land converted from agricultural to non-agricultural use. The FMMP maintains an inventory of state agricultural land and updates its "Important Farmland Series Maps" every two

years (CDC, 2007a). Important farmlands are divided into the following five categories based on their suitability for agriculture:

1. **Prime Farmland.** Land with the best combination of physical and chemical characteristics able to sustain long-term production of agricultural crops. This land has produced irrigated crops at some time within the four years prior to the mapping date.

2. **Farmland of Statewide Importance.** Land that meets the criteria for Prime Farmland but with minor shortcomings such as greater slopes or lesser soil moisture capacity.

3. **Unique Farmland.** Land with even lesser quality soils and produces the state's leading agricultural crops. This land is usually irrigated but also includes non-irrigated orchards and vineyards.

4. **Farmland of Local Importance.** Land that is important to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

5. **Grazing Land.** Land on which the existing vegetation is suited to the grazing of livestock.

Regional and Local Plans, Policies, Regulations and Ordinances

County of Riverside General Plan

As the Proposed Project is entirely located in unincorporated Riverside County, the County's General Plan was reviewed for applicable goals and policies related to agricultural resources. The policies contained in the County of Riverside General Plan address countywide issues that are general in nature and may apply to numerous locations and land use designations within the Study Area. The Lakeview/Nuevo Area Plan, the Land Use Element, and the Multipurpose Open Space Element govern the land use and agricultural resources of the county and the Study Area.

The County of Riverside General Plan recognizes 19 geographic planning areas. The Proposed Project is located within the Lakeview/Nuevo Area Plan. The Lakeview/Nuevo Area Plan was reviewed for goals and polices related to agricultural resources; however, none were found to be relevant to the proposed project.

The Land Use Element of the County General Plan presents goals and policies that guide future geographic patterns of development in the county. The Multipurpose Open Space Element outlines the county's intentions for protecting and preserving natural resources, agriculture, open space, and recreational opportunities (Riverside County, 2008b). The following policies, contained within the Land Use and Multipurpose Open Space elements of the County of Riverside General Plan, apply to properties designated as Agriculture on the General Plan (Riverside County, 2008b) and the Lakeview/Nuevo Area Plan land use maps:

Land Use (LU)

- **LU 16.1:** Encourage retaining agriculturally designated lands where agricultural activity can be sustained at an operational scale, where it accommodates lifestyle choice, and in locations where impacts to and from potentially incompatible uses, such as residential uses, are minimized, through incentives such as tax credits.

- **LU 16.2:** Protect agricultural uses, including those with industrial characteristics (dairies, poultry, hog farms, etc.) by discouraging inappropriate land division in the immediate proximity and allowing only uses and intensities that are compatible with agricultural uses.

- **LU 16.4:** Encourage conservation of productive agricultural lands. Preserve prime agricultural lands for high-value crop production.

- **LU 16.7:** Adhere to Riverside County's Right-to-Farm Ordinance.

Open Space (OS)

- **OS 7.3:** Encourage conservation of productive agricultural lands and preservation of prime agricultural lands.

Riverside County Integrated Project

The Riverside County Integrated Project (RCIP) is a program to coordinate future conservation, transportation, housing, and economic needs in Riverside County, including the update of the 2003 County General Plan. The vision of the RCIP reflects the importance of agricultural uses and the sensitivity of development in and around agricultural areas:

> *Agricultural land that remains economically viable, either as a permanent or temporary economic resource, is well protected by policies, ordinances, and design regulations applicable to new development that may be planned nearby* (Riverside County, 2006).

4.2.3 Significance Criteria

The significance criteria for assessing the impacts to agricultural resources are based on the checklist in Appendix G of the State CEQA Guidelines. The Proposed Project would result in a significant impact related to agricultural resources if it would result in any of the following:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use

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

- 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))

- Result in the loss of forest land or conversion of forest land to non-forest use

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

4.2.4 Impact Analysis

Agricultural activities previously occupied the Proposed Substation Site. Areas in the vicinity of the Proposed Substation Site and the Proposed Subtransmission Source Line Route consist of Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland.

Land disturbance for the Proposed Project would include surface modifications for the installation of access roads, 115 kV subtransmission lines, telecommunication lines decommissioning of Nuevo Substation and Model P.T. and the proposed substation. It is estimated that the total permanent land disturbance for the Proposed Project would be approximately 33 acres. It is estimated that the Proposed Project would temporarily disturb approximately 64 to 67 acres of land.

The Proposed Project would not be located on lands subject to a Williamson Act contract. The Proposed Substation Site has already been designated for residential development by the County's General Plan. In addition, the Proposed Substation Site is not designated as agricultural land.

New rights-of-way (ROW) and easement rights would be required for the proposed new subtransmission facilities and for the new access roads.

No Impact

Construction and operation of the Proposed Project would not result in impacts for the following CEQA criteria:

Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The Proposed Project would not be constructed or operated on agricultural lands currently under Williamson Act contract.

The Proposed Substation Site would not be located on land zoned for agricultural use. However, both the Proposed Subtransmission Source Line Route and the proposed access roads would traverse land zoned as Residential-Agriculture (R-A). Approximately 5,500 feet of new subtransmission source line would traverse lands zoned as R-A out of a total of approximate 17,424 feet (3.3 miles) of new subtransmission source lines for the Proposed Project. In addition, approximately 5,500 feet of new access roads would traverse lands zoned as R-A out of the total approximate 11,572 feet (2.2 miles) of new access roads for the Proposed Project. These new roads would have to be cleared and grubbed, graded, and recompacted or covered with an aggregate base, as described in section 3.2.3.2 of Chapter 3. In addition, existing access roads in the Proposed

Subtransmission Source Line Route Segment Two and along the existing Valley Moval 115 kV Subtransmission Line would need some rehabilitation, which may involve grading.

The Proposed Project is compatible with agricultural use according to California Government Code 51238. The placement of subtransmission poles and the construction of new access roads, on land currently under agricultural production, would not affect the status of the agricultural land zoning. The construction and placement of subtransmission poles and new access roads on land currently under agricultural production would not affect the status of the agricultural land zoning. Construction of the Proposed Project would take agricultural lands out of production; the impact of which is described below. There would be no impact related to existing zoning. The Proposed Project would not remove land from Williamson Act status and there would no impact related to Williamson Act lands. Furthermore, public utility uses are deemed to be compatible with agricultural lands according to the Riverside County General Plan. Periodic maintenance and inspection activity would have a negligible effect on the surrounding land uses. Since existing agricultural land uses could resume during the operational phase, there would be no impact on existing zoning for agricultural use or a Williamson Act contract.

Would the project 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))?

The Proposed Project site is not zoned as forest land or timberland for timber production. The Proposed Substation Site is zoned Rural Residential (R-R) which permits some public utility use (Refer to Section 4.10 Land Use and Planning). While "lumber production of a commercial nature, including commercial logging or commercial development of timber and lumber mills" is permitted on lands zoned R-R with a Conditional Use Permit, the Proposed Project would not cause the rezoning of lands zoned for forest land or timberland, nor would it conflict with timber production. Project development would not conflict with existing zoning as forest land or timberland, and no impact would occur.

Would the project result in the loss of forest land or conversion of forest land to non-forest use?

Forest land is defined by the California Public Resources Code (PRC Section 12220[g]) as land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. As indicated by land cover data provided by the Fire and Resource Assessment Program (FRAP, 2003), the Proposed Project area is classified as mostly herbaceous, and not within an area identified as either forest or woodland. Because there is currently no forest land located within the Proposed Project area, the project would not result in the loss of forest land or conversion of forest land to non-forest use. There would be no impact.

Construction Impacts

Construction of the Proposed Project has the potential to result in impacts for the following CEQA criteria:

Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The Proposed Project would permanently convert approximately 10 acres of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance to nonagricultural use for the construction of the substation, access roads, subtransmission source line poles, and other project features.[1] However, the land uses designated by the County of Riverside General Plan for the Proposed Substation Site and Proposed Subtransmission Source Line Route are Medium Density Residential and Conservation Habitat, both of which are compatible with public utilities.

The farmland that would be converted to non-agricultural use as a result of the Proposed Project has already been designated for urban development by the County of Riverside General Plan, the impacts of which have been analyzed in the Environmental Impact Report (EIR) prepared for the Riverside County General Plan Update of 2003.[2] At build-out, implementation of the Riverside County General Plan (2003) would result in a loss or conversion of 86,748 acres of agricultural land within the County; of which 10 acres would be converted as a result of the Proposed Project (Riverside County, 2003b). The County's EIR found that conversion of this agricultural land would result in a significant and unavoidable impact. No mitigation measures were available because the EIR was revised in 2003 acknowledging a contemporary court ruling on another project that found that an agricultural mitigation bank is not a feasible mitigation measure.[3] As a result, the County adopted a Statement of Overriding Considerations for the loss of this agricultural land.

The County notes that they have other planning policies in place to support and encourage the conservation of agricultural land and the continuation of agriculture-related uses. However, even with implementation of General Plan policies, the loss of 86,748 acres of farmland remains a significant, unavoidable impact (Riverside County, 2003b). Because the EIR for Riverside County's General Plan Update of 2003 already analyzed and approved this loss of farmland that would occur as a result of the planned land uses and found the impact to be significant and unavoidable, the loss of 10 acres of state-designated farmland resulting from the Proposed Project would continue to be

[1] Other project features include facilities related to telecommunication including duct banks, pull boxes, and manholes.

[2] October 7, 2003; Resolution No. 2003-488 Resolution of the Board of Supervisors of the County of Riverside Adopting and Certifying the Final EIR for the Riverside County Integrated Project ("RCIP") 2002 General Plan, and Making Certain Findings Related Thereto, retrieved from http://www.rcip.org/Documents/Resolution2003-488.pdf

[3] Riverside County does not currently have an agricultural mitigation bank (Browne, 2010). In light of the *Friends of the Kangaroo Rat* decision, Riverside County decided to remove the EIR's proposal of an Agricultural Land Mitigation Bank because a mitigation measure of this nature does not actually avoid or reduce the loss of farmland subject to development. An Agricultural Land Mitigation Bank is not a valid form of mitigation for farmland conversion impacts (Riverside County, 2003a).

significant and unavoidable. The impact to farmland cannot be avoided and will therefore remain significant. No mitigation measures are available.

Would the project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

Construction of the Proposed Project would permanently convert a total of approximately 13.5 acres[4] of agricultural lands to non-agricultural uses, including approximately 10 acres of state-designated farmland (Prime Farmland, Unique Farmland, and Farmland of Statewide Importance). The Proposed substation and associated improvements are required to ensure the availability of safe and reliable electric service to meet customer electrical demand in the Electrical Needs Area. Existing facilities will not meet forecasted, long term electrical demand within the Electrical Needs Area. The Proposed Project would not induce growth but instead is designed to respond to existing growth and demand trends; and therefore, would not be expected to substantially induce or exacerbate conversion of agricultural land. Because there is currently no forest land located within the Proposed Project area, the Proposed Project would not result in the loss of forest land or conversion of forest land to non-forest use. Impacts would be less-than-significant.

Operation Impacts

Operation of the Proposed Project has the potential to result in impacts for the following CEQA criteria:

Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Operation of the Proposed Project would result in similar impacts as described above in Construction Impacts. This would be a significant and unavoidable impact.

Would the project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

The project's operational phase would consist of routine maintenance, including equipment testing, equipment monitoring and repair, as well as emergency and routine procedures for service continuity and preventative maintenance. These routine maintenance activities would not result in other changes to the environment that could result in the conversion of farmland to nonagricultural use. Furthermore, as noted in Section 6.2, Growth Inducing Impacts, the Proposed Project would not induce growth but instead is designed to respond to existing growth and demand trends; and therefore, would not be expected to substantially induce or exacerbate conversion of agricultural land. Because there is currently no forest land located within the Proposed Project area, the project would not result in the loss of forest land or conversion of forest land to non-forest use. Impacts would be less-than-significant.

[4] This total includes Farmland of Local Importance.

4.2.5 Alternative Substation Site

Like the Proposed Substation Site, the Alternative Substation Site consists entirely of Prime Farmland. The Alternative Substation Site would not affect any Williamson Act lands, as the Alternative Substation Site is located on land that has inactive status. However, the Alternative Substation Site (6.0-acres) is slightly larger than the Proposed Substation Site (5.4-acres) and would therefore convert additional farmland to non-agricultural use as compared to the Proposed Project. About 0.6-acre of additional land designated as Prime Farmland would be permanently converted to non-agricultural use under this alternative. As a result, the impacts with respect to agriculture would be greater than those for the Proposed Substation Site. The Alternative Substation Site is not preferable to the Proposed Project, impacts would still be significant and unavoidable.

4.2.6 Alternative Subtransmission Source Line Route

Similar to the Proposed Subtransmission Source Line Route, the Alternative Subtransmission Source Line Route would cross Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland, but would not cross any Williamson Act lands. As a result, impacts with respect to agricultural resources for the Alternative Subtransmission Source Line Route would be similar to those for the Proposed Subtransmission Source Line Route. However, the Alternative Route is approximately 0.1 miles longer than the Proposed Route and would likely include more source line poles, which would disturb a small amount of additional farmland as compared to the Proposed Project. Impacts would still be significant and unavoidable.

4.2.7 References

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4.3 Air Quality

This section describes the air quality in the area of the Proposed Project. The potential impacts of the Proposed Project and alternatives are also discussed.

4.3.1 Environmental Setting

The Proposed Project lies within the South Coast Air Basin (SCAB), a region that is comprised of portions of Los Angeles, San Bernardino and Riverside counties and all of Orange County. The air above the SCAB often exhibits weak vertical and horizontal dispersion due to persistent temperature inversions (a warm air mass moves above a cooler air mass, limiting mixing of the two masses), and the air movement is restricted by the presence of nearby mountain ranges.

The Proposed Project is in a region under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD adopts and enforces rules and regulations to achieve state and federal ambient air quality standards and enforces applicable state and federal laws.

The Clean Air Act of 1970 required the U.S. Environmental Protection Agency (EPA) to adopt ambient air quality standards. The National Ambient Air Quality Standards (NAAQS) are the maximum levels, given a margin of safety, of pollution that is considered safe for public health and welfare. Air quality standards developed by individual states must be at least as stringent as those set forth by the EPA. The California Air Resources Board (CARB) has developed California Ambient Air Quality Standards (CAAQS).

Areas that fail to meet federal NAAQS (and CAAQS in California) are identified as nonattainment areas. When an area is designated as nonattainment, regional air quality management agencies are required to develop detailed plans that will lower the emissions of pollutants in order to reach attainment, and sources of pollutants are typically subject to more stringent air permitting requirements than similar sources in attainment areas.

Presently, the ambient air in the Proposed Project Area is classified by both the EPA and the CARB as nonattainment for ozone (O_3), suspended particulate matter measuring less than 10 microns (PM_{10}), and suspended particulate matter measuring less than 2.5 microns ($PM_{2.5}$), and classified by the CARB as nonattainment for nitrogen dioxide (NO_2) (CARB, 2010a). However, the SCAQMD is seeking redesignation by the EPA of the SCAB to attainment for PM_{10}. The Los Angeles County portion of the SCAB is also designated by the CARB as nonattainment for lead. The attainment status of each CAAQS and NAAQS pollutant is shown in Table 4.3-1, Federal and California Ambient Air Quality Standards and South Coast Air Basin Attainment Status.

Table 4.3-1 Federal and California Ambient Air Quality Standards and South Coast Air Basin Attainment Status

Pollutant	Federal Primary Standard Averaging Time and Concentration	Designation/ Classification	State Standard Averaging Time and Concentration	Designation/ Classification
Ozone (O_3)	8-hr average 0.075 ppm (147 µg/m^3)	Nonattainment	8-hr average 0.070 ppm (137 µg/m^3)	Nonattainment
	None		1-hr average 0.09 ppm (180 µg/m^3)	
Respirable Particulate Matter (PM_{10})	None	Nonattainment[1]	Annual Arithmetic Mean 20 µg/m^3	Nonattainment
	24-hr average 150 µg/m^3		24-hr average 50 µg/m^3	
Fine Particulate Matter($PM_{2.5}$)	Annual Arithmetic Mean 15.0 µg/m^3	Nonattainment	Annual Arithmetic Mean 12 µg/m^3	Nonattainment
	24-hr average 35 µg/m^3		None	
Carbon Monoxide (CO)	8-hr average 9 ppm (10 mg/m^3)	Attainment	8-hr average 9.0 ppm (10 mg/m^3)	Attainment
	1-hr average 35 ppm (40 mg/m^3)		1-hr average 20 ppm (23 mg/m^3)	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean 0.053 ppm (100 µg/m^3)	Attainment	Annual Arithmetic Mean 0.030 ppm (57 µg/m^3)	Nonattainment
	0.100 ppm (188 µg/m^3)		1-hr average 0.18 ppm (339 µg/m^3)	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean 0.030 ppm (80 µg/m^3)	Attainment	None	Attainment
	24-hr average 0.14 ppm (365 µg/m^3)		24-hr average 0.04 ppm (105 µg/m^3)	
	None		1-hr average 0.25 ppm (655 µg/m^3)	

Pollutant	Federal Primary Standard Averaging Time and Concentration	Designation/ Classification	State Standard Averaging Time and Concentration	Designation/ Classification
Lead	Rolling 3-month average 0.15 µg/m^3	Attainment	None	Nonattainment[2]
	Calendar quarter average 1.5 µg/m^3		None	
	None		30-day average 1.5 µg/m^3	
Hydrogen Sulfide	None	--	1-hr average 0.03 ppm (42 µg/m^3)	Attainment/ Unclassified
Sulfates	None	--	24-hr average 25 µg/m^3	Attainment
Visibility Reducing Particles	None	--	See note (3) below	Attainment/ Unclassified
Vinyl Chloride	None	--	24-hr average 0.01 ppm (26 µg/m^3)	Not reported

Source: CARB, 2010a; CARB, 2010b
µg/m^3 = microgram per cubic meter, mg/m^3 = milligram per cubic meter, ppm = parts per million
Notes:
[1] The SCAQMD is seeking redesignation to attainment for the federal PM_{10} standard.
[2] Nonattainment designation for lead only applies to the Los Angeles County portion of the SCAB
[3] State criterion for nonattainment of visibility-reducing particles is the amount of particles present to produce an extinction coefficient of 0.23 per kilometer when relative humidity is less than 70 percent.

The SCAQMD operates several monitoring stations within the SCAB to monitor levels of criteria pollutants. The most recent available data are from monitoring during 2008. The air quality monitoring station closest to the Proposed Project is the Perris Valley station, where O_3 and PM_{10} are monitored. The PM_{10} NAAQS were not exceeded at this station from 2006 through 2008, but the following exceedances of the PM_{10} CAAQS and the O_3 NAAQS and CAAQS were measured (SCAQMD, 2010):

- The 24-hour PM_{10} CAAQS was exceeded on 19 days during 2006, 32 days during 2007, and 12 days during 2008
- The annual average PM_{10} CAAQS was exceeded during 2006, 2007, and 2008
- The 8-hour O_3 NAAQS was exceeded on 53 days during 2006, 73 days during 2007, and 77 days during 2008
- The 8-hour O_3 CAAQS was exceeded on 84 days during 2006, 88 days during 2007, and 94 days during 2008

- The 1-hour O_3 CAQAS was exceeded on 76 days during 2006, 66 days during 2007, and 65 days during 2008

The air quality monitoring station closest to the Proposed Project where CO and NO_2 are monitored is the Lake Elsinore station. The CO and NO_2 NAAQS and CAAQS were not exceeded at this station from 2006 through 2008.

The air quality monitoring station closest to the Proposed Project where $PM_{2.5}$ is monitored is the Riverside-Magnolia station. The following exceedances of the $PM_{2.5}$ NAAQS and CAAQS were measured (SCAQMD, 2010):

- The 24-hour $PM_{2.5}$ NAAQS was exceeded on nine days during 2006, eight days during 2007, and four days during 2008
- The annual $PM_{2.5}$ NAAQS and CAAQS were exceeded during 2006, 2007, and 2008

The air quality monitoring station closest to the Proposed Project where SO_2, lead, and sulfate are monitored is the Riverside-Rubidoux station. The SO_2 and lead NAAQS and CAAQS and the sulfate CAAQS were not exceeded at this station from 2006 through 2008.

4.3.2 Regulatory Setting

Federal Clean Air Act and Amendments

These statutes provide the EPA with the authority to set ambient air quality standards and grant a waiver for California to set stricter standards. Other states have the choice of adopting federal standards or the more stringent California ambient air quality standards. The EPA also requires a State Implementation Plan that outlines the state regulations and programs that will be implemented to demonstrate how a state will attain or maintain the ambient air quality standards within a given period of time. Through the Clean Air Act and Amendments, the EPA also implements on- and off-road engine emission reduction programs that periodically phase in engine efficiency requirements and/or ancillary engine or exhaust equipment that result in cleaner emissions from on- and off-road equipment.

California Clean Air Act

Through these statutes, the CARB is given the authority to develop ambient air quality standards for the state. The CARB is also responsible for setting vehicle emission standards and fuel specifications, and for regulating emissions from other sources such as consumer products and certain types of mobile equipment (e.g., lawn and garden equipment, industrial forklifts). The CARB also implements the Off-road Mobile Sources Emission Reduction Program to reduce emissions from off-road equipment, and the Portable Equipment Registration Program, a program that evaluates portable equipment and provides a registry for qualifying equipment to be exempt from obtaining separate air quality permits to operate within each individual air basin.

South Coast Air Quality Management District

In addition to supporting CARB and EPA air quality programs, the SCAQMD also develops plans and implements control measures for regulated pollutants in the SCAB, primarily affecting stationary sources such as factories and plants. The SCAQMD is required to update plans for improving air quality in the basin as needed or every three years. The 2007 Air Quality Management Plan (AQMP) (SCAQMD, 2007) is the latest version designed to satisfy requirements of both federal and state clean air laws. The plan outlines policies and practices intended to achieve attainment levels for criteria pollutants and avoid future levels that exceed applicable standards.

South Coast Air Quality Management District Rule 403-Fugitive Dust

This rule prohibits construction activities from generating visible dust in the atmosphere beyond the property line or higher than 90 feet. The rule requires construction activities to use the best available control measures specified in the rule to minimize fugitive dust emissions. Measures may include stabilizing disturbed areas with water, chemical stabilizer, or by covering with a tarp or other suitable cover; materials transported off-site must be covered or stabilized with at least 6 inches of freeboard space from the top of the container; and traffic speeds on unpaved roads must be limited to 15 miles per hour. These actions are required for all projects within the SCAB capable of generating fugitive dust.

4.3.3 Significance Criteria

The significance criteria for assessing the impacts to air quality come from the California Environmental Quality Act (CEQA) Environmental Checklist. According to the CEQA Checklist, a project causes a potentially significant impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- 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)
- Expose sensitive receptors to substantial pollutant concentrations
- Create objectionable odors affecting a substantial number of people

4.3.4 Impact Analysis

The SCAQMD adopted the CEQA Air Quality Handbook in 1993 (SCAQMD, 1993). The purpose of the handbook is to provide lead agencies, consultants, and project applicants with a framework and uniform methods for preparing air quality evaluations for environmental documents. The handbook recommends specific criteria and threshold levels for determining whether a proposed project may have a significant adverse air quality impact. The SCAQMD is in the process of developing an "Air Quality Analysis Guidance Handbook" to replace the CEQA Air Quality Handbook. While the new handbook is being prepared, the SCAQMD provides supplemental and updated

information on its CEQA Handbook webpage (SCAQMD, 2009a). Although these are guidelines only, and their use is not required or mandated by the SCAQMD, they are considered appropriate for evaluating potential air quality impacts from construction and operation of the Proposed Project.

CEQA significance thresholds that have been adopted by the SCAQMD are listed in Table 4.3-2, SCAQMD Air Quality Significance Thresholds. Although ambient air quality standards have not been established for nitrogen oxides or volatile organic compounds, they have air quality significance thresholds because they react in the atmosphere to form ozone.

No Impact

Construction and operation of the Proposed Project would not result in impacts for the following CEQA criteria:

Would the project conflict with or obstruct implementation of the applicable air quality plan?

The AQMP is a blueprint of control measures designed to meet ambient air quality standards. The control measures are developed by compiling a current air pollutant emissions inventory, projecting the emissions inventory to future years, evaluating the impacts of future emissions on ambient air quality through air quality modeling, determining reductions in the projected future emissions needed to attain the standards, and devising control measures that will achieve those emission reductions. The 2007 AQMP (SCAQMD, 2007) demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law.

Growth projections from local general plans adopted by cities in the district and vehicle-miles-traveled (VMT) projections developed by the Southern California Association of Governments (SCAG) are some of the inputs used to develop the AQMP. Because construction and operation of the Proposed Project would not result in a population increase, the Proposed Project would not conflict with the growth projections used to develop the 2007 AQMP. Please see Section 6.2, Growth Inducing Impacts, for a discussion of economic and population growth. Construction and operation of the Proposed Project would not conflict with the implementation of the air quality plan, and there would be no impact.

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

Potential odors associated with construction and operation of the Proposed Project would be limited to vehicle exhaust. Construction and operation of the Proposed Project are unlikely to create objectionable odors that would affect a substantial number of people. There would be no impact.

Table 4.3-2 SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds [1]		
Pollutant	**Construction** [2]	**Operation** [3]
Nitrogen Oxides (NOx)	100 lbs/day	55 lbs/day
Volatile Organic Compounds (VOC)	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
Sulfur Oxides (SOx)	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs) 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 for Criteria Pollutants [4]		
NO_2 1-hour average annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state)	
PM_{10} 24-hour average annual average	 10.4 μg/m^3 (construction)[5] & 2.5 μg/m^3 (operation) 1.0 μg/m^3	
$PM_{2.5}$ 24-hour average	 10.4 μg/m^3 (construction)[5] & 2.5 μg/m^3 (operation)	
Sulfate 24-hour average	 1 μg/m^3	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)	

Source: SCAQMD, 2009b
lbs/day = pounds per day
≥ = greater than or equal
ppm = parts per million
μg/m^3 = microgram per cubic meter
Notes:
[1] Source: SCAQMD CEQA Handbook (SCAQMD, 1993).
[2] Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).
[3] For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.
[4] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.
[5] Ambient air quality threshold based on SCAQMD Rule 403.

Construction Impacts

Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Peak daily emissions during construction, including both on-site and off-site sources, were calculated for comparison with the SCAQMD's mass daily emissions CEQA significance thresholds (see Table 4.3-2, SCAQMD Air Quality Significance Thresholds) to evaluate whether construction activities could cause or contribute to regional violations of air quality standards. The calculations applied pollutant emission factors from the SCAQMD CEQA Handbook webpage (SCAQMD, 2009a) to construction data in Chapter 3, Project Description (please see Appendix C, Air Quality Calculations, for details). Maximum daily emissions during construction of each of the Proposed Project components (Lakeview Substation, distribution facilities, Proposed Subtransmission Source Lines, and telecommunications) and during demolition of the Nuevo and Model Pole Top substations were calculated, taking into account the overlap of construction phases. Since construction of all of the components could occur at the same time, the maximum daily emissions during construction of the Lakeview Substation, distribution facilities, Proposed Subtransmission Source Lines, and telecommunications components were added together to calculate maximum daily emissions during construction of these components. Demolition of the Nuevo and Model Pole Top substations would occur after construction of the of the Proposed Project components is completed, so demolition activities would not overlap with construction activities. Therefore, peak daily emissions would be the higher of the maximum daily emissions during construction of the Proposed Project components and during demolition of the Nuevo and Model Pole Top substations.

Table 4.3-3, Peak Daily Construction Emissions, compares peak daily construction emissions with the SCAQMD's mass daily emissions CEQA significance thresholds. The estimates are based on a worst-case construction schedule scenario. The emissions would be temporary.

The estimated peak daily emissions of nitrogen oxides (NOx) and PM_{10} during construction activities exceed corresponding SCAQMD mass daily significance thresholds, and emissions of these pollutants during construction may contribute to regional air quality violations. The majority of NOx and VOC would be emitted from on-site construction equipment used during installation of the Proposed Subtransmission Source Lines. The majority of PM_{10} would be emitted as fugitive dust from vehicle travel on unpaved roads and surfaces.

Construction emissions would be reduced by complying with CARB Off-Road Idling Policy, which restricts most occurrences of off-road equipment engine idling to fewer than five minutes. SCE will comply with California Code of Regulations, Title 13, Section 2423.

Table 4.3-3 Peak Daily Construction Emissions

Proposed Project Component	Maximum Daily Emissions (pounds/day)					
	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$
Lakeview Substation	11.6	97.2	117.6	0.2	33.3	9.5
Distribution Facilities	7.7	30.5	68.5	0.1	3.8	2.5
Subtransmission Source Lines	16.2	64.5	159.1	0.2	218.5	31.9
Telecommunications	7.4	36.8	63.8	0.1	69.1	8.7
Nuevo Substation Demolition[1]	N/A	N/A	N/A	N/A	N/A	N/A
Model Pole Top Substation Demolition[1]	N/A	N/A	N/A	N/A	N/A	N/A
Total	**42.9**	**229.0**	**409.0**	**0.6**	**324,6**	**52.6**
SCAQMD CEQA Significance Threshold	75	550	100	150	150	55
Significant?	No	No	Yes	No	Yes	No

Source: AECOM, 2010
Note:
[1] Maximum daily emissions during Nuevo and Model Pole Top substations are less than maximum daily emissions during construction of the Proposed Project components. Since demolition activities would occur after the other construction activities are completed, they would not contribute to the peak daily emissions.

The SCAQMD has developed and implemented Rule 403, Fugitive Dust, to reduce the amount of particulate matter entrained in the ambient air as a result of man-made fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. SCE would develop an Air Quality Plan prior the start of construction, pursuant to Rule 403, that would include details of project-specific measures to be implemented during construction of the Proposed Project to reduce impacts to air quality. Prior to construction, this plan would be submitted for approval to the SCAQMD and implemented during construction.

Although these measures would reduce impacts, impacts to air quality during construction of the Proposed Project are expected to remain significant.

Localized Exceedances

The SCAQMD (2008) has developed look-up tables that can be used to evaluate the potential for emissions during construction to cause localized exceedances of the ambient air quality CEQA significance thresholds as listed in Table 4.3-2, SCAQMD Air Quality Significance Thresholds. This localized significance thresholds (LST) analysis consists of comparing maximum daily on-site CO, NOx, PM_{10}, and $PM_{2.5}$ emissions at individual locations with maximum allowable emissions in the look-up tables. The maximum allowable emissions in the tables depend on the location within the SCAB, the

size (disturbed area) of the construction activities, and the distance from the construction site boundary to the nearest receptor. Receptors for the analysis include residences for PM_{10} and $PM_{2.5}$ and either residences or commercial locations for CO and NOx. Table 4.3-4, Construction Localized Significance Threshold Analysis, compares maximum daily on-site emissions for construction of each Proposed Project component and demolition of the Nuevo and Model Pole Top substations with the maximum allowable emissions from the SCAQMD's look-up tables (please see Appendix C, Air Quality Calculations, for details). As shown in Table 4.3-4, Construction Localized Significance Threshold Analysis, maximum daily on-site construction emissions would not exceed the maximum allowable emissions for any pollutant. Therefore, construction of the Proposed Project would not cause or contribute to a localized exceedance of an air quality standard.

Table 4.3-4 Construction Localized Significance Threshold Analysis

Proposed Project Component	**CO**	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Substation Construction Emissions (pounds/day)	72	33	22	6
Maximum Allowable Emissions (pounds/day)[1]	1,938	338	29	9
Exceedance?	No	No	No	No
Distribution Construction Emissions (pounds/day)	10	29	1	1
Maximum Allowable Emissions (pounds/day)[2]	773	170	9	4
Exceedance?	No	No	No	No
Subtransmission Source Line Construction Emissions (pounds/day)	10	28	1	1
Maximum Allowable Emissions (pounds/day)[2]	602	147	4	3
Exceedance?	No	No	No	No
Telecommunications Construction Emissions (pounds/day)	9	28	1	1
Maximum Allowable Emissions (pounds/day)[2]	773	170	9	4
Exceedance?	No	No	No	No
Nuevo Substation Demolition Emissions (pounds/day)	28	6	1	<0.5
Maximum Allowable Emissions (pounds/day)[2]	1,059	201	16	5
Exceedance?	No	No	No	No
Model Pole Top Substation Demolition Emissions (pounds/day)	11	29	1	1
Maximum Allowable Emissions (pounds/day)[2]	1,059	201	16	5
Exceedance?	No	No	No	No

Source: AECOM, 2010

Notes:

[1] Maximum allowable emissions based on 5 acre site and linear interpolation to actual receptor distance using values for Perris Valley source/receptor area.

[2] Maximum allowable emissions based on 1 acre site and linear interpolation to actual receptor distance using values for Perris Valley source/receptor area.

Would the project 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)?

The SCAB is classified as nonattainment for ozone, PM_{10} and $PM_{2.5}$. Table 4.3-3, Peak Daily Construction Emissions, shows that peak daily emissions of ozone precursors, VOC and NOx, exceed the SCAQMD's mass emissions CEQA significance thresholds. Therefore, construction of the Proposed Project could result in a cumulatively considerable net increase of ozone precursors. Table 4.3-3, Peak Daily Construction Emissions, also shows that peak daily PM_{10} and $PM_{2.5}$ emissions exceed the SCAQMD's mass emissions CEQA significance thresholds. Therefore, construction of the Proposed Project could also result in a cumulatively considerable net increase in PM_{10} and $PM_{2.5}$ emissions. Compliance with California Code of Regulations, Title 13, Section 2423 would reduce VOC, NOx, PM_{10} and $PM_{2.5}$ construction emissions, but the cumulative impact from these emissions is expected to remain significant.

Would the project expose sensitive receptors to substantial pollutant concentrations?

Table 4.3-4, Construction Localized Significance Threshold Analysis, shows that emissions during construction of the Proposed Project will not cause or contribute to a localized exceedance of an air quality standard. Since the NAAQS and CAAQS are the levels, given a margin of safety, that are considered safe for public health, construction of the Proposed Project would not expose receptors, including sensitive receptors, to substantial pollutant concentrations. Impacts would be less than significant.

Operation Impacts

Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Peak daily emissions during operation were calculated for comparison with the SCAQMD's mass daily emissions CEQA significance thresholds (see Table 4.3-2, SCAQMD Air Quality Significance Thresholds) to evaluate whether the operational activities could cause or contribute to regional violations of air quality standards. Table 4.3-5, Peak Daily Operational Emissions, compares peak daily operational emissions with the SCAQMD's mass daily emissions CEQA significance thresholds. The calculations applied pollutant emission factors from the SCAQMD CEQA Handbook webpage (SCAQMD, 2009a) to anticipated motor vehicle usage during operation (please see Appendix C, Air Quality Calculations, for details). The estimated peak daily emissions during operation of the Proposed Project are much less than the corresponding SCAQMD mass daily significance thresholds, and emissions of these pollutants during operation would not contribute to regional air quality violations. Additionally, these emissions would not occur at a single location and would not cause or contribute to a localized exceedance of an air quality standard. Impacts would be less than significant.

Table 4.3-5 Peak Daily Operational Emissions

Emission Source	Maximum Daily Emissions (pounds/day)					
	VOC	**CO**	**NOx**	**SOx**	**PM_{10}**	**$PM_{2.5}$**
Motor Vehicle Exhaust	0.1	0.9	0.1	< 0.05	< 0.05	< 0.05
Particulate Matter from Paved and Unpaved Roads	--	--	--	--	3.1	0.3
Total[1]	**0.1**	**0.9**	**0.1**	**< 0.05**	**3.2**	**0.3**
SCAQMD CEQA Significance Threshold	55	550	55	150	150	55
Significant?	No	No	No	No	No	No

Note:
[1] Totals may not match sums of individual values because of rounding.

Would the project 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)?

Table 4.3-5, Peak Daily Operational Emissions, shows that peak daily emissions would not exceed the SCAQMD's mass emissions CEQA significance thresholds. Therefore, operation of the Proposed Project would not result in a cumulatively considerable increase of nonattainment criteria pollutants. Impacts would be less than significant.

Would the project expose sensitive receptors to substantial pollutant concentrations?

The extremely small emissions during operation of the Proposed Project would not cause or contribute to a localized exceedance of an air quality standard. Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations. Impacts would be less than significant.

4.3.5 Alternative Substation Site

The Alternative Substation Site would also be located within an area under the jurisdiction of the SCAQMD, and its construction and operation would be similar in scope to that of the Proposed Substation Site. Construction and operation of the Alternative Substation Site would have similar impacts as the Proposed Substation Site. Construction impacts would be potentially significant, and operational impacts would be less than significant.

4.3.6 Alternative Subtransmission Source Line Route

The Alternative Subtransmission Source Line Route would also be located within an area under the jurisdiction of the SCAQMD, and its construction and operation would be similar in scope to that of the Proposed Subtransmission Source Line Route.

Construction and operation of the Alternative Subtransmission Source Line Route would have similar impacts as the Proposed Subtransmission Source Line Route. Construction impacts would be potentially significant, and operational impacts would be less than significant.

4.3.7 References

California Air Resources Board (CARB). 2010a. Area Designation Maps/State and National. [online] http://www.arb.ca.gov/desig/adm/adm.htm [cited March 2010].

CARB. 2010b. Ambient Air Quality Standards. [online] http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, February 2010 [cited March 2010].

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SCAQMD. 2007. Final 2007 Air Quality Management Plan. [online] http://www.aqmd.gov/aqmp/07aqmp/index.html, June 2007 [cited July 2009].

SCAQMD. 2008. Final Localized Significance Threshold Methodology. [online] http://www.aqmd.gov/ceqa/handbook/LST/LST.html, July 2008 [cited August 2009].

SCAQMD 2009a. CEQA Handbook webpage. [online] http://www.aqmd.gov/ceqa/hdbk.html [cited July 2009].

SCAQMD 2009b. SCAQMD Air Quality CEQA Significance Thresholds. [online] http://www.aqmd.gov/ceqa/handbook/signthres.pdf, March 2009 [cited July 2009].

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4.4 Biological Resources

4.4.1 Overview

This section describes existing conditions and the potential impacts to biological resources that may result from construction and operation of the Lakeview Substation Project (hereafter referred to as the "Proposed Project"). Potential impacts and Applicant Proposed Measures (APMs) are discussed in Sections 4.4.6 and 4.4.7, respectively. As discussed below, construction and operation of the Proposed Project (the Proposed Substation Site, the Proposed Subtransmission Source Line Routes, and the Proposed Telecommunications Route) and Site Alternatives (the Alternative Substation Site and the Alternative Subtransmission Source Line Route) would result in less-than-significant impacts to biological resources with implementation of the APMs.

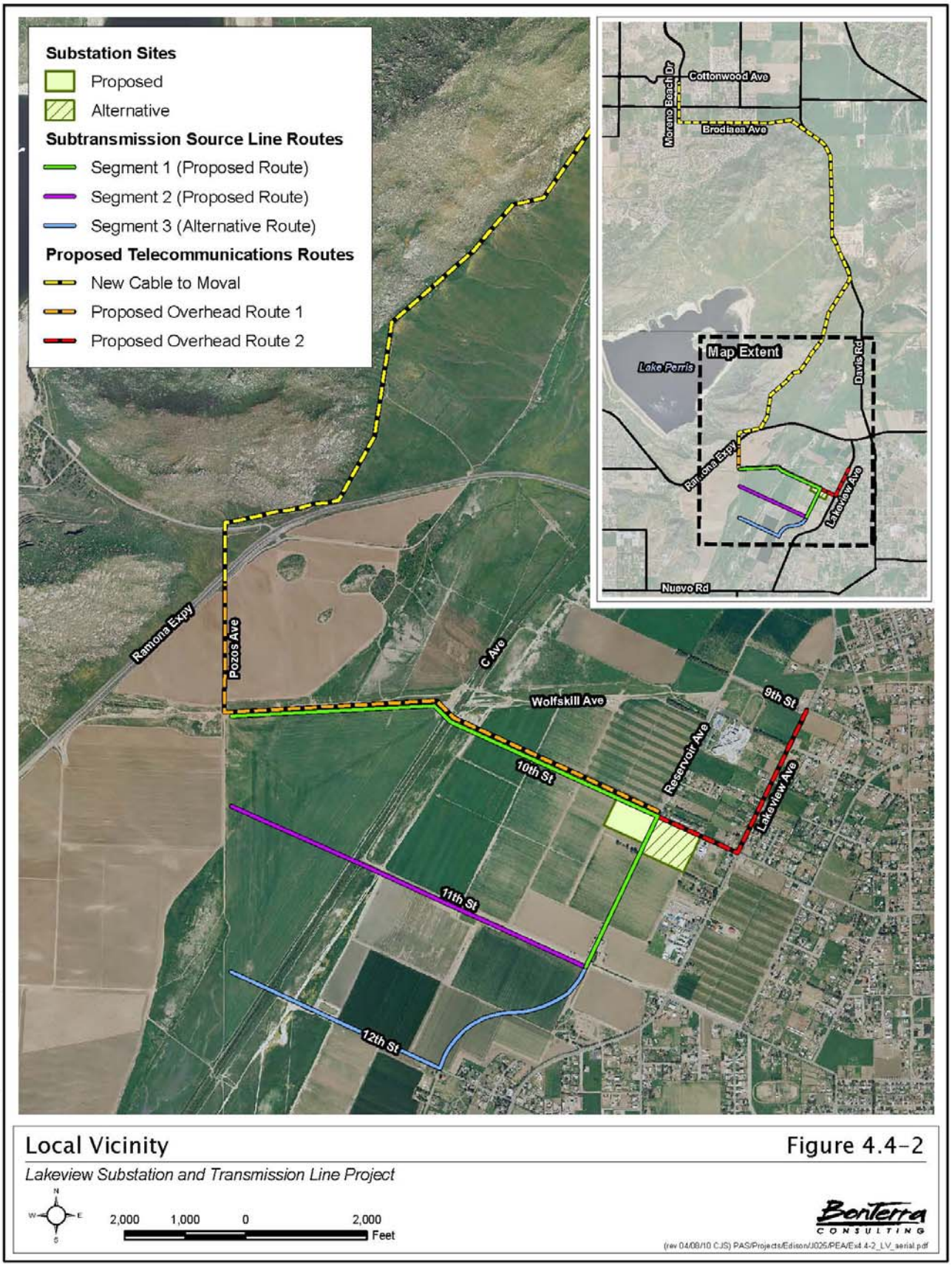
4.4.2 Methodology

At the request of Southern California Edison (SCE), BonTerra Consulting conducted a biological resources assessment for the proposed Lakeview Substation Project (Figure 4.4-1). The assessment included focused biological surveys and habitat suitability assessments for special status plant and wildlife species within two potential substation sites and six potential transmission line segments selected for the Project. The Project includes a Proposed Substation Site and an Alternative Substation Site, a Proposed Subtransmission Source Line Route (Segments One and Two), a Proposed Telecommunications Route (New Cable to Moval and Proposed Overhead Routes 1 and 2), and an Alternative Subtransmission Source Line Route (Segment Three). A 50-foot buffer is also included on either side of all the Subtransmission Source Line Routes and the Proposed Telecommunications Routes (Figure 4.4-2).

Literature Review

The biological resources section is based on background data review and field reconnaissance surveys. Prior to field surveys, a literature review was performed to identify special status plants, wildlife, and habitats known to occur in the vicinity of the Project. This search included a review of the U.S. Geological Survey's (USGS's) Perris, Lakeview, Romoland, Winchester, Sunnymead, and El Casco 7.5-minute quadrangles; the California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Vascular Plants of California Electronic Database (CNPS 2009, 2010) and the California Department of Fish and Game's (CDFG's) California Natural Diversity Database (CNDDB) (CDFG 2009, 2010). In addition, the Assessor's Parcel Numbers (APNs) for the parcels were run through the Riverside County Integrated Project (RCIP) Conservation Summary Report Generator for the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) (RCIP 2008).


Lucerne Valley
Hesperia
Big Bear
San Bernardino National Forest
Rancho Cucamonga
Rialto
San Bernardino
Ontario
Yucaipa
Redlands
San Bernardino
Riverside
Riverside
Desert Hot Springs
Moreno Valley
Project Location
Yorba Linda
Corona
Lake Mathews
Lake Perris
Perris
Riverside
Orange
San Jacinto
San Jacinto Wilderness
Cleveland National Forest
Idyllwild
Palm Springs
Canyon Lake
Rancho Santa Margarita
Mission Viejo
Lake Elsinore
Laguna Beach
San Juan Capistrano
Temecula
San Diego
San Clemente
Camp Pendleton
Cleveland National Forest
Project Study Area
Regional Location
Figure 4.4-1
Lakeview Substation and Transmission Line Project
10 5 0 10 Miles
(Rev 03/11/10 CJS) PAS\Projects\Edison\I025\Graphics\PEA\Ex4.4-1_RL.pdf



Local Vicinity — Figure 4.4-2

Lakeview Substation and Transmission Line Project

Survey Methods

Biological reconnaissance surveys were conducted to describe and map the vegetation present on the Project and to evaluate the potential of the habitats to support special status plant and wildlife species. BonTerra Consulting Botanist/Restoration Ecologist Jeff Crain and biologists Kim Oldehoeft and Lindsay Messett performed general plant and wildlife surveys on the Substation Sites, Subtransmission Source Line Routes, and Proposed Overhead Routes 1 and 2 in February and June of 2009 and in February of 2010 for the New Cable to Moval (Figure 4.4-2). Vegetation was mapped in the field on an aerial photograph at a scale of 1 inch equals 200 feet (1″=200′). Nomenclature for vegetation types generally follows that of *The Vegetation Classification and Mapping Program: List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* (CDFG 2003).

Plant species were identified in the field or collected for subsequent identification using keys in Hickman (1993) and Munz (1974). Taxonomy follows Hickman (1993) and current scientific data (e.g., scientific journals) for scientific and common names. Active searches for reptiles and amphibians included lifting, overturning, and carefully replacing rocks and debris. Birds were identified by visual and auditory recognition. Surveys for mammals were conducted during the day and included searching for and identifying diagnostic sign including scat, footprints, burrows, and trails. Taxonomy and nomenclature for wildlife generally follows Stebbins (2003) for amphibians and reptiles, American Ornithologists Union (2009) for birds, and Baker et al. (2003) for mammals. All species observed were recorded in field notes.

Due to the presence of suitable habitat, focused surveys for special status plant species were conducted in 2009 for Segment Two of the Proposed Subtransmission Source Line Route,; Proposed Telecommunications Route (Overhead Routes 1 and 2); Segment Three of the Alternative Subtransmission Source Line Route; and the Alternative Substation Site and in 2010 for Segment One of the Proposed Subtransmission Source Line Route and the New Cable to Moval. Focused burrowing owl surveys were conducted in 2009 for the Proposed Substation Site; the Proposed Subtransmission Source Line Routes; the Alternative Substation Site; and the Alternative Subtransmission Source Line Route. Focused Quino checkerspot butterfly and California gnatcatcher surveys were conducted in 2010 along the New Cable to Moval.

For detailed methodology regarding focused surveys for special status plants, Quino checkerspot butterfly (*Euphydryas editha quino*), burrowing owl (*Athene cunicularia*), and coastal California gnatcatcher (*Polioptila californica californica*) conducted on the Project site, refer to the full Biological Technical Report (BonTerra Consulting 2010c).

4.4.3 Environmental Setting

General Biological Resources

The Project site is located on the USGS Perris, Lakeview, Romoland, Winchester, Sunnymead, and El Casco 7.5-minute quadrangle maps. The Project area is bordered by Ramona Expressway to the north, Lakeview Avenue to the east, 12th Street to the

south, and the Valley-Moval Subtransmission Line to the west. Additionally, the Proposed Telecommunications Route (New Cable to Moval) runs from the Moval Substation, on Moreno Beach Drive in the City of Moreno Beach to Brodiaea Avenue, along Brodiaea Avenue to the east and then south along the foot of the Bernasconi Mountains to Ramona Expressway (Figure 4.4-2).

Land uses in the immediate vicinity of the Project site are agricultural and residential. Topography on the Project site is mostly flat in the northern portion of the Project and varied in the southern portion with an approximate range of elevation from approximately

1,400 feet to 2,200 feet above mean sea level (msl). Soils on the Substation Sites and along the Subtransmission Source Line Routes and Proposed Telecommunications Routes include Domino fine sandy loam, saline-alkali; Domino silt loam; Domino silt loam, saline-alkali; Exeter sandy loam; Exeter sandy loam, deep; Gorgonio loamy sand; Gorgonio loamy sand, deep; Greenfield sandy loam; Hanford coarse sandy loam; Metz loamy fine sand, sandy loam substratum; Metz loamy sand; Pachappa fine sandy loam; Placentia fine sandy loam; Ramona sandy loam; Riverwash; Rockland; San Emigdio fine sandy loam, San Emigdio loam; Terrace escarpments; Willows silty clay; Willows silty clay, saline-alkali; Willows silty clay, strongly saline-alkali; and Willows silty clay, deep, strongly saline-alkali (USDA NRCS 2007 [Figures 4-4-3A – 4-4-3O]).

Vegetation Type Descriptions

Fifteen vegetation types and other areas occur on the Project site (Figures 4-4-4A through 4-4-4O; see Appendix D Vegetation Types and Other Areas Within Each Portion of the Survey Area). Vegetation types and other areas mapped on the Project site include alkali grassland, annual grassland, alkali scrub playa, disturbed alkali scrub playa, alkali wetland, Riversidean sage scrub, disturbed Riversidean sage scrub, southern willow scrub, ruderal, agriculture, ornamental, detention basin, irrigation ditch, disturbed, and developed.

Alkali grassland occurs along Segment One and the Proposed Telecommunications Route (Overhead Route 1). This vegetation type is dominated by non-native grasses including Mediterranean barley (*Hordeum murinum* var. *gussoneanum*) and foxtail barley (*Hordeum murinum* var. *leporinum*); however, the native component of this vegetation type includes salt grass (*Distichilis spicata*), vernal barley (*Hordeum intercedens*), and alkali weed (*Cressa truxillensis*). The area is fairly disturbed but maintains at least 10 percent cover by native grasses and forbs.

Annual grassland occurs along Segment One, and the New Cable to Moval, and along the Proposed Telecommunications Route (Overhead Route 1). This vegetation type is dominated by non-native grasses and forbs including ripgut grass (*Bromus diandrus*), Mediterranean barley, foxtail barley, perennial ryegrass (*Lolium perenne*), little-seed canary grass (*Phalaris minor*), small saltbush (*Atriplex suberecta*), five-hook bassia (*Bassia hyssopifolia*), and Russian thistle (*Salsola tragus*). Native components include Mojave silver scale (*Atriplex argentea* ssp. *mohavensis*), alkali weed, summer cypress (*Kochia scoparia*), and bush seepweed (*Suaeda moquinii*).

Alkali scrub playa occurs in flat alkali clay soils along Segment Two and Segment Three. This vegetation type is dominated by native, alkali-tolerant shrubs including Mojave silver scale, alkali weed, summer cypress, Nuttall's monolepis (*Monolepis nutalliana*), and bush seepweed. Non-native components include five-hook bassia, garden beet (*Beta vulgaris*), and Russian thistle.

Disturbed alkali scrub playa occurs along Segment Two. Species composition was similar to alkali scrub playa above; however, these areas had been subject to disturbance from off-road activity and had much higher non-native cover than the alkali scrub playa and include Mediterranean barley and foxtail barley.

Alkali wetland occurs along Segment Three. This vegetation type is associated with the San Jacinto River and is dominated by native species including mulefat (*Baccharis salicifolia*), alkali heliotrope (*Heliotropium curassavicum*), alkali heath (*Frankenia salina*), California bulrush (*Scirpus californica*), and bush seepweed. Non-native components include black mustard (*Brassica nigra*) and bull thistle (*Cirsium vulgare*).

Riversidean sage scrub occurs along the New Cable to Moval. This vegetation type is dominated by native shrubs including California sagebrush (*Artemisia californica*), brittlebush (*Encelia farinosa*), interior flat-topped buckwheat, deerweed, and white sage (*Salvia apiana*).

Disturbed Riversidean sage scrub occurs along the New Cable to Moval. This vegetation type has identical dominant shrubs to Riversidean sage scrub above; however, these areas have been disturbed to varying degrees by off-road vehicle use and are now dominated by non-native grasses including ripgut grass, Mediterranean barley, and shortpod mustard (*Hirschfeldia incana*).

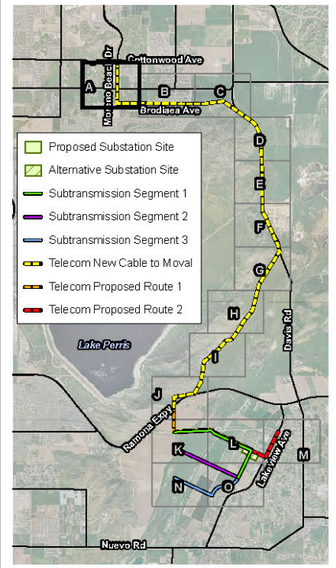
Southern willow scrub occurs along Segment Two. This vegetation type is dominated by native trees and shrubs including black willow (*Salix gooddingii*) and mulefat. The understory consists of native herbs including southern cattail (*Typha domingensis*) and California bulrush and non-native herbs including black mustard and Italian thistle (*Carduus pycnocephalus*).

Ruderal occurs in nearly every segment of the Project site and are associated with heavy disturbance. This vegetation type is dominated by non-native grasses and forbs including black mustard, ripgut grass, foxtail chess, wild radish (*Raphanus sativus*), field charlock (*Sinapsis arvensis*), and London rocket (*Sisymbrium irio*).

Agriculture occurs throughout the Project site. Common fields include alfalfa and sod farms or dry farming with barley.

Ornamental vegetation occurs along Segment One and the Proposed Telecommunications Route (New Cable to Moval and Overhead Route 2), and is most often associated with developed areas. Ornamental species observed include oleander (*Nerium oleander*), gum tree (*Eucalyptus* sp.), Canary Island date palm (*Phoenix canariensis*), and Mexican fan palm (*Washingtonia robusta*).





Soil Types

- GyC2, Greenfield sandy loam, 2 to 8 percent slopes, eroded
- PaC2, Pachappa fine sandy loam, 2 to 8 percent slopes, eroded
- SeA, San Emigdio fine sandy loam, 0 to 2 percent slopes
- SeC2, San Emigdio fine sandy loam, 2 to 8 percent slopes, ero ded
- SgC, San Emigdio loam, 2 to 8 percent slopes

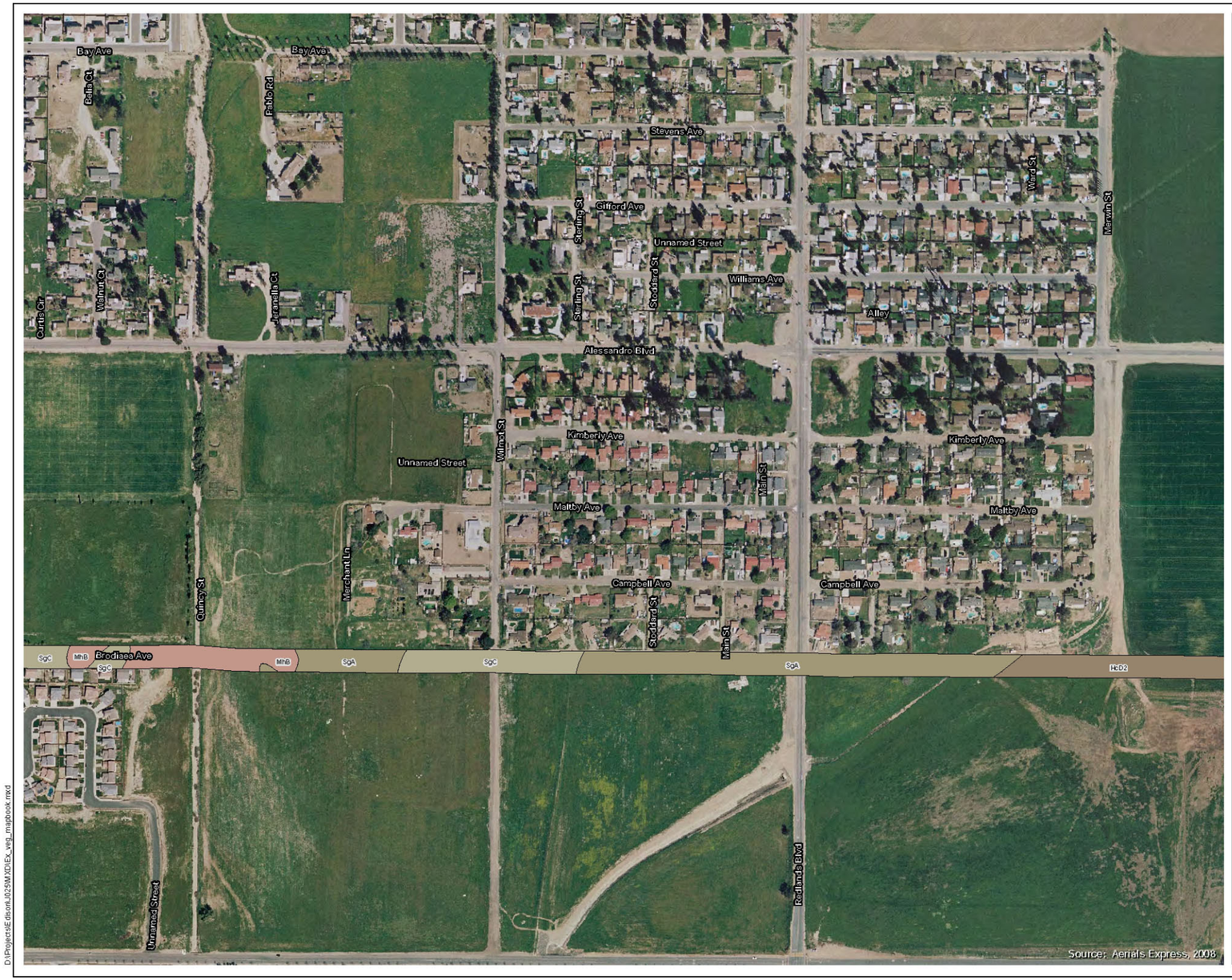
Soil Types Figure 4.4-3A

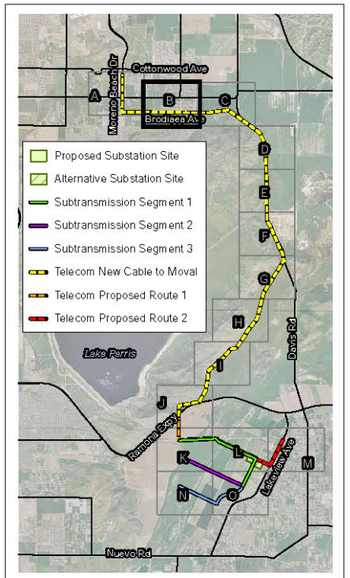
Lakeview Substation and Transmission Line Project

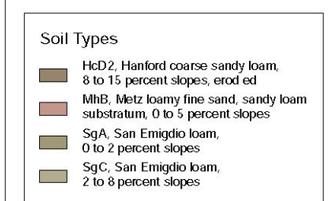
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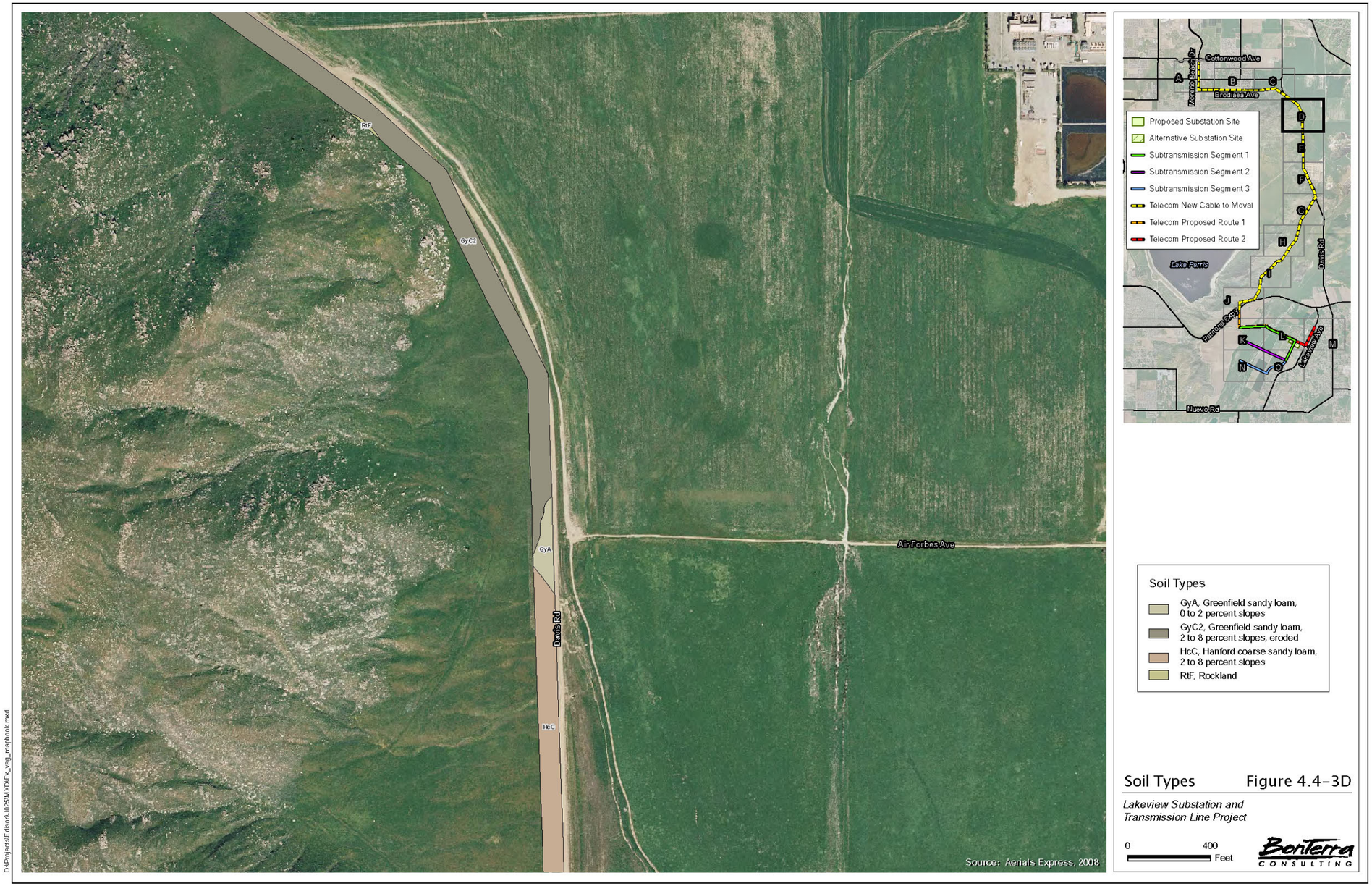
Soil Types Figure 4.4-3B

Lakeview Substation and Transmission Line Project

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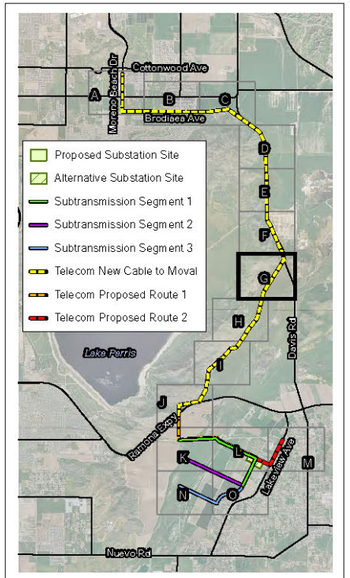

Sinclair St
Alessandro Blvd
Theodore St
Sinclair Ave
Brodiaea Ave
HcD2
MdC
HcD2
GhC
RtF
GhC
RtF
SgC
HcD2
RtF
HcC
Davis Rd
GyC2
Sinclair St
Source: Aerials Express, 2008
Cottonwood Ave
Moreno Beach Dr
Brodiaea Ave
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Proposed Substation Site
Alternative Substation Site
Subtransmission Segment 1
Subtransmission Segment 2
Subtransmission Segment 3
Telecom New Cable to Moval
Telecom Proposed Route 1
Telecom Proposed Route 2
Lake Perris
Davis Rd
Cottonwood Ave
Lasselle St
Nuevo Rd
Soil Types
GhC, Gorgonio loamy sand, 0 to 8 percent slopes
GyC2, Greenfield sandy loam, 2 to 8 percent slopes, eroded
HcC, Hanford coarse sandy loam, 2 to 8 percent slopes
HcD2, Hanford coarse sandy loam, 8 to 15 percent slopes, erod ed
MdC, Metz loamy sand, 2 to 8 percent slopes
RtF, Rockland
SgC, San Emigdio loam, 2 to 8 percent slopes
Soil Types
Figure 4.4-3C
Lakeview Substation and Transmission Line Project
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RtF
GyC2
GyA
HcC
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Source: Aerials Express, 2008
Cottonwood Ave
Moreno Beach Dr
Brodiaea Ave
Proposed Substation Site
Alternative Substation Site
Subtransmission Segment 1
Subtransmission Segment 2
Subtransmission Segment 3
Telecom New Cable to Moval
Telecom Proposed Route 1
Telecom Proposed Route 2
Lake Perris
Perris Blvd
Goetz Rd
Lake View Ave
Nuevo Rd
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Soil Types
GyA, Greenfield sandy loam, 0 to 2 percent slopes
GyC2, Greenfield sandy loam, 2 to 8 percent slopes, eroded
HcC, Hanford coarse sandy loam, 2 to 8 percent slopes
RtF, Rockland
Soil Types
Figure 4.4-3D
Lakeview Substation and Transmission Line Project
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HcC
GyC2
Davis Rd
Ponds Beech Dr
Source: Aerials Express, 2008
Cottonwood Ave
Moreno Beach Dr
Brodiaea Ave
Proposed Substation Site
Alternative Substation Site
Subtransmission Segment 1
Subtransmission Segment 2
Subtransmission Segment 3
Telecom New Cable to Moval
Telecom Proposed Route 1
Telecom Proposed Route 2
Lake Perris
Davis Rd
Goetz Rd
Lake View Ave
Nuevo Rd
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Soil Types
GyC2, Greenfield sandy loam, 2 to 8 percent slopes, eroded
HcC, Hanford coarse sandy loam, 2 to 8 percent slopes
Soil Types
Figure 4.4-3E
Lakeview Substation and Transmission Line Project
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Perris Beach Dr
HcC
HcD2
GIC
RtF
HcD2
Davis Rd
TeG
HcD2
HcD2
Source: Aerials Express, 2008
Cottonwood Ave
Moreno Beach Dr
Brodiaea Ave
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Proposed Substation Site
Alternative Substation Site
Subtransmission Segment 1
Subtransmission Segment 2
Subtransmission Segment 3
Telecom New Cable to Moval
Telecom Proposed Route 1
Telecom Proposed Route 2
Lake Perris
Davis Rd
Goetz Rd
Lake Perris Dr
Nuevo Rd
Soil Types
GIC, Gorgonio loamy sand, deep, 2 to 8 percent slopes
HcC, Hanford coarse sandy loam, 2 to 8 percent slopes
HcD2, Hanford coarse sandy loam, 8 to 15 percent slopes, erod ed
RtF, Rockland
TeG, Terrace escarpments
Soil Types
Figure 4.4-3F
Lakeview Substation and Transmission Line Project
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Soil Types

- GyC2, Greenfield sandy loam, 2 to 8 percent slopes, eroded
- HcD2, Hanford coarse sandy loam, 8 to 15 percent slopes, erod ed
- PlB, Placentia fine sandy loam, 0 to 5 percent slopes
- RtF, Rockland
- TeG, Terrace escarpments

Soil Types Figure 4.4-3G

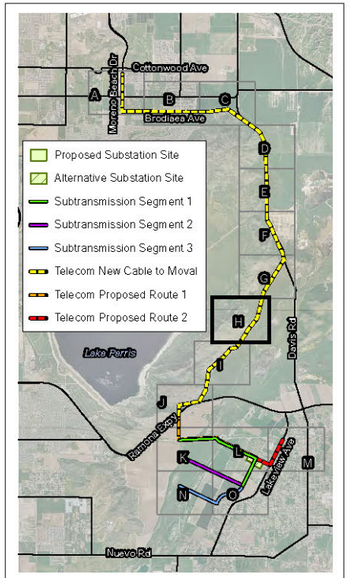
Lakeview Substation and Transmission Line Project

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Soil Types

- GyC2, Greenfield sandy loam, 2 to 8 percent slopes, eroded
- HcC, Hanford coarse sandy loam, 2 to 8 percent slopes
- HcD2, Hanford coarse sandy loam, 8 to 15 percent slopes, erod ed
- RtF, Rockland
- TeG, Terrace escarpments

Soil Types Figure 4.4-3H

Lakeview Substation and Transmission Line Project

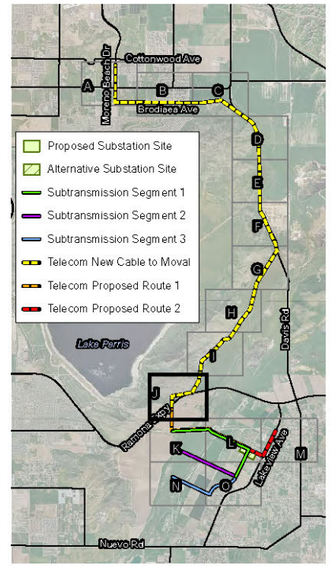
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RtF
HcD2
RtF
TeG
Martin St
HcD2
TeG
HcD2
Source: Aerials Express, 2008
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Cottonwood Ave
Moreno Beach Dr
Brodiaea Ave
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Lake Perris
Perris Blvd
Goetz Rd
Lake View Ave
Nuevo Rd
Proposed Substation Site
Alternative Substation Site
Subtransmission Segment 1
Subtransmission Segment 2
Subtransmission Segment 3
Telecom New Cable to Moval
Telecom Proposed Route 1
Telecom Proposed Route 2
Soil Types
HcD2, Hanford coarse sandy loam, 8 to 15 percent slopes, erod ed
RtF, Rockland
TeG, Terrace escarpments
Soil Types
Figure 4.4-31
Lakeview Substation and Transmission Line Project
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Feet
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Soil Types

- EnC2, Exeter sandy loam, 2 to 8 percent slopes, eroded
- HcC, Hanford coarse sandy loam, 2 to 8 percent slopes
- HcD2, Hanford coarse sandy loam, 8 to 15 percent slopes, erod ed
- RtF, Rockland
- TeG, Terrace escarpments

Soil Types Figure 4.4-3J

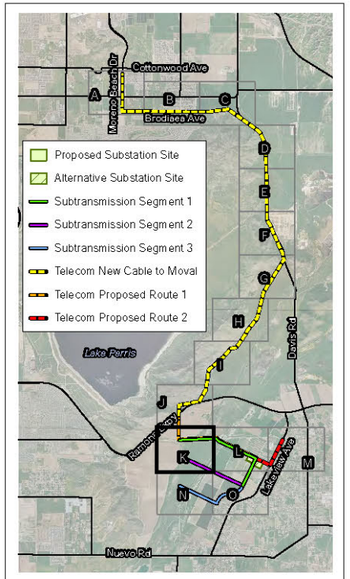
Lakeview Substation and Transmission Line Project

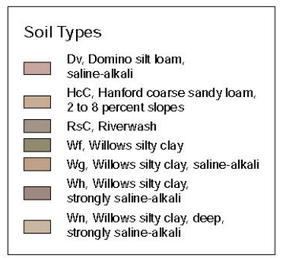
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Soil Types Figure 4.4-3K

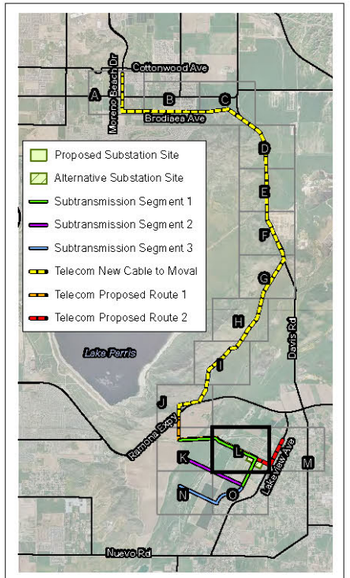
Lakeview Substation and Transmission Line Project

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Soil Types

- Dt, Domino fine sandy loam, saline-alkali
- Du, Domino silt loam
- Dv, Domino silt loam, saline-alkali
- EpC2, Exeter sandy loam, deep, 2 to 8 percent slopes, eroded
- GyA, Greenfield sandy loam, 0 to 2 percent slopes
- HcC, Hanford coarse sandy loam, 2 to 8 percent slopes
- PaA, Pachappa fine sandy loam, 0 to 2 percent slopes
- PaC2, Pachappa fine sandy loam, 2 to 8 percent slopes, eroded
- RaA, Ramona sandy loam, 0 to 2 percent slopes
- RsC, Riverwash
- Wg, Willows silty clay, saline-alkali
- Wh, Willows silty clay, strongly saline-alkali
- Wn, Willows silty clay, deep, strongly saline-alkali

Soil Types Figure 4.4-3L

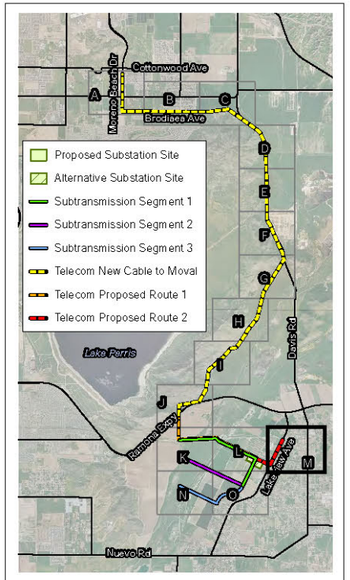
Lakeview Substation and Transmission Line Project

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Soil Types

- GyA, Greenfield sandy loam, 0 to 2 percent slopes
- GyC2, Greenfield sandy loam, 2 to 8 percent slopes, eroded
- HgA, Hanford fine sandy loam, 0 to 2 percent slopes

Soil Types **Figure 4.4-3M**

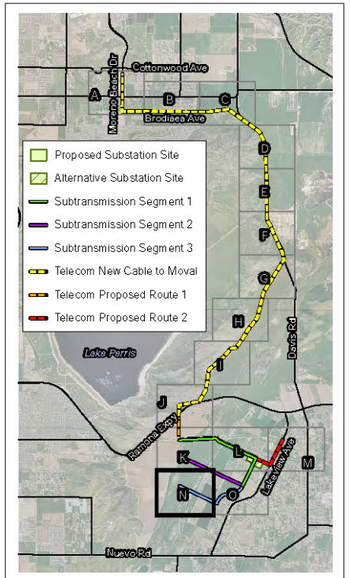
Lakeview Substation and Transmission Line Project

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Soil Types

- Dv, Domino silt loam, saline-alkali
- EpA, Exeter sandy loam, deep, 0 to 2 percent slopes
- GyC2, Greenfield sandy loam, 2 to 8 percent slopes, eroded
- RsC, Riverwash
- Wf, Willows silty clay
- Wg, Willows silty clay, saline-alkali
- Wn, Willows silty clay, deep, strongly saline-alkali

Soil Types Figure 4.4-3N

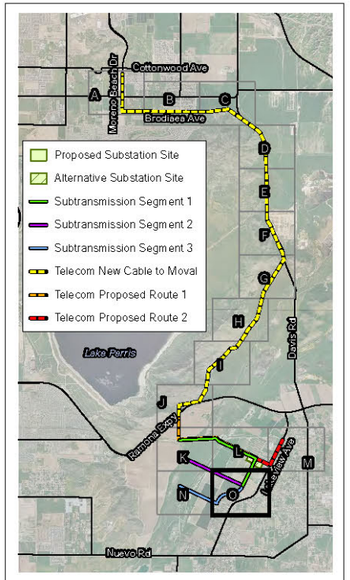
Lakeview Substation and Transmission Line Project

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Soil Types

- Dv, Domino silt loam, saline-alkali
- EpA, Exeter sandy loam, deep, 0 to 2 percent slopes
- GyC2, Greenfield sandy loam, 2 to 8 percent slopes, eroded
- PaA, Pachappa fine sandy loam, 0 to 2 percent slopes
- RaA, Ramona sandy loam, 0 to 2 percent slopes
- Wh, Willows silty clay, strongly saline-alkali

Soil Types **Figure 4.4-30**

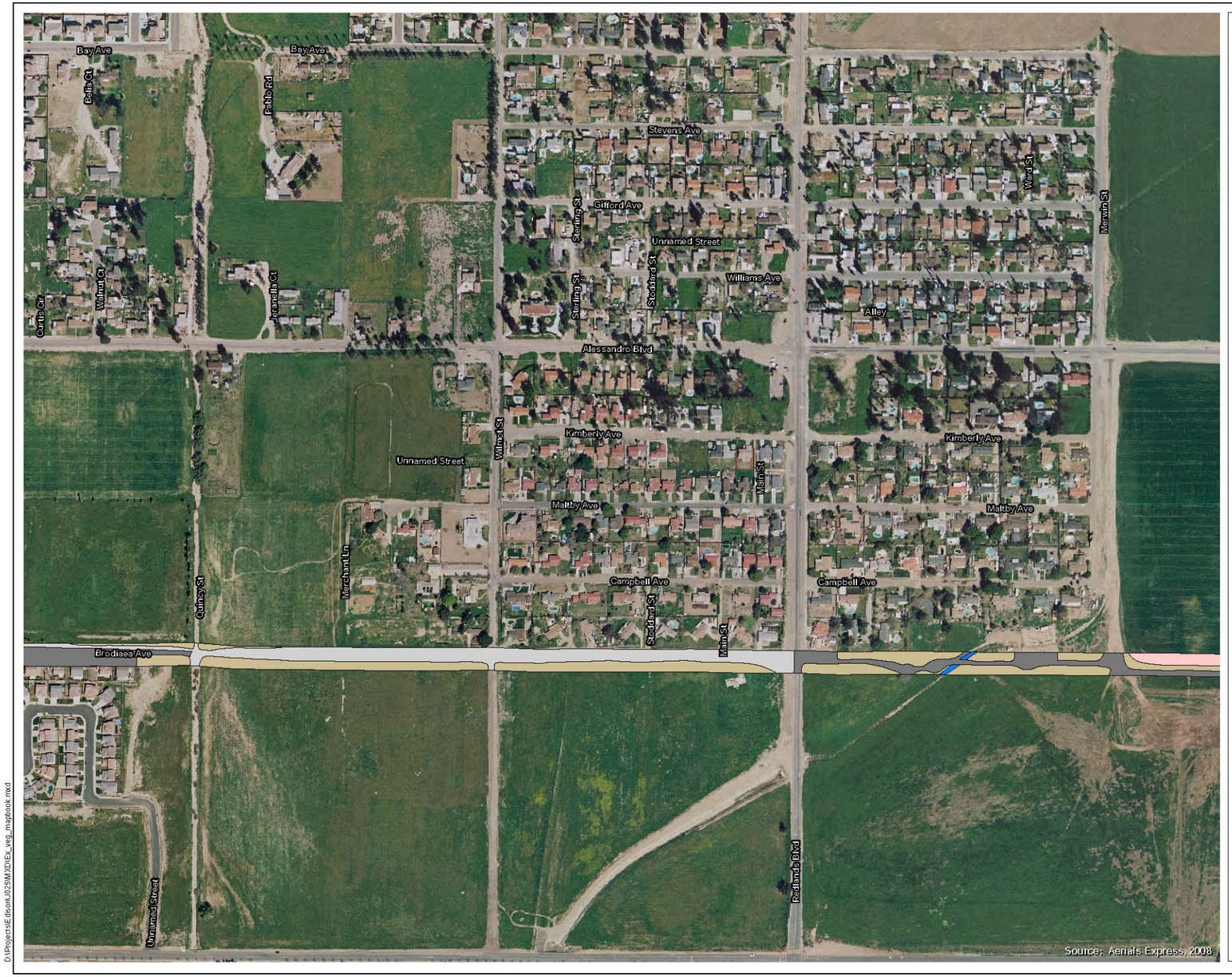
Lakeview Substation and Transmission Line Project

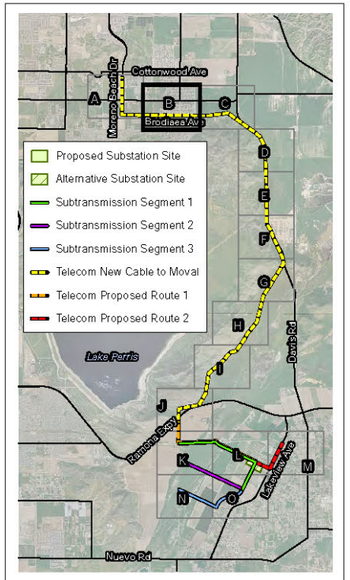
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Cottonwood Ave
Oliver St
Bethany Rd
Swaps St
War Admiral St
Sea Biscuit St
Adios St
Moreno Beach Dr
Bay Ave
Pearl Ln
Ramp
Alessandro Blvd
Bella Ct
Curtis Cir
Tanberry Ln
Wilmont St
Oliver St
Brodiaea Ave
Brodiaea Ave
Lemon Rd
Sand Dollar Way
Annadale Dr
Morningside Dr
Source: Aerials Express, 2008
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Proposed Substation Site
Alternative Substation Site
Subtransmission Segment 1
Subtransmission Segment 2
Subtransmission Segment 3
Telecom New Cable to Moval
Telecom Proposed Route 1
Telecom Proposed Route 2
Cottonwood Ave
Brodiaea Ave
Lake Perris
Davis Rd
Lemon Way
Lakeview Ave
Nuevo Rd
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Vegetation Types
Alkali Grassland
Annual Grassland
Alkali Scrub Playa
Disturbed Alkali Scrub Playa
Alkali Wetland
Riversidean Sage Scrub
Disturbed Riversidean Sage Scrub
Southern Willow Scrub
Ruderal
Agriculture
Ornamental
Drainage
Detention Basin
Disturbed
Developed
Vegetation Types Fig. 4.4-4A
Lakeview Substation and Transmission Line Project
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Vegetation Types
- Alkali Grassland
- Annual Grassland
- Alkali Scrub Playa
- Disturbed Alkali Scrub Playa
- Alkali Wetland
- Riversidean Sage Scrub
- Disturbed Riversidean Sage Scrub
- Southern Willow Scrub
- Ruderal
- Agriculture
- Ornamental
- Drainage
- Detention Basin
- Disturbed
- Developed

Vegetation Types Fig. 4.4-4B

Lakeview Substation and Transmission Line Project

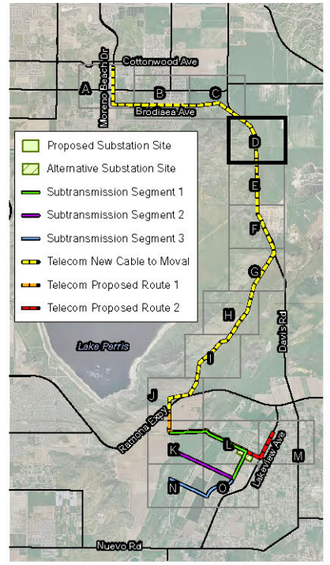
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Sinclair St
Alessandro Blvd
Alessandro Blvd
Theodore St
Sinclair Ave
Brodiaea Ave
Sinclair St
Davis Rd
Source: Aerials Express, 2008
Cottonwood Ave
Morrison Reach Dr
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Nuevo Rd
Proposed Substation Site
Alternative Substation Site
Subtransmission Segment 1
Subtransmission Segment 2
Subtransmission Segment 3
Telecom New Cable to Moval
Telecom Proposed Route 1
Telecom Proposed Route 2
Vegetation Types
Alkali Grassland
Annual Grassland
Alkali Scrub Playa
Disturbed Alkali Scrub Playa
Alkali Wetland
Riversidean Sage Scrub
Disturbed Riversidean Sage Scrub
Southern Willow Scrub
Ruderal
Agriculture
Ornamental
Drainage
Detention Basin
Disturbed
Developed
Vegetation Types Fig. 4.4-4C
Lakeview Substation and
Transmission Line Project
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Vegetation Types
- Alkali Grassland
- Annual Grassland
- Alkali Scrub Playa
- Disturbed Alkali Scrub Playa
- Alkali Wetland
- Riversidean Sage Scrub
- Disturbed Riversidean Sage Scrub
- Southern Willow Scrub
- Ruderal
- Agriculture
- Ornamental
- Drainage
- Detention Basin
- Disturbed
- Developed

Vegetation Types Fig. 4.4-4D

Lakeview Substation and Transmission Line Project

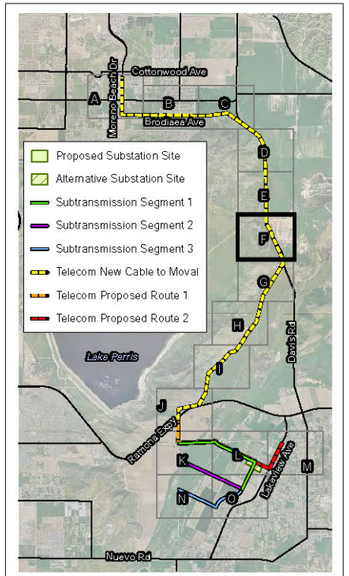
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Davis Rd
Patricia Beach Dr
Source: Aerials Express, 2006
Cottonwood Ave
Morrison Brandin Dr
Brodiaea Ave
Proposed Substation Site
Alternative Substation Site
Subtransmission Segment 1
Subtransmission Segment 2
Subtransmission Segment 3
Telecom New Cable to Moval
Telecom Proposed Route 1
Telecom Proposed Route 2
Lake Perris
Davis Rd
Ramona Expy
Lakeview Ave
Nuevo Rd
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
Vegetation Types
Alkali Grassland
Annual Grassland
Alkali Scrub Playa
Disturbed Alkali Scrub Playa
Alkali Wetland
Riversidean Sage Scrub
Disturbed Riversidean Sage Scrub
Southern Willow Scrub
Ruderal
Agriculture
Ornamental
Drainage
Detention Basin
Disturbed
Developed
Vegetation Types
Fig. 4.4-4E
Lakeview Substation and
Transmission Line Project
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Vegetation Types
- Alkali Grassland
- Annual Grassland
- Alkali Scrub Playa
- Disturbed Alkali Scrub Playa
- Alkali Wetland
- Riversidean Sage Scrub
- Disturbed Riversidean Sage Scrub
- Southern Willow Scrub
- Ruderal
- Agriculture
- Ornamental
- Drainage
- Detention Basin
- Disturbed
- Developed

Vegetation Types Fig. 4.4-4F

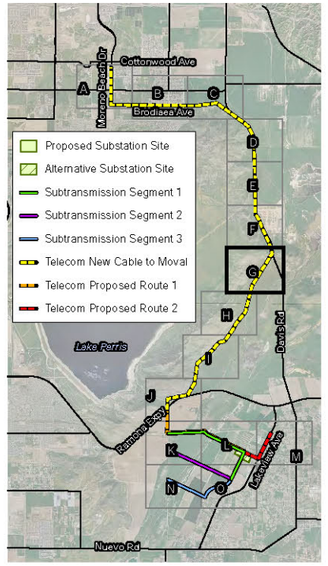
Lakeview Substation and Transmission Line Project

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Vegetation Types
- Alkali Grassland
- Annual Grassland
- Alkali Scrub Playa
- Disturbed Alkali Scrub Playa
- Alkali Wetland
- Riversidean Sage Scrub
- Disturbed Riversidean Sage Scrub
- Southern Willow Scrub
- Ruderal
- Agriculture
- Ornamental
- Drainage
- Detention Basin
- Disturbed
- Developed

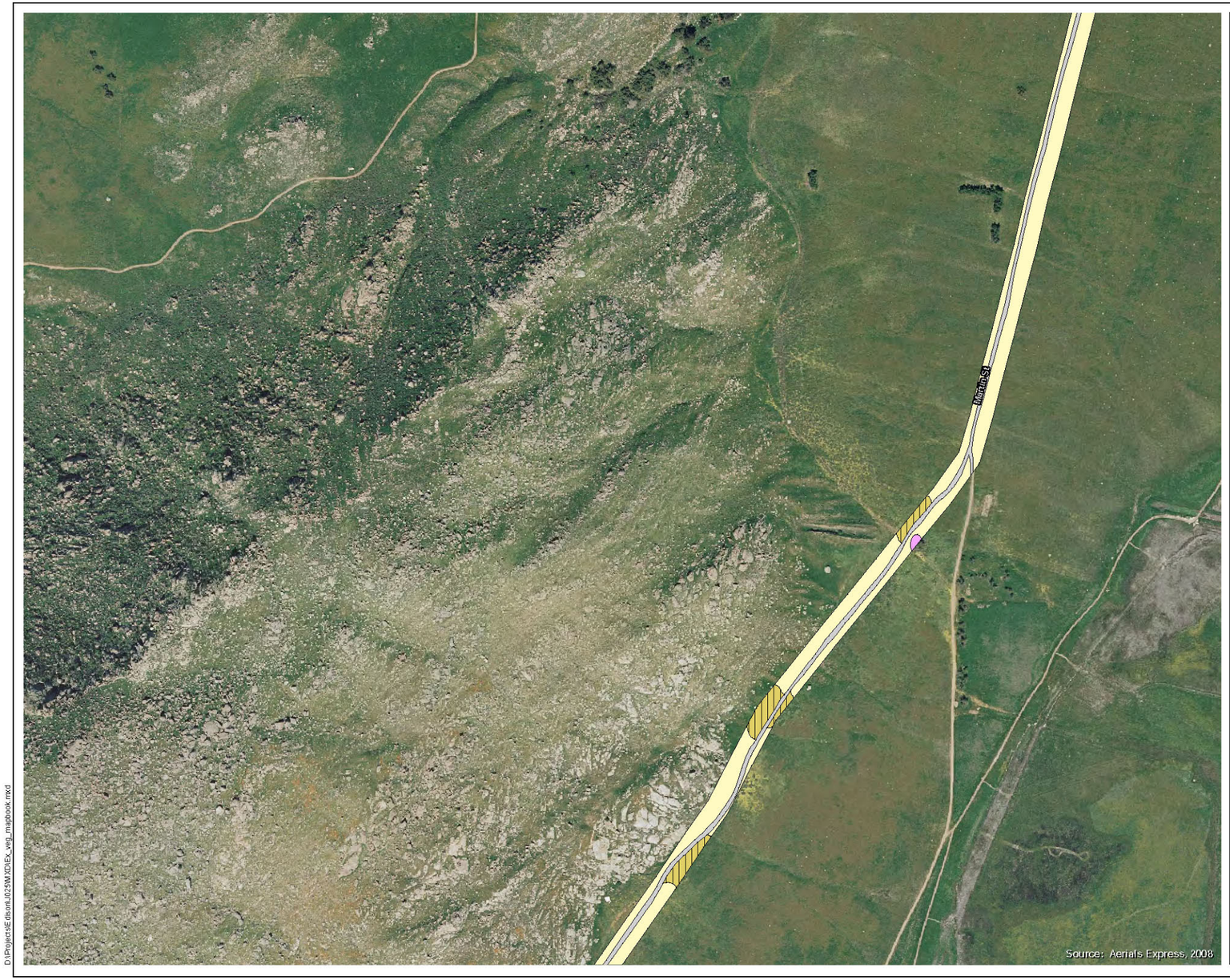
Vegetation Types Fig. 4.4-4G

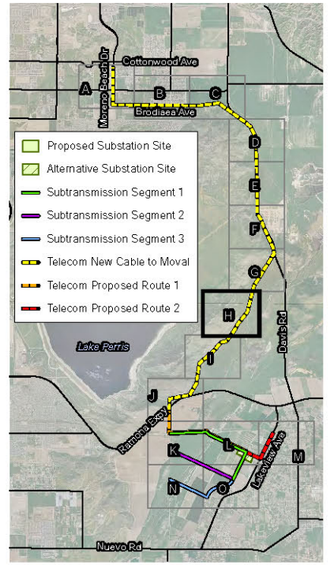
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Vegetation Types
- Alkali Grassland
- Annual Grassland
- Alkali Scrub Playa
- Disturbed Alkali Scrub Playa
- Alkali Wetland
- Riversidean Sage Scrub
- Disturbed Riversidean Sage Scrub
- Southern Willow Scrub
- Ruderal
- Agriculture
- Ornamental
- Drainage
- Detention Basin
- Disturbed
- Developed

Vegetation Types Fig. 4.4-4H

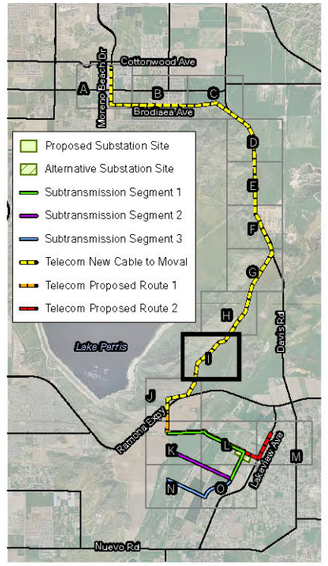
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Vegetation Types
- Alkali Grassland
- Annual Grassland
- Alkali Scrub Playa
- Disturbed Alkali Scrub Playa
- Alkali Wetland
- Riversidean Sage Scrub
- Disturbed Riversidean Sage Scrub
- Southern Willow Scrub
- Ruderal
- Agriculture
- Ornamental
- Drainage
- Detention Basin
- Disturbed
- Developed

Vegetation Types Fig. 4.4-4I

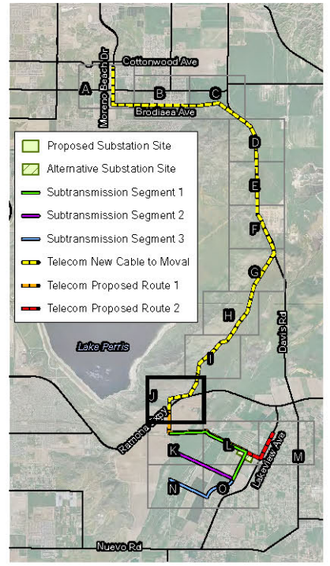
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Vegetation Types
- Alkali Grassland
- Annual Grassland
- Alkali Scrub Playa
- Disturbed Alkali Scrub Playa
- Alkali Wetland
- Riversidean Sage Scrub
- Disturbed Riversidean Sage Scrub
- Southern Willow Scrub
- Ruderal
- Agriculture
- Ornamental
- Drainage
- Detention Basin
- Disturbed
- Developed

Vegetation Types Fig. 4.4-4J

Lakeview Substation and Transmission Line Project

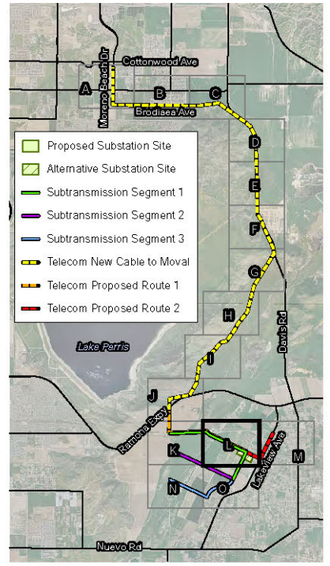
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Ramona Expy
Rider St
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Unnamed Street
Walnut Ave
Palomar Rd
Placentia Ave
CAVe
BAVe
BAVe
11th St
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Cottonwood Ave
Morrison Street Dr
Brodiaea Ave
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Lake Perris
Davis Rd
Ramona Expy
Lakeview Ave
Nuevo Rd
Proposed Substation Site
Alternative Substation Site
Subtransmission Segment 1
Subtransmission Segment 2
Subtransmission Segment 3
Telecom New Cable to Moval
Telecom Proposed Route 1
Telecom Proposed Route 2
Vegetation Types
Alkali Grassland
Annual Grassland
Alkali Scrub Playa
Disturbed Alkali Scrub Playa
Alkali Wetland
Riversidean Sage Scrub
Disturbed Riversidean Sage Scrub
Southern Willow Scrub
Ruderal
Agriculture
Ornamental
Drainage
Detention Basin
Disturbed
Developed
Vegetation Types Fig. 4.4-4K
Lakeview Substation and Transmission Line Project
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Vegetation Types
- Alkali Grassland
- Annual Grassland
- Alkali Scrub Playa
- Disturbed Alkali Scrub Playa
- Alkali Wetland
- Riversidean Sage Scrub
- Disturbed Riversidean Sage Scrub
- Southern Willow Scrub
- Ruderal
- Agriculture
- Ornamental
- Drainage
- Detention Basin
- Disturbed
- Developed

Vegetation Types Fig. 4.4-4L

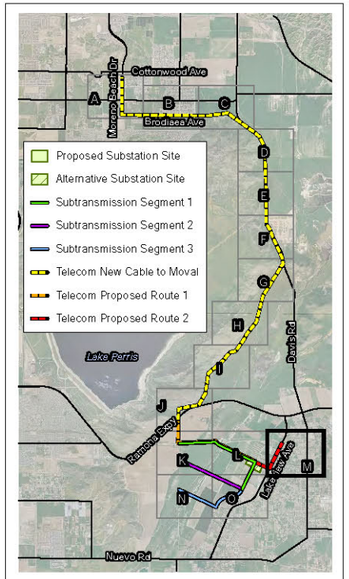
Lakeview Substation and Transmission Line Project

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Vegetation Types

- Alkali Grassland
- Annual Grassland
- Alkali Scrub Playa
- Disturbed Alkali Scrub Playa
- Alkali Wetland
- Riversidean Sage Scrub
- Disturbed Riversidean Sage Scrub
- Southern Willow Scrub
- Ruderal
- Agriculture
- Ornamental
- Drainage
- Detention Basin
- Disturbed
- Developed

Vegetation Types Fig. 4.4-4M

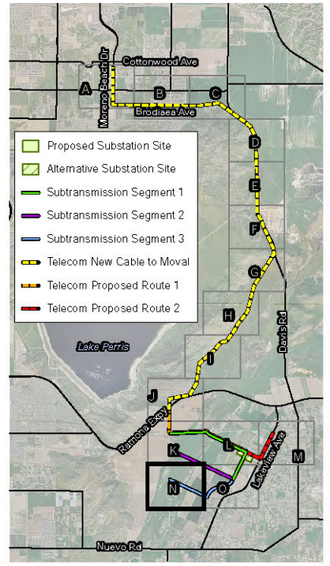
Lakeview Substation and Transmission Line Project

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Vegetation Types
- Alkali Grassland
- Annual Grassland
- Alkali Scrub Playa
- Disturbed Alkali Scrub Playa
- Alkali Wetland
- Riversidean Sage Scrub
- Disturbed Riversidean Sage Scrub
- Southern Willow Scrub
- Ruderal
- Agriculture
- Ornamental
- Drainage
- Detention Basin
- Disturbed
- Developed

Vegetation Types Fig. 4.4-4N

Lakeview Substation and Transmission Line Project

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Vegetation Types
- Alkali Grassland
- Annual Grassland
- Alkali Scrub Playa
- Disturbed Alkali Scrub Playa
- Alkali Wetland
- Riversidean Sage Scrub
- Disturbed Riversidean Sage Scrub
- Southern Willow Scrub
- Ruderal
- Agriculture
- Ornamental
- Drainage
- Detention Basin
- Disturbed
- Developed

Vegetation Types Fig. 4.4-40

Lakeview Substation and Transmission Line Project

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The detention basin occurs along Segment Two as part of the adjacent agriculture fields. The basin consists of an earthen berm and filled basin. There was no vegetation present within or on the berm at the time of the survey.

The irrigation ditch occurs along the New Cable to Moval. This area is regularly cleared of vegetation to enhance the flow of water. The sparse vegetation that does occur includes common knotweed (*Polygonum arenastrum*) and Persian knotweed (*Polygonum argyrocoleon*).

Disturbed areas are mostly unvegetated and are used as access roads for equipment and vehicle movement around active fields, residential dirt roads, and the shoulders of paved roads. They are found throughout the Project site.

Developed areas are found throughout the Project site. This mapping unit includes paved roads, parking areas, and buildings (e.g., residences, commercial buildings, and dairy facilities). These areas are mostly unvegetated or contain ornamental landscaping.

Common Wildlife

The Project site provides suitable habitat for several wildlife species. No fish or amphibian species were observed or detected on the Project site during the biological survey, and only limited habitat is present. One reptile species, side-blotched lizard (*Uta stansburiana*), was observed on the Project site during the biological survey. Common reptile species such as western fence lizard (*Sceloporus occidentalis*), and gopher snake (*Pituophis catenifer*) are expected to occur on the Project site as well.

Bird species observed include California quail (*Callipepla californica*), common peafowl (*Pavo cristatus*), great egret (*Ardea alba*), white-faced ibis (*Plegadis chihi*), northern harrier (*Circus cyaneus*), Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), killdeer (*Charadrius vociferus*), long-billed curlew (*Numenius americanus*), rock pigeon (*Columba livia*), band-tailed pigeon (*Patagioenas fasciata*), mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*), black phoebe (*Sayornis nigricans*), Say's phoebe (*Sayornis saya*), Cassin's kingbird (*Tyrannus vociferans*), western kingbird (*Tyrannus verticalis*), loggerhead shrike (*Lanius ludovicianus*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), California horned lark (*Eremophila alpestris*), cliff swallow (*Petrochelidon pyrrhonota*), barn swallow (*Hirundo rustica*), bushtit (*Psaltriparus minimus*), house wren (*Troglodytes aedon*), northern mockingbird (*Mimus polyglottos*), European starling (*Sturnus vulgaris*), lark sparrow (*Chondestes grammacus*), red-winged blackbird (*Agelaius phoeniceus*), western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), brown-headed cowbird (*Molothrus ater*), house finch (*Carpodacus mexicanus*), lesser goldfinch (*Spinus* [*Carduelis*] *psaltria*), American goldfinch (*Spinus* [*Carduelis*] *tristis*), and house sparrow (*Passer domesticus*).

Mammals, or their sign, observed on the Project site include desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), coyote (*Canis latrans*), domestic dog (*Canis familiaris*), raccoon

(*Procyon lotor*), domestic cat (*Felis catus*), horse (*Equus ferus caballus*), and domestic goat (*Capra aegagrus hircus*).

Wildlife Movement and Urban/Wildlands Interface

The Project site occurs within a land use matrix of primarily agricultural and residential areas. Open space occurs around Lake Perris to the northwest, with the Bernasconi Hills and the San Jacinto River adjacent to the Proposed Telecommunications Route (New Cable to Moval). This area occurs within the MSHCP Existing Core H (Dudek 2003). These areas may provide a connection to core areas in the Badlands and the middle reach of the San Jacinto River. Open space also occurs in the Lakeview Mountains to the southeast. This area is Proposed Noncontiguous Habitat Block 5 in the MSHCP (Dudek 2003). It is connected to other MSHCP conservation lands via Proposed Constrained Linkage 20 (i.e., the connection between Lake Perris in the north and the Lakeview Mountains in the south). This connection is important to reduce the likelihood of species extirpation as a result of population isolation in the Lakeview Mountains.

The abundance of active agriculture surrounding the Proposed Project, the fact that the majority of Subtransmission Source Line Routes run along existing roads, and the adjacency to existing indirect effects of urban development (e.g., night lighting, noise, and general human activity) presently limit the movement of wildlife species in the Project area.

The Proposed and Alternative Subtransmission Source Line Routes (Segments One, Two and Three) would all cross the San Jacinto River. This river functions as a wildlife movement corridor and live-in habitat for wildlife species. It is identified in the MSHCP as an example of a landscape linkage that serves as a movement corridor across the central portion of the MSHCP Plan Area for species such as the bobcat (*Lynx rufus*) (Dudek 2003). The construction of these segments may temporarily impact wildlife movement along the San Jacinto River.

Special Status Biological Resources

Special Status Vegetation Types

Resource agencies generally consider vegetation types to have special status if they support concentrations of special status plant or wildlife species, are of relatively limited distribution, or offer particular value to wildlife. While some special status vegetation types are not afforded legal protection unless they support protected species, others may be protected by ordinance, code, or regulation under which conformance typically requires a permit or other discretionary action prior to impacting the vegetation. Alkali scrub playa, disturbed alkali scrub playa, alkali wetland, Riversidean sage scrub, disturbed Riversidean sage scrub, and southern willow scrub may be considered special status vegetation types by the CDFG on the Project site.

Jurisdictional Areas

Drainages, which include "Waters of the U.S.", are protected under Section 404 of the Clean Water Act (CWA) and are under the jurisdiction of the U.S. Army Corps of Engineers (USACE). "Waters of the U.S." include navigable coastal and inland waters, lakes, rivers, streams and their tributaries; interstate waters and their tributaries; wetlands adjacent to such waters; intermittent streams; and other waters that could affect interstate commerce. The Regional Water Quality Control Board (RWQCB) is the primary agency responsible for protecting water quality within California through the regulation of discharges to surface waters under the CWA and the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act). The RWQCB's jurisdiction extends to all "Waters of the State" and to all "Waters of the U.S.", including wetlands (isolated and non-isolated).

Section 401 of the CWA provides the RWQCB with the authority to regulate, through a Water Quality Certification, any proposed federally permitted activity that may affect water quality. Among such activities are discharges of dredged or fill material permitted by the USACE pursuant to Section 404 of the CWA. Section 401 requires the RWQCB to provide "certification that there is reasonable assurance that an activity which may result in the discharge to 'waters of the U.S.' will not violate water quality standards." Water Quality Certification must be based on a finding that the proposed discharge will comply with water quality standards, which contain numeric and narrative objectives that can be found in each of the nine RWQCB's Basin Plans.

An RWQCB CWA Section 401 Water Quality Certification is required before the USACE will issue a Section 404 permit. In addition, if drainages on the Project site meet the criteria established by Section 1600 of the *California Fish and Game Code*, the CDFG may require a Streambed Alteration Agreement prior to any modification of the bed, bank, or channel of streambeds on the Project site.

Multiple features on the Project site may be under the jurisdiction of the USACE and/or the CDFG (Table 4.4-1). These features include crossings of the San Jacinto River, and the detention basin and irrigation ditch. The irrigation ditch empties into the San Jacinto River.

Special Status Plants and Wildlife

Plants or wildlife may be considered to have "special status" due to declining populations, vulnerability to habitat change, or restricted distributions. Certain special status species have been listed as Threatened or Endangered under the California Endangered Species Act (CESA) and the Federal Endangered Species Act (FESA).

Table 4.4-1 Project Locations Potentially Containing Jurisdictional Resources

Location	Areas Potentially under the Jurisdiction of:		
	USACE	CDFG	RWQCB
Proposed Subtransmission Source Line Route, Segment One	X	X	X
Proposed Subtransmission Source Line Route, Segment Two	X	X	X
Alternative Subtransmission Source Line Route, Segment Three	X	X	X
Proposed Telecommunications Routes	X	X	X

Special Status Plants

Special status plant species known to occur in the Project vicinity are listed in Appendix D Special Status Plant Species Reported in the Project Vicinity, along with habitat suitability and the potential for occurrence on each portion of the Project site. Some species may occur on some sites due to the presence of potentially suitable habitat or were observed while conducting various field surveys (BonTerra Consulting 2010a, 2010b, 2010c, 2010d). Plant surveys have been completed for Segments One and Two; the Proposed Telecommunications Route (Overhead Route 1 and 2); and Segment Three. Surveys are continuing on the Proposed Telecommunication Route, New Cable to Moval. Of these potentially occurring species, five are listed species and include Munz's onion (*Allium munzii*), San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*), thread-leaved brodiaea (*Brodiaea filifolia*), Moran's navarretia (*Navarretia fossalis*), and California Orcutt grass (*Orcuttia californica*). Each potential for occurrence is based on the potential suitability of the site and the level and frequency of disturbance.

Special Status Wildlife

Special status wildlife species that are known to occur or potentially occur in the Project vicinity are listed in Appendix D Special Status Wildlife Species Known to Occur in the Project Vicinity. Some of these species may occur on some of the sites due to the presence of potentially suitable habitat or were observed while conducting various field surveys. Of these potentially occurring species, four are listed species and include Riverside fairy shrimp (*Streptocephalus woottoni*), Quino checkerspot butterfly, coastal California gnatcatcher, and Stephens' kangaroo rat (*Dipodomys stephensi*). Appendix D lists each of these species, their State and federal status, and their potential for occurrence on each site. Focused efforts to determine the presence or absence were conducted for the Quino checkerspot butterfly, burrowing owl, and coastal California gnatcatcher for the Proposed Substation Site, Alternative Substation Site, Subtransmission Source Line Routes, and Proposed Telecommunications Routes (BonTerra Consulting 2010b). These surveys were limited to the areas that contain potentially suitable habitat.

Critical Habitat

Portions of the Project are within designated Critical Habitat for Moran's navarretia (Segments One, Two, and Three. REGULATORY SETTING

Federal

Federal Endangered Species Act (16 United States Code [USC] 153 et seq.)

The FESA of 1973 provides for (1) the conservation of plant and animal species that are listed by the federal government as "Endangered" or "Threatened" with extinction throughout all or a significant portion of their range and (2) the conservation of the ecosystems on which they depend. The FESA is implemented by enforcing Sections 7 and 9 of the Act. A federally listed species is protected from unauthorized "take" pursuant to Section 9 of the FESA. "Take", as defined by the FESA, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or to attempt to engage in any such conduct. All persons are presently prohibited from taking a federally listed species unless and until (1) the appropriate Section 10(a) permit has been issued by the U.S. Fish and Wildlife Service (USFWS) or (2) an incidental Take Statement is obtained as a result of formal consultation between a federal agency and the USFWS pursuant to Section 7 of the FESA and the implementing regulations that pertain to it (50 *Code of Federal Regulations* [CFR] 402). "Person" is defined in the FESA as an individual, corporation, partnership, trust, association, or any private entity; any officer, employee, agent, department or instrument of the federal government; any State, Municipality, or political subdivision of the state; or any other entity subject to the jurisdiction of the United States. The Project Applicant is a "person" for purposes of the FESA.

Sections 404 and 401 of the Clean Water Act of 1972 (33 USC 1251 et seq.)

Section 404 of the CWA regulates the discharge of dredged or fill material into "Waters of the U.S.", including wetlands. The USACE is the designated regulatory agency responsible for administering the 404 permit program and for making jurisdictional determinations. This permitting authority applies to all "Waters of the U.S." where the material has the effect of (1) replacing any portion of "Waters of the U.S." with dry land or (2) changing the bottom elevation of any portion of "Waters of the U.S.". These fill materials would include sand, rock, clay, construction debris, wood chips, and materials used to create any structure or infrastructure in the "Waters of the U.S.". Dredge and fill activities are typically associated with development projects; water-resource related projects; infrastructure development and wetland conversion to farming; forestry; and urban development.

Under Section 401 of the CWA, an activity requiring a USACE Section 404 permit must obtain a State Water Quality Certification (or waiver thereof) to ensure that the activity will not violate established State water quality standards. The State Water Resources Control Board (SWRCB), in conjunction with the nine California RWQCBs, is responsible for administering the Section 401 water quality certification program.

Under Section 401 of the federal CWA, an activity involving discharge into a water body must obtain a federal permit and a State Water Quality Certification to ensure that the activity will not violate established water quality standards. The U.S. Environmental Protection Agency (USEPA) is the federal regulatory agency responsible for implementing the CWA. However, it is the SWRCB in conjunction with the nine RWQCBs who essentially have been delegated the responsibility to administer the water quality certification (401) program.

Migratory Bird Treaty Act of 1918 (16 USC 703 to 711)

The Migratory Bird Treaty Act of 1918, as amended in 1972 (MBTA), makes it unlawful, unless permitted by regulations, to ”pursue; hunt; take; capture; kill; attempt to take, capture or kill; possess; offer for sale; sell; offer to purchase; purchase; deliver for shipment; ship; cause to be shipped; deliver for transportation; transport; cause to be transported; carry or cause to be carried by any means whatever; receive for shipment, transportation, or carriage; or export, at any time, or in any manner, any migratory bird…for the protection of migratory birds…or any part, nest, or egg of any such bird.” (16 USC 703).

In 1972, the MBTA was amended to include protection for migratory birds of prey (e.g., raptors). Six families of raptors occurring in North America were included in the amendment: Accipitridae (kites, hawks, and eagles), Cathartidae (New World vultures), Falconidae (falcons and caracaras), Pandionidae (ospreys), Strigidae (typical owls), and Tytonidae (barn owls). The provisions of the 1972 amendment to the MBTA protect all species and subspecies of these families.

Bald and Golden Eagle Protection Act (16 USC 668)

This Act provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act and strengthened other enforcement measures. A 1978 amendment authorizes the Secretary of the Interior to permit the taking of golden eagle nests that interfere with resource development or recovery operations. A 1994 Memorandum (59 CFR 22953, April 29, 1994) from President William J. Clinton to the heads of Executive Agencies and Departments sets out the policy concerning collection and distribution of eagle feathers for Native American religious purposes.

State

California Endangered Species Act (California Fish and Game Code Section 2050 et seq.)

Pursuant to the CESA and Section 2081 of the *California Fish and Game Code*, an incidental take permit from the CDFG is required for projects that could result in the take of a state-listed Threatened or Endangered species. Under the CESA, “take” is defined as an activity that would directly or indirectly kill an individual of a species, but the definition does not include “harm” or “harass”, as the federal act does. As a result, the

threshold for a take under the CESA is higher than that under the FESA. An incidental take permit authorized by the CDFG under Section 2081(b) would be required where a project could result in the take of a state-listed Threatened or Endangered Species. The application for an incidental take permit under Section 2081(b) has a number of requirements including the preparation of a conservation plan, generally referred to as a Habitat Conservation Plan.

The State of California considers an Endangered Species as one whose prospects of survival and reproduction are in immediate jeopardy; a Threatened Species as one present in such small numbers throughout its range that it is likely to become an Endangered Species in the near future in the absence of special protection or management; and a Rare Species as one present in such small numbers throughout its range that it may become Endangered if its present environment worsens. The Rare Species designation applies only to California native plants. The CESA authorizes the CDFG to issue permits authorizing incidental take of Threatened and Endangered Species. A California Species of Special Concern is an informal designation which the CDFG uses for some declining wildlife species that are not State candidates. This designation does not provide legal protection but signifies that these species are recognized as special status by the CDFG.

California Environmental Quality Act (California Fish and Game Code Section 1802)

State law confers upon the CDFG the trustee responsibility and authority for the public trust resource of wildlife in California. The CDFG may play various roles under the California Environmental Quality Act (CEQA) process. By State law, the CDFG has jurisdiction over the conservation, protection, and management of the wildlife, native plants, and habitat necessary to maintain biologically sustainable populations. The CDFG shall consult with lead and responsible agencies and shall provide the requisite biological expertise to review and comment upon environmental documents and impacts arising from project activities.

As a trustee agency, the CDFG has jurisdiction over certain resources held in trust for the people of California. Trustee agencies are generally required to be notified of CEQA documents relevant to their jurisdiction, whether or not these agencies have actual permitting authority or approval power over aspects of the underlying project (14 *California Code of Regulations* [CCR], Section 15386). The CDFG, as a trustee agency, must be notified of CEQA documents regarding projects involving fish and wildlife of the state, as well as rare and endangered native plants, wildlife areas, and ecological reserves. As a trustee agency, the CDFG cannot approve or disapprove a project, although lead and responsible agencies are required to consult with the CDFG. The CDFG, as the trustee agency for fish and wildlife resources, shall provide the requisite biological expertise to review and comment upon environmental documents and impacts arising from project activities and shall make recommendations regarding those resources held in trust for the people of California (*California Fish and Game Code,* Section 1802).

California Fish and Game Code (Sections 1600 through 1616)

All diversions, obstructions, or changes to the natural flow or bed, channel or bank of any river, stream, or lake in California that support wildlife resources and/or riparian vegetation are subject to CDFG regulations, pursuant to Sections 1600 through 1603 of the *California Fish and Game Code.* Under Section 1602, it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake designated by CDFG as waters within their jurisdiction, nor can a person use any material from the streambeds, without first notifying the CDFG of such activity. For a project that may affect stream channels and/or riparian vegetation regulated under Sections 1600 through 1603, CDFG authorization is required in the form of a Streambed Alteration Agreement.

Additional Fish and Game Codes

Sections 1900 et seq. or Native Plant Protection Act

This section lists threatened, endangered, and rare plants so designated by the California Fish and Game Commission.

Sections 3511, 4700, 5050, and 5515

These sections provide a provision for the protection of bird, mammal, reptile, amphibian, and fish species that are “fully protected”. Fully protected animals may not be harmed, taken, or possessed.

Section 3503, 3503.5, and 3513

This section states that 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 explicitly provides protection for all birds-of-prey, including their eggs and nests. Section 3513 makes it unlawful to take or possess any migratory non-game bird as designated in the MBTA.

Title 14, California Code of Regulations, Sections 670.2 and 670.5

These sections list animals designated as threatened or endangered in California. The CDFG designates species considered to be indicators of regional habitat changes, or candidate species for future state listing, as California Species of Special Concern.

California Porter-Cologne Water Quality Control Act

Pursuant to the California Porter-Cologne Water Quality Control Act, the SWRCB and the nine RWQCBs may require permits (“waste discharge requirements” or “WDRs”) for the fill or alteration of the “Waters of the U.S.”. The term “Waters of the State” is defined

as “any surface water or groundwater, including saline waters, within the boundaries of the state” (*California Water Code,* Section 13050[e]). Although “waste” is partially defined as any waste substance associated with human habitation, the SWQCB interprets this to include fill discharge into water bodies. The State and Regional Boards have interpreted their authority to require WDRs to extend to any proposal to fill or alter “Waters of the State”, even if those same waters are not under USACE jurisdiction. Pursuant to this authority, the State and Regional Boards may require the submission of a”report of waste discharge“under Section 13260, which is treated as an application for a WDR.

County of Riverside

Western Riverside Multiple Species Habitat Conservation Plan (MSHCP)

The Western Riverside MSHCP is a comprehensive, multi-jurisdictional plan that focuses on conservation of species and their associated habitats in western Riverside County. The MSHCP will allow Riverside County and its cities to better control local land-use decisions and to maintain a strong economic climate in the region while addressing the requirements of the state and federal Endangered Species Acts. The MSHCP Plan Area encompasses 1.26 million acres in western Riverside County.

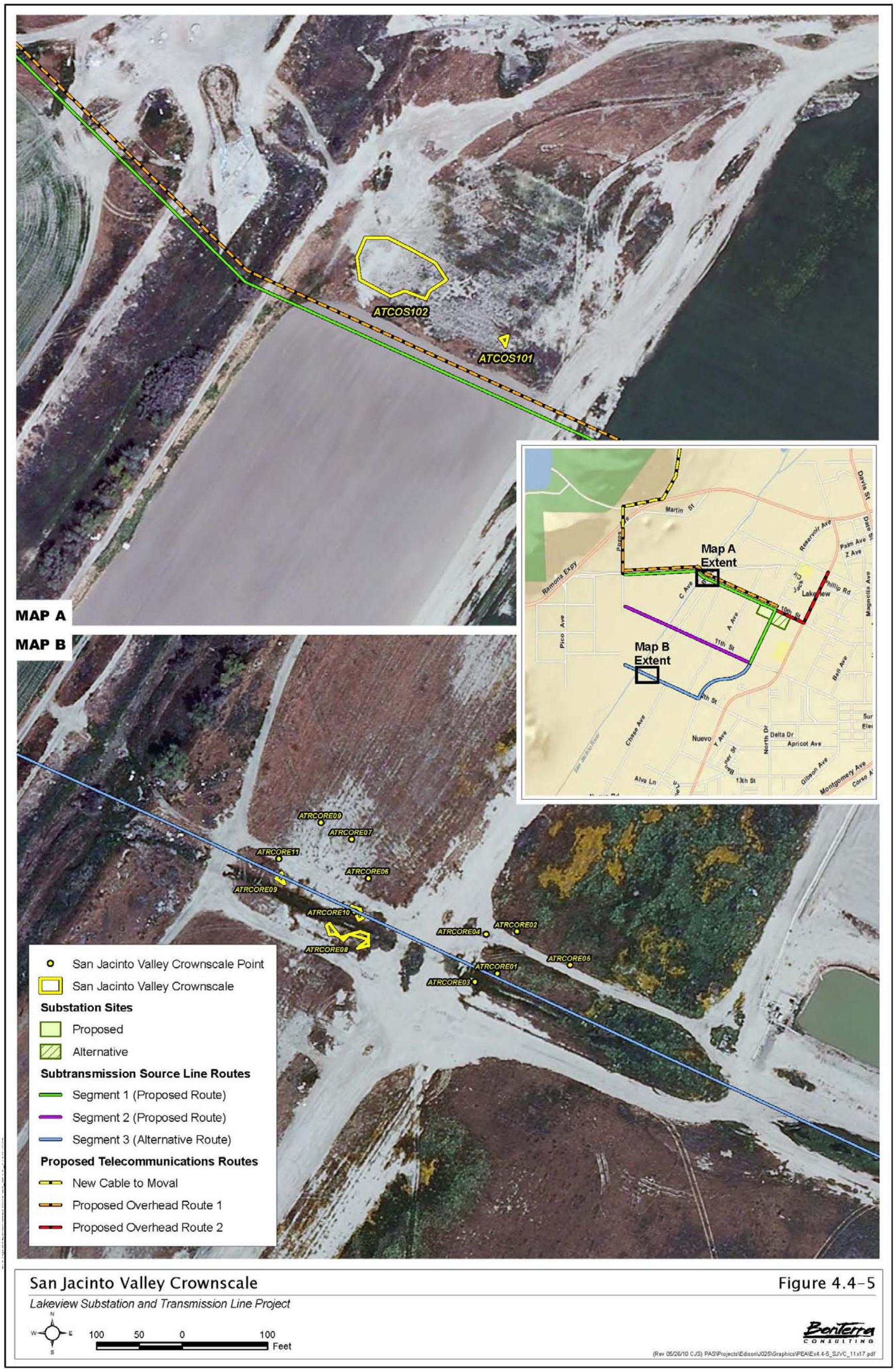
The MSHCP has 146 “Covered Species” (including 14 Narrow Endemic plant species). Of the 146 “covered species”, 118 species (including 13 of the 14 Narrow Endemic plant species) are considered “adequately conserved” within the MSHCP. A covered species is considered adequately conserved when enough designated “Criteria Area” (i.e., geographic area, soils and/or habitat that supports, or has the potential to support, the Covered Species) has been acquired, or designated for acquisition, for that species in the MSHCP. For species not deemed adequately conserved, additional dedication and/or purchase of conservation land may be required, as determined on a case-by-case basis. A Narrow Endemic species has a limited geographic distribution (e.g., Santa Rosa Plateau or San Jacinto River Valley), an affinity for a particular soil-type (e.g., Domino, Travers, or Willow), and/or is restricted to a specific habitat (e.g., coastal sage scrub, vernal pools).

The MSHCP requires that project sites be evaluated for a number of factors to assess how they meet the criteria identified in the MSHCP. As part of this evaluation, the project site has been assessed for riparian/riverine resources, vernal pools, areas under the jurisdiction of the USACE and/or CDFG, urban/wildlands interface issues, and potential for special status species. If it is determined that there is potential for one of these resources and/or if the site is located within a Criteria Area that indicates potential for particular wildlife species or narrow endemic plant species, focused surveys may be required. Focused surveys must follow MSHCP protocol guidelines which typically limit surveys to certain seasonal time periods and require a set number of surveys to be conducted. In addition, Criteria Area requirements may restrict the level of development allowable within the site.

The Proposed Project occurs within a total of 12 MSHCP Criteria Cells (Figure 4.4-5). Table 4.4-2 lists these Criteria Cells and the species included in each designation.

Table 4.4-2 MSHCP Criteria Cells Within the Project Limits

Criteria Cells	Planning Species	Project Sections Included
1364, 1483, 1577	Bell's sage sparrow coastal California gnatcatcher least Bell's vireo loggerhead shrike southern California rufous-crowned sparrow southwestern willow flycatcher Quino checkerspot butterfly bobcat Stephens' kangaroo rat	Proposed Telecommunications Route (New Cable to Moval)
2251, 2548, 2549	arroyo toad mountain plover tricolored blackbird white-faced ibis Riverside fairy shrimp vernal pool fairy shrimp Los Angeles pocket mouse western pond turtle Coulter's goldfields Davidson's saltscale San Jacinto Valley crownscale Moran's navarretia thread-leaved brodiaea vernal barley Wright's trichocoronis	Proposed Telecommunications Route (New Cable to Moval); Alternative Subtransmission Source Line Route, Segment Three
2347, 2348, 2444, 2445, 2652	Bell's sage sparrow Quino checkerspot butterfly bobcat Stephens' kangaroo rat	Proposed Substation Site; Alternative Substation Site; Proposed Subtransmission Source Line Routes, Segments One and Two; Alternative Subtransmission Source Line Route, Segment Three Proposed Telecommunications Routes
2443	loggerhead shrike mountain plover white-faced ibis vernal pool fairy shrimp Los Angeles pocket mouse Coulter's goldfields Davidson's saltscale San Jacinto Valley crownscale Moran's navarretia thread-leaved brodiaea vernal barley Wright's trichocoronis	Proposed Subtransmission Source Line Routes, Segments One and Two



San Jacinto Valley Crownscale

Figure 4.4-5

Lakeview Substation and Transmission Line Project

(Rev 05/26/10 CJS) PAS\Projects\Edison\J025\Graphics\PEA\Ex4.4-5_SJVC_11x17.pdf

Five narrow endemic plant species are known to occur within the Project area including, Munz's onion, slender-horned spineflower (*Dodecahema leptoceras*), Moran's navarretia, California Orcutt grass and Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*).

MSHCP covered plant species with potential to occur in the Project area include Munz's onion, San Jacinto Valley crownscale, Parish's brittlescale (*Atriplex parishii*), Davidson's saltscale (*Atriplex serenana* var. *davidsonii*), thread-leaved brodiaea, intermediate mariposa lily (*Calochortus weedii* var. *intermedius*), smooth tarplant (*Centromadia pungens* ssp. *laevis*), Parry's spineflower (*Chorizanthe parryi* var. *parryi*), long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*), vernal barley (*Hordeum intercedens*), Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*), Moran's navarretia, California Orcutt grass, and Wright's trichocoronis.

MSHCP covered wildlife species with potential to occur in the Project area include Riverside fairy shrimp, Quino checkerspot butterfly, western spadefoot (*Spea* [*Scaphiopus*] *hammondii*), coast horned lizard (*Phrynosoma coronatum* [*blainvillii* population]), northern red-diamond rattlesnake (*Crotalus ruber ruber*), Cooper's hawk, golden eagle (*Aquila chrysaetos*), northern harrier, white-tailed kite (*Elanus leucurus*), merlin (*Falco columbarius*), prairie falcon (*Falco peregrinus*), mountain plover (*Charadrius montanus*), burrowing owl, loggerhead shrike, California horned lark, coastal California gnatcatcher, southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), grasshopper sparrow (*Ammodramus savannarum*), Bell's sage sparrow (*Amphispiza belli belli*), tricolored blackbird (*Agelaius tricolor*), San Diego black-tailed jackrabbit (*Lepus californicus bennettii*), northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*), Stephens' kangaroo rat, Los Angeles pocket mouse (*Perognathus longimembris brevinasus*) and San Diego desert woodrat (*Neotoma lepida intermedia*).

4.4.4 Significance Criteria

The significance criteria for assessing the impacts to biological resources come from the California Environmental Quality Act (CEQA) Environmental Checklist. According to the checklist, a project causes a potentially significant impact if it would:

- 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 or USFWS.

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or USFWS.

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- Interfere substantially with the movement of any native or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Section 15065(a), *Mandatory Findings of Significance,* of the CEQA Guidelines states that a project may have a significant effect on the environment if " the project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare or threatened species".

An evaluation of whether an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would substantially diminish, or result in the loss of, an important biological resource or those that would obviously conflict with local, State or Federal resource conservation plans, goals, or regulations. Impacts are sometimes locally adverse but not significant because, although they would result in an adverse alteration of existing conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population- or region-wide basis.

Section 15380 of the CEQA Guidelines indicates that a lead agency can consider a non-listed species to be Rare or Endangered for the purposes of CEQA if the species can be shown to meet the criteria in the definition of Rare or Endangered. For the purposes of this discussion, the current scientific knowledge on the population size and distribution for each special status species was considered according to the definitions for Rare and Endangered listed in Section 15380 of the CEQA Guidelines.

The actual and potential occurrence of special-status biological resources on the Project site was correlated with the previously identified significance criteria to determine whether the impacts of the Project on these resources would be significant, less than significant, or would result in no impact.

4.4.5 Impact analysis

Introduction

This section presents a general impact analysis of the Lakeview Substation Project. Because the Proposed Project is still early in the design stage, this section outlines the potential issues that are likely to arise from the construction of the project. A complete

Project impact analysis will be possible once the Proposed Project impact footprint is established.

Both direct and indirect impacts on biological resources have been evaluated. Direct impacts are those that involve the initial loss of habitats due to grading, construction, and construction-related activities. Indirect impacts are caused by the action and occur late in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may induce changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. Generally, indirect impacts are those that would be related to impacts on the adjacent remaining habitat due to construction activities (e.g., noise, dust) or operation of the Proposed Project (e.g., human activity, indirect lighting).

Biological impacts associated with the Proposed Project were evaluated with respect to the following special status biological issues:

- Federally or state-listed Endangered or Threatened species of plant or wildlife;
- Non-listed species that meet the criteria in the definition of Rare or Endangered in the CEQA guidelines;
- Streambeds, wetlands, and their associated vegetation;
- Habitats suitable to support a federally or state-listed Endangered or Threatened species of plant or wildlife;
- Species designated as California Species of Special Concern;
- Habitat, other than wetlands, considered special status by regulatory agencies (USFWS, CDFG) or resource conservation organizations; and
- Other species or issues of concern to regulatory agencies or conservation organizations (e.g., CNPS).

Direct Impacts

The actual and potential occurrence of biological resources in the Project vicinity was correlated with the significance criteria described in Section 4.4.5 to determine whether impacts from the Proposed Project on these resources would be significant. Potential direct impacts are grouped below according to topic.

Depending on the site and route selected, the Proposed Project may impact the following types of vegetation: alkali grassland, annual grassland, alkali scrub playa, disturbed alkali scrub playa, alkali wetland, Riversidean sage scrub, disturbed Riversidean sage scrub, southern willow scrub, ruderal, agriculture, and ornamental. In

addition, the Project may impact irrigation ditch, detention basin, disturbed, and developed areas. Many of these vegetation types potentially support special status plants and wildlife and would have high biological value. Impacts to special status species will be avoided by direct grading and construction impacts where possible; the potential of these impacts would be reduced by implementing APM 6 listed below.

As stated earlier, multiple features on the Project site may be under the jurisdiction of the USACE and/or CDFG (Table 4.4-1). The Project, as proposed, is not expected to cause impacts to the San Jacinto River or any of the drainage ditches that may be under the jurisdiction of the USACE and/or CDFG. The San Jacinto River and these drainage ditches would be avoided by direct grading and construction impacts. However, incidental or accidental impacts could occur and, of so, these impacts would be potentially significant. The potential of this impact would be reduced to less than significant by implementation of Best Management Practices (BMPs).

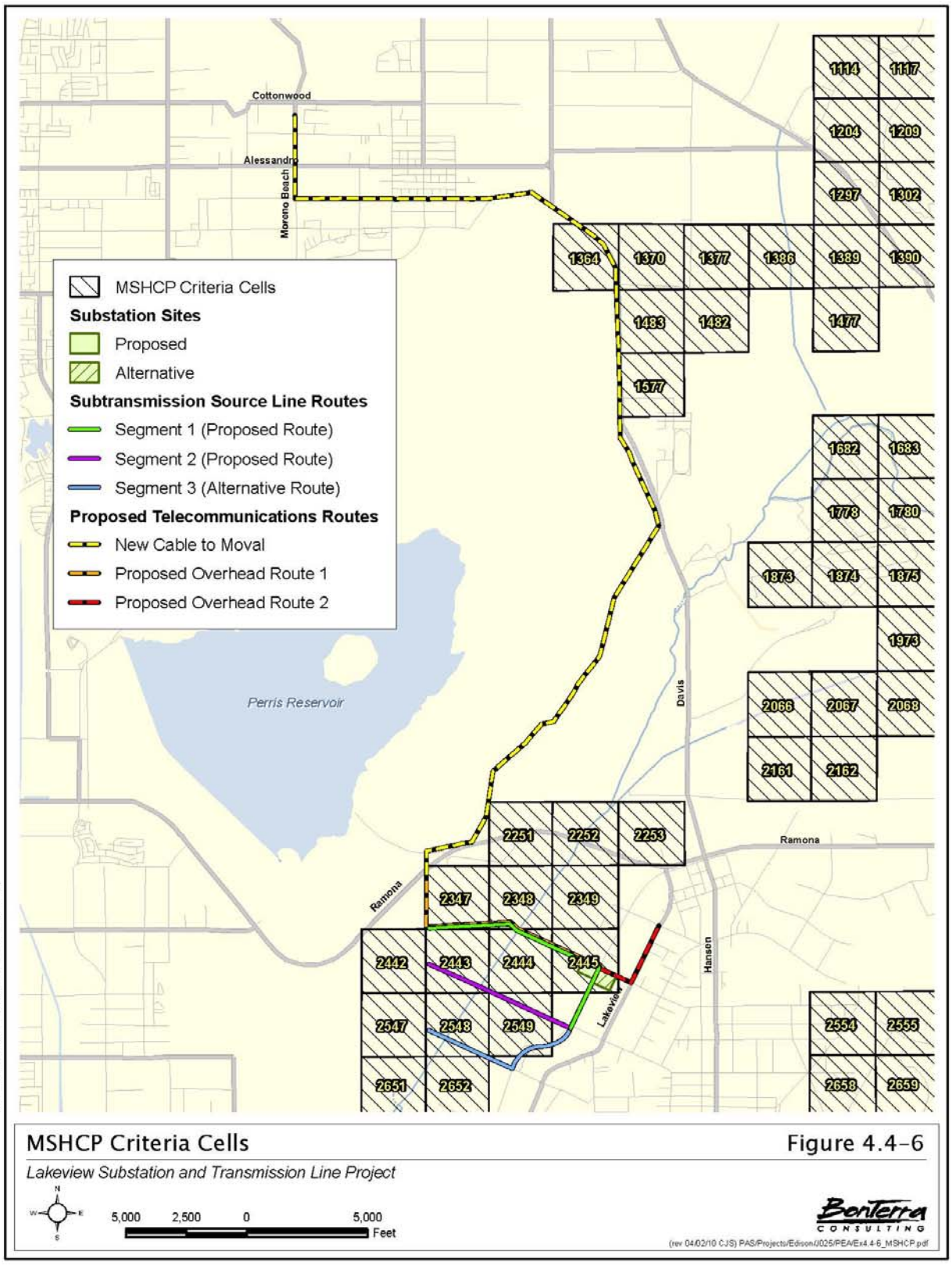
Construction of the Proposed Project would similarly result in a minimal loss of moderate to high-quality habitat for common wildlife species. The loss of limited wildlife habitat is considered an adverse but less-than-significant impact. Therefore, APMs are not required for common wildlife habitat/species.

Three special status plant species were observed within the Project area, including San Jacinto Valley crownscale along Segment One; the Proposed Telecommunications Route (Overhead Route 1); and Segment Three (Figure 4.4-6); smooth tarplant along Segments One and Two and the Proposed Telecommunications Route (Overhead Route 1); and Coulter's goldfields along Segment Two and Segment Three. Impacts to these special status plant species will be avoided by direct grading and construction impacts where possible; the potential of these impacts would be reduced to less than significant by implementing APM's 2, 6, and 7.

Quino checkerspot butterfly, burrowing owl, and California gnatcatcher were not observed; however, two special status wildlife species were incidentally observed including loggerhead shrike along the Proposed Telecommunications Route (Overhead Route 1); and California horned lark along Segment One. Impacts on these species would be considered adverse but less than significant; therefore, no APMs would be required.

Multiple Species Habitat Conservation Plan (MSHCP) Issues

Because SCE is a Participating Special Entity under the Western Riverside County MSHCP, the sites were also assessed for wildlife movement and urban/wildlands interface issues, presence of riparian/riverine areas and vernal pools, special status plant potential, and burrowing owl potential. SCE has the option to participate in the Western Riverside County MSHCP as a Participating Special Entity. At this time it is uncertain as to whether or not SCE will participate in this Plan; however, SCE will protect sensitive and protected species and habitats in a manner that is consistent with the Western Riverside County MSHCP.



MSHCP Criteria Cells — Figure 4.4-6

Lakeview Substation and Transmission Line Project

5,000 2,500 0 5,000 Feet

BonTerra CONSULTING

(rev 04/02/10 CJS) PAS/Projects/Edison/J026/PEA/Ex4.4-6_MSHCP.pdf

Indirect Impacts

Indirect impact analysis is subject to final Project Design. It is anticipated that there may be some indirect impacts resulting from the Proposed Project; possible indirect impacts are described below.

Lighting

Night lighting of the Proposed Project during and after construction is expected; this lighting could inadvertently affect the behavior patterns of nocturnal and crepuscular (active at dawn and dusk) wildlife adjacent to the selected site. Of greatest concern is the impact on small ground-dwelling animals that use the darkness to hide from predators, and on owls that are specialized night foragers. In addition, night lighting could inhibit wildlife from using the habitat adjacent to lighted areas. This impact is considered adverse but not significant; therefore, no APMs are required.

Noise

Noise levels on the selected site are expected to increase over present levels during construction of the proposed project. During construction, temporary noise impacts have the potential to disrupt foraging, nesting, roosting, and/or denning activities for wildlife species. In addition, noise impacts would also increase over present levels due to normal operation of the project. Wildlife species stressed by noise may disperse from the habitat located in the vicinity of the selected site. This impact is considered adverse but not significant; therefore, no APMs are required.

Construction Impacts

Proposed Substation Site

Would the project 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 or USFWS?

The Proposed Substation Site would not have a substantial adverse effect either directly or through habitat modifications on any special status plant species. The Proposed Substation Site is not expected to support any special status plant species due to the lack of suitable habitat and/or soils. Therefore, construction and operation of the Proposed Substation Site will not impact special status plant species and no APMs would be required.

The Proposed Substation Site contains suitable habitat for ferruginous hawk (*Buteo regalis*), northern harrier, white-tailed kite, merlin, prairie falcon, peregrine falcon, mountain plover, loggerhead shrike, California horned lark, and San Diego black-tailed jackrabbit. Due to the limited amount of habitat loss relative to the availability of habitat for these species in the region, impacts on these species would be considered adverse but less than significant; therefore, no APMs would be required.

The burrowing owl is not currently expected to occur on the Proposed Substation Site because it was not observed during focused surveys conducted in 2009. However, suitable habitat for this species occurs on the site, and this species may occur occasionally as a migrant or winter visitor. If this species returns to the site, impacts on burrowing owls would be considered significant; therefore, implementation of APM 5 would reduce this impact to less-than-significant levels.

Suitable foraging habitat for white-faced ibis, Cooper's hawk, golden eagle, tricolored blackbird, western yellow bat (*Lasiurus xathinus*), and western mastiff bat (*Eumops perotis californicus*) is present on the site as well. The construction of the Proposed Substation Site is expected to impact foraging opportunities for these species. Although construction activities may discourage use of the area within the immediate vicinity of the active work site, this disruption in foraging is expected to be extremely localized and temporary in nature. Impacts on foraging habitat for these species would be considered adverse, but would not be expected to appreciably affect the overall population of these species given the amount of potentially suitable foraging habitat in the immediate vicinity. Therefore, impacts on these species would be considered less than significant and no APMs are required.

The Proposed Substation Site provides potentially suitable habitat for nesting birds/raptors. Construction of the Proposed Substation Site could result in construction-related impacts to nesting birds/raptors, including potential disruption of nesting activity, or destruction of active nests. Construction disturbance during the breeding season (February 1 – August 31) that results in the incidental loss of fertile eggs or nestlings, or otherwise leads to nest abandonment is considered take by USFWS under the Migratory Bird Treaty Act, as well as by CDFG under the California Fish and Game Codes 3503, 3503.5, and 3513 (see Regulatory Setting above). The potential for this impact to occur during construction would be minimized to less than significant by implementation of the APM's 1, 2 and 6 listed below.

Would the project 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 or USFWS?

Construction and operation of the Proposed Substation Site would not have a substantial adverse effect on any riparian habitat or other sensitive natural community. The Proposed Substation Site does not support any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, by the CDFG or USFWS. Construction of the Proposed Substation Site would impact agriculture and disturbed areas. These impacts are summarized in Table 4.4-3. These areas generally have low biological value because they are composed of unvegetated areas or are vegetated with non-native species. In addition, these areas generally provide limited habitat for native plant and wildlife species, although they may occasionally be used by native species. Therefore, impacts on these areas would not be considered significant and no APMs would be required.

Table 4.4-3 Vegetation Types and other Areas Impacted by the Proposed Substation Site

Vegetation Types and Other Areas	Existing (Acres)	Total Impacts (Acres)
Agriculture	7.09	**7.09**
Disturbed	0.98	**0.98**
Total	**8.07**	**8.07**

Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means?

No federally protected wetlands, as defined by Section 404 of the Clean Water Act, are present on the Proposed Substation Site. Construction and operation of the Proposed Substation Site would not have a substantial adverse effect on federally protected wetlands. Therefore, implementation of the Proposed Substation Site would result in no impacts to wetlands. No APMs would be required.

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridor, or impede the use of native wildlife nursery sites?

Wildlife species observed or expected to occur on the Proposed Substation Site include species associated with residential/urban habitats. Therefore, the Proposed Substation Site would not interfere substantially with the movement of any native resident or migratory fish or wildlife species. In addition, there would be no impacts to wildlife movement corridors because the Proposed Substation Site does not function as, nor is it a part of, a major wildlife movement corridor. No native nursery sites are present on the Proposed Substation Site. Therefore, construction and operation of the Proposed Substation Site would not impact wildlife movement and no APMs would be required.

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Construction and operation of the Proposed Substation would not conflict with any local policies or ordinances protecting biological resources. Furthermore, the Proposed Substation Site does not contain any native trees; therefore, construction and operation of the Proposed Substation site would result in no impact under this criterion and no APMs would be required.

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Construction and operation of the Proposed Substation Site would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. The Project site is within a Criteria Area Cell (2445) of the Western Riverside County MSHCP (Dudek 2003); however current land use for this site is agriculture and does not provide habitat for the Criteria Area Species (Bell's sage sparrow, Quino checkerspot butterfly, bobcat, and Stephens' kangaroo rat). The Proposed Substation would result in no impact under this criterion and no APMs would be required.

Proposed Subtransmission Source Line Route (Segments One and Two)

Would the project 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 or USFWS?

Segment One contains suitable habitat for special status plants including San Jacinto Valley crownscale, South Coast saltscale (*Atriplex pacifica*), Parish's brittlescale, Davidson's saltscale, thread-leaved brodiaea, smooth tarplant, Parry's spineflower, long-spined spineflower, vernal barley, Coulter's goldfields, Moran's navarretia, Salt Spring checkerbloom (*Sidalcea neomexicana*), and Wright's trichocoronis. A total of 1999 San Jacinto Valley crownscale individuals, 4000 vernal barley individuals, and 75 smooth tarplant individuals were observed during the 2010 plant surveys (BonTerra 2010a). Potential impacts to these species would be considered significant; however, implementation of APM's 2, 6, and 7 would reduce these impacts to less-than-significant levels.

Segment Two contains suitable habitat for special status plant species including San Jacinto Valley crownscale, South Coast saltscale, Davidson's saltscale, smooth tarplant, Parry's spineflower, vernal barley, Coulter's goldfields, Moran's navarretia, Salt Spring checkerbloom, and Wright's trichocoronis. A total of 65 smooth tarplant individuals, 150 vernal barley individuals, and 1 Coulter's goldfields were observed in this segment during the 2009 plant surveys (BonTerra 2010a). Potential impacts to these species would be considered significant; however, implementation of APM's 2 and 6 would reduce these impacts to less-than-significant levels.

Segment One provides suitable habitat or limited suitable habitat for special status wildlife species including white-faced ibis, golden eagle, mountain plover, loggerhead shrike, California horned lark, Oregon vesper sparrow (*Pooecetes gramineus affinis*), grasshopper sparrow, San Diego black-tailed jackrabbit, northwestern San Diego pocket mouse, Los Angeles pocket mouse, southern grasshopper mouse (*Onychomys torridus ramona*), and American badger (*Taxidea taxus*). California horned lark was observed along Segment One during the 2009 surveys (BonTerra 2010b). Due to the limited amount of habitat loss relative to the availability of habitat for these species in the region,

impacts on these species would be considered adverse but less than significant; therefore, no APMs would be required.

Segment One contains suitable habitat for Stephens' kangaroo rat, which is a federally Endangered and State Threatened species. Impacts to this species would be considered significant; however, implementation of APM 3 would reduce these impacts to less than significant.

The burrowing owl is not currently expected to occur along Segment One because it was not observed during focused surveys conducted in 2009. However, suitable habitat for this species occurs on the site, and this species may occur occasionally as a migrant or winter visitor. If this species returns to the site, impacts on burrowing owls would be considered significant; therefore, implementation of APM 5 would reduce this impact to less-than-significant levels.

Segment One provides suitable foraging habitat for Cooper's hawk, ferruginous hawk, northern harrier, white-tailed kite, merlin, prarie falcon, peregrine falcon, tricolored blackbird, western yellow bat, and western mastiff bat. The construction of Segment One is expected to impact foraging opportunities for these species. Although construction activities may discourage use of the area within the immediate vicinity of the active work site, this disruption in foraging is expected to be extremely localized and temporary in nature. This impact is considered less than significant given the large availability of foraging habitat in the region. Therefore, no APMs are required.

Segment Two contains suitable habitat or limited suitable habitat for special status wildlife species including white-faced ibis, white-tailed kite, mountain plover, loggerhead shrike, California horned lark, Oregon vesper sparrow, San Diego black-tailed jackrabbit, northwestern San Diego pocket mouse, Los Angeles pocket mouse, and southern grasshopper mouse. Due to the limited amount of habitat loss relative to the availability of habitat for these species in the region, impacts on these species would be considered adverse but less than significant; therefore, no APMs would be required.

Segment Two contains limited suitable habitat for Stephens' kangaroo rat. Impacts to this species would be considered significant; however, implementation of APM 3 would reduce these impacts to less than significant.

The burrowing owl is not currently expected to occur on Segment Two because it was not observed during focused surveys conducted in 2009. However, suitable habitat for this species occurs on the site, and this species may occur occasionally as a migrant or winter visitor. If this species returns to the site, impacts on burrowing owls would be considered significant; therefore, implementation of APM 5 would reduce this impact to less-than-significant levels.

Segment Two contains suitable foraging habitat for Cooper's hawk, golden eagle, ferruginous hawk, northern harrier, merlin, prairie falcon, peregrine falcon, tricolored blackbird, western yellow bat, and western mastiff bat. Although construction activities may discourage use of the area within the immediate vicinity of the active work site, this

disruption in foraging is expected to be extremely localized and temporary in nature. This impact is considered less than significant given the large availability of foraging habitat in the region. Therefore, no APMs are required.

Segments One and Two provide potentially suitable habitat for nesting birds/raptors. Construction of the Proposed Subtransmission Source Line Routes could result in construction-related impacts to nesting birds/raptors, including potential disruption of nesting activity, or destruction of active nests. Construction disturbance during the breeding season (February 1 – August 31) that results in the incidental loss of fertile eggs or nestlings, or otherwise leads to nest abandonment is considered take by USFWS under the Migratory Bird Treaty Act, as well as by CDFG under the California Fish and Game Codes 3503, 3503.5, and 3513 (see Regulatory Setting above). The potential for this impact to occur during construction would be minimized to less than significant by implementation of the APM's 1, 2, and 6 listed below.

Would the project 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 or USFWS?

The Proposed Subtransmission Source Line Routes support a small patch of southern willow scrub which is considered a special status vegetation type by CDFG. Direct grading and construction impacts to this vegetation will be avoided where possible; the potential of these impacts would be reduced by implementing APM 6 listed below. Construction impacts are summarized in Table 4.4-4.

Table 4.4-4 Vegetation Types and other Areas Impacted by the Proposed Subtransmission Source Line Routes (Segments One and Two)

Vegetation Types and Other Areas	Existing (Acres)	Total Impacts (Acres)
Alkali Grassland	0.77	0.20
Annual Grassland	0.22	0.00
Alkali Scrub Playa	0.29	0.00
Disturbed Alkali Scrub Playa	0.03	0.00
Southern Willow Scrub	0.06	0.00
Ruderal	1.03	1.03
Agriculture	26.60	26.60
Ornamental	0.21	0.21
Detention Basin	0.19	0.00
Disturbed	8.40	8.40
Developed	0.84	0.00
Totals	**38.35**	**36.44**

In addition, the Proposed Project is not expected to cause impacts to the San Jacinto River or any of the drainage ditches (irrigation channels) that may be under the jurisdiction of the USACE and/or CDFG. These features would be avoided by direct grading and construction impacts. However, incidental or accidental impacts (temporary impacts) could occur and these impacts are potentially significant. The potential of this impact would be reduced to less-than-significant levels with implementation of BMPs.

Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means?

No federally protected wetlands as defined by Section 404 of the Clean Water Act, are present on the Proposed Subtransmission Source Line Routes. Construction and operation of the Proposed Subtransmission Source Line Routes would not have a substantial adverse effect on federally protected wetlands. Therefore, implementation of the Proposed Subtransmission Source Line Routes would result in no impacts to wetlands. No APMs would be required.

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridor, or impede the use of native wildlife nursery sites?

Temporary, minor impacts to wildlife movement may result from construction activities. The potential of this impact would be reduced to less-than-significant levels with implementation of APM 2 listed below.

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

There is no tree preservation policy or ordinance for the Project area; therefore, construction and operation of the Proposed Subtransmission Source Line Route would not conflict with any local policies or ordinances protecting biological resources. There would be no impact under this criterion. No APMs would be required.

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Construction and operation of the Proposed Subtransmission Source Line Routes would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. This Route is within six Criteria Area Cells (2347, 2348, 2443, 2444, 2445, and 2652) of the Western Riverside County MSHCP (Dudek 2003); however, impacts to Criteria Area species (See Table 4.4-2) will be avoided by direct grading and construction impacts. Potential impacts to these species would be considered significant;

however, implementation of APM"s 1, 2 and 6 would reduce these impacts to less-than-significant levels.

Proposed Telecommunications Routes (New Cable to Moval and Proposed Overhead Routes 1 and 2)

Would the project 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 or USFWS?

Suitable habitat for special status plants (including chaparral sand-verbena (*Abronia villosa* var. *aurita*), Munz's onion, San Jacinto Valley crownscale, South Coast saltscale, Parish's brittlescale, Davidson's saltscale, thread-leaved brodiaea, Intermediate mariposa lily, smooth tarplant, Parry's spineflower, long-spined spineflower, vernal barley, Coulter's goldfields, Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*), and Wright's trichocoronis) is present on the New Cable to Moval. Impacts on these species, if present, may be considered significant; however, implementation of APM's 6 and 7 would reduce these impacts to less-than-significant levels.

The Proposed Overhead Route 1 contains suitable habitat for special status plants including San Jacinto Valley crownscale, South Coast saltscale, Parish's brittlescale, Davidson's saltscale, thread-leaved brodiaea, smooth tarplant, Parry's spineflower, long-spined spineflower, Coulter's goldfields, Moran's navarretia, Salt Spring checkerbloom, and Wright's trichocoronis. A total of 1999 San Jacinto Valley crownscale individuals, 75 smooth tarplant individuals and 4000 vernal barley individuals were observed in this segment during the 2009 plant surveys (BonTerra 2010a). Potential impacts to these species would be considered significant; however, implementation of APM's 6 and 7 would reduce these impacts to less-than-significant levels.

The Proposed Overhead Route 2 is not expected to support any special status plant species due to the lack of suitable habitat and/or soils. Therefore, construction and operation of the Proposed Overhead Route 2 will not impact special status plant species and no APMs would be required.

The Proposed Telecommunications Routes (New Cable to Moval and Proposed Overhead Routes 1 and 2) provide suitable habitat and/or foraging habitat for special status wildlife species including western spadefoot, coast horned lizard, orange-throated whiptail, silvery legless lizard (*Anniella pulchra pulchra*), coast patch-nosed snake (*Salvadora hexalepis virgultea*), northern red-diamond rattlesnake, white-faced ibis, Cooper's hawk, golden eagle, ferruginous hawk, northern harrier, white-tailed kite, merlin, prairie falcon, peregrine falcon, mountain plover, long-eared owl, burrowing owl, loggerhead shrike, California horned lark, southern California rufous-crowned sparrow, Oregon vesper sparrow, grasshopper sparrow, Bell's sage sparrow, tricolored blackbird, western yellow bat, western mastiff bat, San Diego black-tailed jackrabbit, northwestern San Diego pocket mouse, Los Angeles pocket mouse, San Diego desert woodrat, southern grasshopper mouse, and American badger. Due to the limited amount of habitat loss relative to the availability of habitat for these species in the region, impacts

on these species would be considered adverse but less than significant; therefore, no APMs would be required.

The New Cable to Moval provides suitable habitat for the following listed species: Quino checkerspot butterfly, coastal California gnatcatcher, and Stephens' kangaroo rat. Focused surveys have been completed for Quino checkerspot butterfly and California gnatcatcher and neither species were observed along the New Cable to Moval; therefore, there would be no impact on these species and no APMs would be required. Surveys for Stephens' kangaroo rat are currently in progress; therefore, impacts to this species would be considered significant if found. However, implementation of APM 3 would reduce this impact to less than significant.

The Proposed Overhead Route 1 provides limited suitable habitat for Stephens' kangaroo rat. Impacts to this species would be considered significant; however, implementation of APM 3 would reduce these impacts to less than significant.

The Proposed Telecommunications Route provides potentially suitable habitat for nesting birds/raptors. Construction of the Proposed Telecommunications Route could result in construction-related impacts to nesting birds/raptors, including potential disruption of nesting activity, or destruction of active nests. Construction disturbance during the breeding season (February 1 – August 31) that results in the incidental loss of fertile eggs or nestlings, or otherwise leads to nest abandonment is considered take by USFWS under the Migratory Bird Treaty Act, as well as by CDFG under the California Fish and Game Codes 3503, 3503.5, and 3513 (see Regulatory Setting above). The potential for this impact to occur during construction would be minimized to less than significant by implementation of the APM's 1, 2 and 6 listed below.

Would the project 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 or USFWS?

The Proposed Telecommunication Routes support a small amount of Riversidean sage scrub and disturbed Riversidean sage scrub which is considered a special status vegetation type by CDFG. Direct grading and construction impacts to these vegetation types will be avoided where possible; the potential of these impacts would be reduced by implementing APM 6 listed below. Construction impacts are summarized in Table 4.4-5, 4.4-6, and 4.4-7.

In addition, the Project, as proposed, is not expected to cause impacts to any of the drainage ditches (irrigation channels) that may be under the jurisdiction of the USACE and/or CDFG. These features would be avoided by direct grading and construction impacts. However, incidental or accidental impacts (temporary impacts) could occur and these impacts are potentially significant. The potential of this impact would be reduced to less than significant by implementation of BMPs.

Table 4.4-5 Vegetation Types and other Areas Impacted by the New Cable To Moval

Vegetation Types and Other Areas	Existing (Acres)	Total Impacts (Acres)
Annual Grassland	50.66	0.00
Riversidean Sage Scrub	3.68	0.00
Disturbed Riversidean Sage Scrub	5.42	0.00
Ruderal	11.85	0.00
Agriculture	9.01	0.00
Ornamental	1.09	0.00
Irrigation Ditch	1.22	0.00
Disturbed	24.32	24.32
Developed	11.50	0.00
Totals	**118.75**	**24.32**

Table 4.4-6 Vegetation Types and Other Areas Impacted by the Proposed Overhead Route 1

Vegetation Types and Other Areas	Existing (Acres)	Total Impacts (Acres)
Alkali Grassland	0.77	0.00
Annual Grassland	0.22	0.22
Ruderal	0.29	0.29
Agriculture	14.17	14.17
Disturbed	1.72	1.72
Developed	0.00	0.00
Total	**17.17**	**16.40**

Table 4.4-7 Vegetation Types and Other Areas Impacted by the Proposed Overhead Route 2

Vegetation Types and Other Areas	Existing (Acres)	Total Impacts (Acres)
Ruderal	1.71	1.71
Agriculture	0.79	0.79
Ornamental	0.07	0.07
Disturbed	4.11	4.11
Developed	0.57	0.57
Total	**7.25**	**7.25**

Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means?

No federally protected wetlands, as defined by Section 404 of the Clean Water Act, are present on the Proposed Telecommunications Route. Construction and operation of the Proposed Telecommunications Route would not have a substantial adverse effect on federally protected wetlands. Therefore, implementation of the Proposed Telecommunications Route would result in no impacts to wetlands and no APMs would be required.

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridor, or impede the use of native wildlife nursery sites?

Temporary, minor impacts to wildlife movement may result from construction activities. The potential of this impact would be reduced to a less-than-significant level with implementation of APM 2 listed below.

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

There is no tree preservation policy or ordinance for the Project area; therefore, construction and operation of the Proposed Telecommunications Route would not conflict with any local policies or ordinances protecting biological resources. There would be no impact under this criterion and no APMs would be required.

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Construction and operation of the Proposed Telecommunications Route would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. The Project site is within ten Criteria Area Cells (1364, 1370, 1483, 1577, 2347, 2348, 2349, 2443, 2444, and 2445) of the Western Riverside County MSHCP (Dudek 2003); however, impacts to Criteria Area species (See Table 4.4-2) will be avoided by direct grading and construction impacts. Potential impacts to these species would be considered significant; however, implementation of APM's 1, 2 and 6 would reduce these impacts to less-than-significant levels.

Operation Impacts

Operation of the Proposed Project would consist of minor maintenance and emergency repairs and would result in either less than significant or no impacts to biological resources.

4.4.6 Applicant Proposed Measures

SCE proposes the following APMs to avoid, minimize, correct, reduce, or eliminate impacts to special status species.

Applicant Proposed Measure No. 1: Pre-Construction Surveys for Nesting Birds/Raptors

To minimize potential impacts to selected nesting special-status birds, raptors, or other MBTA bird species, planned vegetation clearing will take place during the non-breeding season (between September 1 and January 31) to the extent feasible. This will discourage the species from nesting within the work area. Existing trees, shrubs, or other vegetation that would provide suitable structure for nesting would be removed. If vegetation clearing must take place during nesting season (February 1–August 31), a biologist shall conduct pre-construction nesting bird surveys prior to clearing for the sites that have potential to support nesting birds/raptors. If the biologist finds an active nest within or adjacent to the construction area and determines that there may be impacts to the nest, s/he will delineate an appropriate buffer zone around the nest depending on the sensitivity of the species and the type of construction activity. Only construction activities (if any) approved by the biologist will take place within the buffer zone until the nest is vacated. If nests are found and cannot be avoided by the project activities, or if work is scheduled to take place near an active nest, SCE shall coordinate with the CDFG and USFWS and obtain written concurrence prior to moving the nest.

Applicant Proposed Measure No. 2: Pre-Construction Surveys and Construction Monitoring

Pre-construction biological clearance surveys shall be performed at the Project Site to minimize impacts on special status wildlife. If special status species are present, biological monitors would be on site, as needed during project implementation in suitable habitat areas and shall aid crews in implementing avoidance measures during project construction. If adequate avoidance cannot be established, SCE shall consider enrollment in the MSHCP as a Participating Special Entity or shall coordinate with the USFWS and the CDFG for further guidance as appropriate. Any significant findings during pre-construction surveys would be added to the WEAP training described in Section 3.9 of Chapter 3.

Applicant Proposed Measure No.3: Stephens' Kangaroo Rat

A habitat assessment for Stephens' kangaroo rat shall be conducted by a biologist qualified to conduct Stephens' kangaroo rat Surveys along Segments One, Two and Three and the Proposed Telecommunications Route. If no potential occupied habitat is found during this assessment, then no further action is necessary. If potential for occupied habitat is found, protocol trapping surveys shall be conducted. The Proposed Telecommunications Route is within a Stephens' kangaroo rat fee area; therefore, if suitable habitat for this species is found, a fee shall be paid in lieu of further surveys (County of Riverside 1996).

Applicant Proposed Measure No. 4: Riverside Fairy Shrimp

If Riverside fairy shrimp are found, SCE shall consider (1) avoidance measures, (2) enrollment in the MSHCP as a Participating Special Entity, or (3) approvals through the USFWS. Appropriate avoidance, minimization, and compensation measures may be required. Impacts to Riverside fairy shrimp habitat will be avoided to the extent feasible in the final Project Design. Habitat areas will be marked as "off limits" in construction plans and specifications. If significant impacts to habitat are unavoidable, focused surveys will need to be conducted prior to construction activities. Riverside fairy shrimp surveys require either a wet season survey, followed by a consecutive dry season survey, or two wet season surveys done within a five-year period (USFWS, 1996). If no Riverside fairy shrimp are found in this area during the focused surveys, no additional action is warranted.

Applicant Proposed Measure No. 5: Burrowing Owl

Any active burrow found during survey efforts shall be mapped. If no active burrows are found, no further mitigation would be required. If nesting activity is present at an active burrow, the burrow shall be protected until nesting activity has ended. Nesting activity for burrowing owl in the region normally occurs between March and August. To protect the active burrow, the following restrictions to construction activities shall be required until the burrow is no longer active as determined by a biologist: (1) clearing limits shall be established within a 500-foot buffer around any active burrow, unless otherwise determined by a biologist and (2) access and surveying shall be restricted within 300 feet of any active burrow, unless otherwise determined by a biologist. Any encroachment into the buffer area around the active burrow shall only be allowed if the biologist determines that the proposed activity will not disturb the nest occupants. Construction can proceed when the biologist has determined that fledglings have left the nest. If an active burrow is observed during the non-nesting season, the nest site will be monitored by a biologist and, when the owl is away from the nest, the biologist will either actively or passively relocate the burrowing owl. The biologist will then remove the burrow so the burrowing owl cannot return to the burrow.

Applicant Proposed Measure No. 6: Native or Special Status Vegetation and Special Status Plant Populations Avoidance

Potential impacts to native vegetation types, vegetation that may support special status species, and known populations of Special Status Plants will be avoided to the extent feasible in the final project design. Native vegetation and Special Status Plant populations will be marked as "off limits" in construction plans and specifications. If significant impacts to native vegetation and/or Special Status Plants are unavoidable, a biologist will be selected to prepare and implement a mitigation plan, which will include detailed descriptions of maintenance appropriate for the mitigation site, monitoring requirements, and annual report requirements, and will have the full authority to suspend any operation which is, in the biologist's opinion, not consistent with the mitigation plan. This plan will be submitted for review to the appropriate agencies.

Applicant Proposed Measure No. 7: Avoidance of San Jacinto Valley Crownscale Populations

In order to avoid potential impacts to known populations of San Jacinto Valley crownscale populations, an Environmentally Sensitive Area (ESA) will be developed prior to construction to the extent feasible in the final Project Design (Figure 4.4-5). If significant impacts to San Jacinto Valley crownscale are unavoidable, a biologist will be selected to prepare and implement a mitigation plan, which will include detailed descriptions of maintenance appropriate for the mitigation site, monitoring requirements, and annual report requirements, and will have the full authority to suspend any operation which is, in the biologist's opinion, not consistent with the mitigation plan. This plan will be submitted for review to the appropriate agencies.

4.4.7 Alternatives

Construction Impacts

Alternative Substation Site

Would the project 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 or USFWS?

The Alternative Substation Site would not have a substantial adverse effect either directly or through habitat modifications on any special status plant species. The Alternative Substation Site is not expected to support any special status plant species due to the lack of suitable habitat and soils. Therefore, the construction and operation of the Alternative Substation Site will not impact special status plant species and no APMs would be required.

The Alternative Substation Site contains suitable habitat for ferruginous hawk, northern harrier, white-tailed kite, merlin, prairie falcon, peregrine falcon, mountain plover, loggerhead shrike, California horned lark, and San Diego black-tailed jackrabbit. Due to the limited amount of habitat loss relative to the availability of habitat for these species in the region, impacts on these species would be considered adverse but less than significant; therefore, no APMs would be required.

The burrowing owl is not currently expected to occur on the Alternative Substation Site because it was not observed during focused surveys conducted in 2009. However, suitable habitat for this species occurs on the site, and this species may occur occasionally as a migrant or winter visitor. If this species returns to the site, impacts on burrowing owls would be considered significant; therefore, implementation of APM 5 would reduce this impact to less-than-significant levels.

Suitable foraging habitat for white-faced ibis, Cooper's hawk, golden eagle, tricolored blackbird, western yellow bat and western mastiff bat is present on the Alternative Substation site. The construction of the Alternative Substation Site is expected to impact

foraging opportunities for these species. Although construction activities may discourage use of the area within the immediate vicinity of the active work site, this disruption in foraging is expected to be extremely localized and temporary in nature. This impact is considered less than significant given the large availability of foraging habitat in the region. Therefore, no APMs are required.

The Alternative Substation Site provides potentially suitable habitat for nesting birds/raptors. Construction of the Alternative Substation Site could result in construction-related impacts to nesting birds/raptors, including potential disruption of nesting activity, or destruction of active nests. Construction disturbance during the breeding season (February 1 – August 31) that results in the incidental loss of fertile eggs or nestlings, or otherwise leads to nest abandonment is considered take by USFWS under the Migratory Bird Treaty Act, as well as by CDFG under the California Fish and Game Codes 3503, 3503.5, and 3513 (see Regulatory Setting above). The potential for this impact to occur during construction would be minimized to less than significant by implementation of the APM's 1, 2, and 6 listed below.

Would the project 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 or USFWS?

Construction and operation of the Alternative Substation Site would not have a substantial adverse effect on any riparian habitat or other sensitive natural community. The Alternative Substation Site does not support any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, by the CDFG or USFWS. Construction of the Alternative Substation Site would impact agriculture, developed, and disturbed areas. These impacts are summarized in Table 4.4-8. These areas generally have low biological value because they are composed of unvegetated areas or are vegetated with non-native species.

Table 4.4-8 Vegetation Types and other Areas Impacted by the Alternative Substation Site

Vegetation Types and Other Areas	Existing (Acres)	Total Impacts (Acres)
Agriculture	10.60	10.60
Disturbed	1.13	1.13
Developed	0.01	0.01
Total	**11.74**	**11.74**

Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means?

No federally protected wetlands as defined by Section 404 of the Clean Water Act are present on the Alternative Substation Site. Therefore, the construction and operation of the Alternative Substation Site will not impact wetlands and no APMs would be required.

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridor, or impede the use of native wildlife nursery sites?

Wildlife species observed or expected to occur on the Alternative Substation Site include species associated with residential/urban habitats. Therefore, the Alternative Substation Site would not interfere substantially with the movement of any native resident or migratory fish or wildlife species. In addition, there would be no impacts to wildlife movement corridors because this alternative does not function as a major wildlife movement corridor. Additionally, no native nursery sites are present on these alternatives. Therefore, the construction and operation of the Alternative Substation Site would not impact wildlife movement and no APMs would be required.

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Construction and operation of the Alternative Substation Site would not conflict with any local policies or ordinances protecting biological resources. Furthermore, the Alternative Substation Site does not contain any native trees; therefore, construction and operation of the Alternative Substation Site would result in no impact under this criterion and no APMs would be required.

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The construction and operation of the Alternative Substation Site would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. The Alternative Substation Site is within a Criteria Area Cells (2445) of the Western Riverside County Multi-Species Habitat Conservation Plan (MSHCP) (Dudek 2003); however, current land use for this site is agriculture and does not provide habitat for the Criteria Area Species (Bell's sage sparrow, Quino checkerspot butterfly, bobcat, Stephens' kangaroo rat). Potential impacts to these species would be considered significant; however, implementation of APM's 1, 2, and 6 would reduce these impacts to less-than-significant levels.

Alternative Subtransmission Source Line Route (Segment Three)

Would the project 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 or USFWS?

Segment Three contains suitable habitat for special status plant species including San Jacinto Valley crownscale, South Coast saltscale, Parish's brittlescale, Davidson's saltscale, thread-leaved brodiaea, smooth tarplant, Parry's spineflower, vernal barley, Coulter's goldfields, Moran's navarretia, California Orcutt grass, Salt Spring checkerbloom, and Wright's trichocoronis. A total of 532 San Jacinto Valley crownscale individuals, 9200 vernal barley individuals and 6250 Coulter's goldfields individuals were observed in this segment during the 2009 plant surveys (BonTerra 2010a). Potential impacts to these species would be considered significant; however, implementation of APM's 6 and 7 would reduce these impacts to less-than-significant levels.

Segment Three contains suitable habitat for Riverside fairy shrimp, which is a federally Endangered species. Impacts to this species would be considered significant; however, implementation of APM 4 would reduce this impact to less than significant.

Segment Three contains suitable habitat for special status wildlife species including northern harrier, white-tailed kite, merlin, prairie falcon, mountain plover, loggerhead shrike, California horned lark, Oregon vesper sparrow, and San Diego black-tailed jackrabbit. Due to the limited amount of habitat loss relative to the availability of habitat for these species in the region, impacts on these species would be considered adverse but less than significant; therefore, no APMs would be required.

The burrowing owl is not currently expected to occur on Segment Three because it was not observed during focused surveys conducted in 2009. However, suitable habitat for this species occurs on the site, and this species may occur occasionally as a migrant or winter visitor. If this species returns to the site, impacts on burrowing owls would be considered significant; therefore, implementation of APM 5 would reduce this impact to less-than-significant levels.

Segment Three contains suitable foraging habitat for white-faced ibis, Cooper's hawk, golden eagle, ferruginous hawk, peregrine falcon, tricolored blackbird, western yellow bat, and western mastiff bat. Although construction activities may discourage use of the area within the immediate vicinity of the active work site, this disruption in foraging is expected to be extremely localized and temporary in nature. This impact is considered less than significant given the large availability of foraging habitat in the region. Therefore, no APMs are required.

Segment Three provides potentially suitable habitat for nesting birds/raptors. Construction of Segment Three could result in construction-related impacts to nesting birds/raptors, including potential disruption of nesting activity, or destruction of active nests. Construction disturbance during the breeding season (February 1 – August 31) that results in the incidental loss of fertile eggs or nestlings, or otherwise leads to nest abandonment is considered take by USFWS under the Migratory Bird Treaty Act, as well as by CDFG under the California Fish and Game Codes 3503, 3503.5, and 3513 (see Regulatory Setting above). The potential for this impact to occur during construction would be minimized to less than significant by implementation of the APM's 1, 2, and 6 listed below.

Would the project 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 or USFWS?

Construction and operation of Segment Three would not have a substantial adverse effect on any riparian habitat or other sensitive natural community. Construction of Segment Three would impact agriculture, developed, and disturbed areas. These impacts are summarized in Table 4.4-9. These areas generally have low biological value because they are composed of unvegetated areas or are vegetated with non-native species.

Table 4.4-9 Vegetation Types and other Areas Impacted by the Alternative Subtransmission Source Line Route, Segment 3

Vegetation Types and Other Areas	Existing (Acres)	Total Impacts (Acres)
Alkali Scrub Playa	1.27	0.00
Alkali Wetland	0.06	0.00
Ruderal	0.47	0.47
Agriculture	9.47	9.47
Disturbed	4.43	4.43
Developed	0.40	0.00
Total	**16.10**	**14.37**

In addition, the Proposed Project is not expected to cause impacts to any of the drainages that may be under the jurisdiction of the USACE and/or CDFG. These drainages would be avoided by direct grading and construction impacts. However, incidental or accidental impacts could occur and these impacts are potentially significant. The potential of this impact would be reduced to less than significant by implementation of BMPs.

Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means?

The construction and operation of Segment Three will not impact wetlands and no APMs would be required.

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridor, or impede the use of native wildlife nursery sites?

Temporary, minor impacts to wildlife movement may results from construction activities. The potential of this impact would be reduced to less than significant by implementation of APM's 1, 2, and 6 listed below.

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

There is no tree preservation policy or ordinance for the Project area; therefore, construction and operation of Segment Three would not conflict with any local policies or ordinances protecting biological resources. There would be no impact under these criteria and no APMs would be required.

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The construction and operation of Segment Three would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Segment Three is within a Criteria Area Cell (2548) of the Western Riverside County MSHCP (Dudek 2003). Potential impacts to Covered Species in these cells would be considered significant; however, implementation of APM's 1, 2, and 6 would reduce these impacts to less-than-significant levels.

Operation Impacts

Operation of the Alternative Substation Site and the Alternative Subtransmission Source Line Route would consist of minor maintenance and emergency repairs and would result in either less than significant or no impacts to biological resources. Additionally, there are no substantial differences in the degree of impact between the Proposed Project and the Alternative Project.

4.4.8 References

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4.5 Cultural and Paleontological Resources

This section describes the potential impacts to cultural and paleontological resources that may result from the construction and operation of the Proposed Project and alternatives. Potential impacts to cultural resources (i.e., archeological and historical resources) are discussed first, followed by a discussion of paleontological resources. The alternatives are also discussed.

4.5.1 Environmental Setting

Regional Setting

Paleontology (Pleistocene Alluvium)

Older Pleistocene sediments throughout Riverside and San Bernardino Counties and the Inland Empire have been previously reported to yield significant fossils of plants and extinct animals from the Ice Age (Jefferson, 1991; Reynolds and Reynolds, 1991; Woodburne, 1991; Scott, 1997; Anderson and others, 2002; Springer and others, 2009). Fossils recovered from these Pleistocene sediments represent extinct taxa including mammoths, mastodons, ground sloths, dire wolves, short-faced bears, sabre-toothed cats, large and small horses, large and small camels, and bison (Reynolds and Reynolds, 1991; Springer and others, 2009).

Prehistory

Paleo-Indian Period/Terminal Pleistocene (12,000 to 10,000 B.P.)

The first inhabitants of southern California were big-game hunters and gatherers exploiting extinct species of Pleistocene megafauna (e.g., mammoth and other Rancholabrean fauna). Local "fluted point" assemblages comprised of large spear points or knives are stylistically and technologically similar to the Clovis Paleo-Indian cultural tradition dated to this period elsewhere in North America (Moratto 1984). Archaeological evidence for this period in southern California is limited to a few small temporary camps with fluted points found around late Pleistocene lake margins in the Mojave Desert and around Tulare Lake in the southern San Joaquin Valley. Single points are reported from Ocotillo Wells and Cuyamaca Pass in eastern San Diego County and from the Yuha Desert in Imperial County (Rondeau, Cassidy, and Jones 2007).

Early Archaic Period/Early Holocene (10,000 to 8,000 B.P.)

Approximately 10,000 years ago at the beginning of the Holocene era, increasingly warm temperatures along with possible human predation, caused the extinction of the megafauna; thus, these people were forced to change their subsistence strategies to hunting smaller game with increasing reliance on plant gathering. Previously, Early Holocene sites were represented by only a few sites and isolates from the Lake Mojave and San Dieguito complexes found along former lakebeds and grasslands of the Mojave Desert and inland San Diego County. More recently, southern California Early Holocene sites have been found along the Santa Barbara Channel (Erlandson 1994), in western Riverside County (Grenda 1997; Goldberg 2001), and along the San Diego County coast (Gallegos 1991; Koerper, Langenwalter, and Schroth 1991; Warren 1967).

The San Dieguito Complex was defined based on material found at the Harris site (CA-SDI-149) on the San Dieguito River near Lake Hodges in San Diego County. San Dieguito artifacts include: large leaf-shaped points; leaf-shaped knives; large ovoid, domed, and rectangular end and side scrapers; engraving tools; and crescentics (Koerper, Langenwalter, and Schroth 1991). The San Dieguito Complex at the Harris site dates to 9,000 to 7,500 B.P. (Gallegos 1991:Figure 3.9). However, sites from this time period in coastal San Diego County have yielded artifacts and subsistence remains characteristic of the succeeding Milling Stone Period, including manos and metates (milling stones), core-cobble tools, and marine shell (Gallegos 1991; Koerper, Langenwalter, and Schroth 1991).

Archaic or Milling Stone Period/Middle Holocene (8,000 to 3,000 B.P.)

Residential sites along the coast from this period are shell middens with hearths. The most common artifacts are manos, metates, and large core-cobble chopping tools. Other artifacts include hammerstones, large flake tools (including scraper-planes and scrapers), worked bone, beads, cogged stones, discoidals, doughnut stones, and stone balls. Projectile points (usually large leaf-shaped points and Elko points) are not plentiful, but faunal remains indicate deer and rabbits were hunted. Sites near bays and estuaries contain abundant shell and fish remains (Masters and Gallegos 1997). Burials were inhumations with associated grinding implements. The Milling Stone Period was originally defined based on sites along the Los Angeles and Ventura County coasts (Wallace 1955). The period was extended to inland areas when sites with similar artifact inventories (but without shell middens) were investigated near Cucamonga (Salls 1983), in the Prado Basin (Goldberg and Arnold 1988), and in Crowder Canyon near the Cajon Pass (Kowta 1969; Basgall and True 1985). Population density was relatively low compared to later periods. The settlement system may have consisted of small bands moving in a seasonal round from the coast to inland areas and back again.

Intermediate Period/Late Holocene (3,000 to 1,350 B.P.)

Mortars and pestles were first used during the Intermediate Period, and probably indicate the beginning of acorn exploitation. Use of the acorn – a storable, high-calorie food source – probably allowed greater sedentism. Large projectile points, including Elko points, indicate that hunting was probably accomplished with the *atlatl* or spear thrower. The settlement pattern may have been semi-sedentary with winter residential bases near a permanent water source and use of temporary camps for resource collection during the rest of the year.

In the upper Santa Ana River drainage area, it has been suggested that the Milling Stone Period artifact assemblage (preponderance of manos, metates, and core tools, and few or no mortars and pestles) continued into the time period designated as Intermediate on the coast (Kowta 1969; Goldberg and Arnold 1988). This may indicate that intensive acorn use began later in inland areas compared to the coast. In western Riverside County, the period corresponding to the Intermediate Period on the coast is the Late Archaic. Mortars and pestles were present in small quantities in some Late Archaic sites and entirely absent in others (Goldberg 2001).

Late Prehistoric Period/Late Holocene (1,350 B.P. to Spanish Contact [A.D. 1769])

The complex hunter-gatherer cultures encountered by the Spaniards in southern California developed during the Late Prehistoric Period. People lived in villages of up to 250 people located near permanent water sources and a variety of food sources. Each village was typically located at the center of an area from which resources for the group were gathered. Small groups left the village for short periods of time to hunt, fish, and gather plant foods. While away from the village, they established temporary camps and created locations where food and other materials were processed. Archaeologically, such locations are evidenced by manos and metates for seed grinding, bedrock mortars for acorn pulverizing, and lithic scatters indicating manufacturing or maintenance of stone tools (usually made of chert) used in hunting or butchering. Overnight stays in field camps are evidenced by fire-affected rock used in hearths.

The more intensive use of resources and settlement in permanent villages near water sources in inland areas may have been a response to a warmer drier period known as the Medieval Climatic Anomaly (MCA) (1,050 to 600 B.P.). Droughts during the MCA were “severe enough to cause problems for residents of poorly watered areas of Native California” (Jones and Klar 2007:302).

The beginning of the Late Prehistoric Period is marked by the introduction of the bow and arrow, which made deer hunting more efficient. The bow and arrow was also used in wars for territorial defense. One of the most important food resources for inland groups was acorns gathered from oak groves in canyons, drainages, and foothills. Acorn processing was labor-intensive, requiring grinding in a mortar and leaching with water to remove tannic acid (Basgall 1987). Many of the mortars are bedrock mortars which are indicators of the Late Prehistoric Period. Acorns provided a storable resource which promoted sedentism. Seeds from sage and grasses, goosefoot, and California buckwheat were collected and ground into meal with manos and metates. Protein was supplied through the meat of deer, rabbits, and other animals, hunted with bow and arrow or trapped using snares, nets, and deadfalls.

Trade among local groups and inland and coastal groups was important as a means of obtaining resources from outside the local group’s territory. Items traded over long distances included: obsidian from the Obsidian Butte source in Imperial County and from the Coso source in Inyo County; steatite bowls and ornaments from Catalina Island; shell beads and ornaments from the Santa Barbara Channel area; rabbit skins and deer hides from the interior; and dried fish and shellfish from the coast. Acorns, seeds, and other food resources were probably exchanged locally.

Ethnography

The Project area is in territory occupied by the Serrano Native American group at the time the Spanish arrived in the area. The Serrano occupied an area in and around the San Bernardino Mountains between approximately 1,500 and 11,000 feet above mean sea level. Their territory extended west along the north side of the San Gabriel Mountains to Soledad Pass (Earle, McKeehan, and Mason 1995), east as far as Twentynine Palms (Bean and Smith 1978), and south through Redlands and Yucaipa to the Lakeview Mountains (Cultural Systems Research 2005). The Serrano also lived along the Mojave River in the Mojave Desert, where they were known as Vanyume (Bean and Smith 1978). The Serrano were mainly hunters and gatherers who also

occasionally fished. Game animals included mountain sheep, deer, antelope, rabbits, small rodents, and various birds, particularly quail. Vegetable staples consisted of acorns, pinyon nuts, bulbs and tubers, shoots and roots, berries, mesquite, barrel cacti, and juniper seeds (Bean and Smith 1978).

A variety of materials were used for hunting, gathering, and processing food, as well as for shelter, clothing, and luxury items. Shells, wood, bone, stone, plant materials, and animal skins and feathers were used for making baskets, pottery, blankets, mats, nets, bags and pouches, cordage, awls, bows, arrows, drills, stone pipes, musical instruments, and clothing (Bean and Smith 1978).

Settlement locations were determined by water availability, and most Serranos lived in small villages near water sources. The Serrano were loosely organized along patrilineal lines and associated themselves with either the *Tukum* (wildcat) or the *Wahilyam* (coyote) moiety.

Partly due to their mountainous inland territory, contact between Serrano and Euro-Americans was minimal prior to the early 1800s. In 1819, the San Bernardino Rancho Asistencia was established near present-day Redlands and was used to help convert and relocate many Serrano to Mission San Gabriel. However, small groups of Serrano remained in the area northeast of the San Gorgonio Pass and were able to preserve some of their native culture. Today, most Serrano live either on the Morongo or San Manuel reservations (Bean and Smith 1978).

History

The first significant European settlement of California began during the Spanish Period (1769 to 1821) when 21 missions and four presidios were established between San Diego and Sonoma. Although located primarily along the coast, the missions dominated economic and political life over the majority of the California region. The purpose of the missions was mainly to provide economic support to the presidios, to assimilate Native Americans into Hispanic society, and to convert the Indians to Spanish Catholicism (Castillo 1978; Cleland 1941). The region encompassing the Project area was controlled primarily by Mission San Luis Rey. During this period, a small group of Spanish soldiers led by Captain Pedro Fages became the first European visitors to what is now western Riverside County. Starting from the San Diego presidio on August 8, 1771, Fages and his men began their trip with the purpose of looking for army deserters, but abandoned the search in the vicinity of present-day Julian in San Diego County and went on an exploratory trip northward. On his way to Cajon Pass and the Mojave Desert, Fages crossed the San Jacinto River, west of the Project areas (Harshman 1992; Hudson 1978; Lerch et al. 2006).

The Mexican Period (1821 to 1848) began with Mexico's independence from Spain in 1821, Mexico removed the missions from church control in the early 1830s. The vast land holdings of the missions were divided into large land grants called *ranchos*. The Mexican government granted ranchos throughout California to Spanish and Hispanic soldiers and settlers (Castillo 1978). The Project areas lie on land known during the Spanish Period and later, during the Mexican Period, as both Rancho San Jacinto and Rancho San Jacinto Nuevo y Potrero. At some time prior to 1821, Rancho San Jacinto was established by Mission San Luis Rey for grazing of mission livestock. In 1842, Mexican governor *pro tempore* Manuel Jimeno granted Rancho San Jacinto to José

Antonio Estudillo, who had been mayordomo of the San Luis Rey mission. Three years later, Estudillo's son-in-law, Miguel de Pedrorena, petitioned for approximately one-half of Rancho San Jacinto. Estudillo had no objection to splitting the rancho, since the land for which Pedrorena was asking was considered surplus. In 1846, Governor Pio Pico approved the grant under the name Rancho San Jacinto Nuevo y Potrero. When the land was surveyed after Pedrorena's death in 1850, its boundaries were said to be San Bernardino on the north, San Gorgonio (now Beaumont) on the northeast, Jurupa on the northwest, and Temecula on the southwest (Gunther 1984).

In 1848, the Treaty of Guadalupe Hidalgo ended the Mexican-American War, and California became part of the United States. California became a state in 1850. In 1883, the U.S. government gave a federal deed for the Rancho San Jacinto Nuevo y Potrero land (encompassing the present-day location of Lakeview and part of Moreno Valley to the north) to Thomas W. Sutherland, the legal guardian of Miguel de Pedrorena's widow and children (Gunther 1984). The U.S. government subsequently acquired portions of the land, and granted alternate sections to the Southern Pacific Railway Company. Homesteaders and miners eventually established small ranches and mineral claims on the former rancho lands (Gunther 1984).

The Project area (comprising the Lakeview Substation alternatives and associated subtransmission source line route alternatives, and Telecommunication cable routes) is located in and near the unincorporated community of Lakeview. This rural settlement was established in 1893 by Frank E. Brown, one of the founders of the nearby city of Redlands, and named for its prospect of an ephemeral body of water to the north. This feature, informally known as Mystic Lake to local residents, was later called Brown's Lake or Lake Moreno ("moreno" is the Spanish word for "brown"). Brown and other investors, including his Redlands partner E. G. Judson, financed the Lake View Water Company and began selling agricultural plots. A post office was opened in 1894, and the two-word name was joined together as "Lakeview." From the very beginning, Brown and his partners had an agreement with the California Southern Railway to continue its line from San Jacinto, several miles to the east, to a new terminus at Lakeview. Eventually, a line to Lakeview was built from a point north of Perris instead of from San Jacinto, but was not completed until 1898. A train station was constructed the next year. Lack of business, exacerbated by the Great Depression of the 1930s, resulted in closure of the depot and discontinuance of the rail line to Lakeview in 1937 (Gudde 2004; Gunther 1984). Very little growth has taken place in Lakeview, which retains its rural, agricultural character. As of 2007, the population of the community was approximately 2,150 (City-data.com 2009).

The southern end of the Lakeview Telecommunication Fiber Optic Cable to Moval Substation Project area is near Lakeview. From there, the route extends northeast, north, and west into Moreno Valley. For most of the 19th century, little ranching or agricultural activity took place in Alessandro Valley (today's Moreno Valley) because of the lack of water. Development in the area began after the California Southern Railway completed its line from National City (near San Diego) to San Bernardino via Temecula and Riverside in 1883 (Gunther 1984). This rail line passed through the western part of Alessandro Valley. In 1885, the California Southern became part of the Atchison, Topeka, and Santa Fe Railway (AT&SF) (Dumke 1944).

In 1887, the owners of the 10,560-acre Alessandro Tract surveyed and platted the town of Alessandro on the east side of the railroad. Alessandro was named for the husband of

Ramona in the popular novel of the same name by Helen Hunt Jackson. Water was to be provided from wells and a reservoir. Lots were sold and a post office and railroad station opened in 1888. Unfortunately for the Alessandro investors, land sales did not go as well as expected, and they went bankrupt. The Alessandro Tract was sold to the Bear Valley and Alessandro Development Company, headed by Frank E. Brown, one of the founders of Redlands. The new owners had rights to water from Bear Valley Reservoir (Big Bear Lake) in the San Bernardino Mountains and built a pipe system to Alessandro via Redlands (Gunther 1984).

The Bear Valley and Alessandro Development Company laid out two new towns in 1890: a new Alessandro north of the original town site, and the town of Moreno seven miles to the east at the other end of Alessandro Boulevard (at what is now the intersection of Alessandro and Redlands Boulevards). Moreno was named for Frank Brown. Lots were sold, buildings were constructed, and a post office was opened in Moreno in 1891, but not in the new Alessandro. Moreno and the original Alessandro were designated as election precincts and school districts in the newly formed Riverside County in 1893. Moreno had a population of 500 in the early 1890s with a hotel, school, newspaper, stores, and churches. Water was brought to the two communities from Bear Valley Reservoir, but the growing town of Redlands began to take almost all the available water before it reached Moreno and Alessandro. Because of the lack of water, most people left for Riverside, moving their houses with them. Those who remained obtained water from wells, using pumps, and from impounded runoff in drainages. By 1896, the Bear Valley and Alessandro Development Company was in receivership (Gunther 1984).

The community of Sunnymead, located north of Alessandro, began as the Sunnymead Orchard Tract. It was subdivided into 10-acre lots which were sold by the Riverside Title and Trust Company, beginning in 1912. Additional two- and three-acre lots were sold in Sunnymead by a Los Angeles bank beginning in 1926 (Gunther 1984).

The original town site of Alessandro was appropriated by the U.S. Army in 1918 and became Alessandro Aviation Field. The name was soon changed to March Field (Gunther 1984). It became March Air Force Base after 1947 when the U.S. Air Force was separated from the Army.

Edgemont began in 1923 as a subdivision for poultry ranches. Land was sold in Edgemont by the California Hotel Farm Company (Gunther 1984). Edgemont was located west of Sunnymead.

During the first half of the 20th century, Moreno Valley remained a low-density rural agricultural area. The 1942 U.S. Army Corps of Engineers (U.S. Army) Perris, California 15-minute topographic quadrangle map shows only a sparse scattering of buildings along Ironwood Avenue (U.S. Army 1942). Residential subdivisions were built beginning in the 1960s in the Sunnymead and Edgemont areas. The city of Moreno Valley, including the communities of Edgemont, Sunnymead, and Moreno, was incorporated in 1984 with a population of 47,000 (Gunther 1984). The population was 183,860 in 2008 (City of Moreno Valley 2008).

Local Setting

Records Search Methods and Results

Cultural resources records searches were conducted at the Eastern Information Center, located at the University of California, Riverside. The purpose of the records searches was to determine the extent of previous cultural resources investigations within a 0.5-mile radius of the project area, and to determine whether any archaeological sites or architectural resources have been previously identified within the Project area. Materials reviewed as part of the records searches included archaeological site records, historic maps, and listings of resources on the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), California Points of Historical Interest, California Landmarks, and National Historic Landmarks.

The Native American Heritage Commission (NAHC) conducted a search of the Sacred Land File for the project vicinity to identify cultural resources of concern for Native Americans. The search of the Sacred Land File did not identify any cultural resources in the project vicinity. The NAHC provided a list of Native American contacts for the project vicinity. Letters were sent to the listed contacts on March 23, 2010 requesting information about cultural resources in the project area. One response from the Cahuilla Band of Indians was received via email on April 6, 2010. The Cahuilla Band of Indians expressed interest in the project area due to the project location as being within the traditional use of the tribe. However, no traditional cultural properties or scared lands were identified by the Cahuilla Band of Indians. No other responses were received by the remaining tribes consulted for the project.

The results of the records search completed for the project identified 67 previously recorded sites within a 0.5-mile buffer of the project. Two of these previously recorded resources, P33-09030 (a historic concrete footing and irrigation pump and engine) and P33-05130 (a historic NRHP-eligible Stalder Farm building and structures), lie within the Project area.

In the Proposed Substation Site and Alternative Substation Site, the Proposed Subtransmission Source Line Route and Alternative Subtransmission Source Line Route, and Lakeview Telecommunication Fiber Optic Cable Proposed Segments 1 and 2 Project areas, 13 of the 20 previously recorded cultural resources are prehistoric and consist of 12 sites with bedrock milling features and one isolated artifact. Four of the prehistoric sites include rock art. Six of the 20 resources are from the historic period and consist of two historic irrigation features, one historic isolated find, and three historic buildings or groups of buildings. There is one multi-component (prehistoric and historic) archaeological site which consists of bedrock milling features and a historic survey marker. Two of the historic resources (P33-05130 and P33-09030) lie within the Project area. P33-05130 consists of buildings and structures of the early-20th century Stalder Farm, which recommended as eligible for listing on the NRHP (Landis 1993a; Wakefield et al. 1993). P33-09030, originally recorded as an irrigation pump and engine mounted on concrete footings (Landis 1993a, 1993b), now consists only of the two concrete footings.

In the Lakeview Telecommunication Fiber Optic Cable to Moval Substation Project area (Segment 3), 59 of the 67 previously recorded cultural resources are prehistoric and consist of 57 prehistoric archaeological sites and two prehistoric isolated finds. Six of the

67 resources are from the historic period and consist of two historic archaeological sites, one historic irrigation ditch, one historic cistern, one historic building, and one historic human burial. There are two multi-component (prehistoric and historic) archaeological sites, one of which consists of bedrock milling features, rock art, and an artifact with both prehistoric and historic items. The other multi-component site consists of bedrock milling features along with a historic period rock foundation and artifact scatter. Fifty-one of the prehistoric sites and the prehistoric components of both of the multi-component sites consist of or include bedrock milling features. Seven of the prehistoric sites and one of the multi-component sites include rock art. Three of the prehistoric sites (P33-03346, P33-08168, and P33-08169) have been determined to be eligible for listing on the CRHR. However, none of the eligible sites are within the Project area. Although there are no previously recorded cultural resources within the Project area, four of the prehistoric sites (P33-00525, P33-00526, P33-00608, and P33-02951), all consisting of bedrock milling features, are located within 30 meters of the project area.

Field Survey Methods and Results

ECORP conducted an intensive archaeological field survey of the Proposed Substation and Alternative Substation on August 31, 2009. Fieldwork along the Proposed Subtransmission Source Line Route and Alternative Substransmission Source Line Route and Lakeview Telecommunication Fiber Optic Cable Segments 1 and 2 was conducted on September 11, 2009 and February 25, 2010, and consisted of an intensive systematic pedestrian survey of a buffer zone measuring 30 meters wide on either side of the center line of the proposed routes by an ECORP archaeologist. Fieldwork along the proposed Lakeview Telecommunication Fiber Optic Cable to Moval Substation segment (Segment 3) was conducted on February 25 and 26, and March 2, 2010, and consisted of an intensive systematic pedestrian survey by two ECORP archaeologists. The entire proposed fiber optic cable route would be installed on an existing SCE pole line that parallels an existing pole line access road and existing public roads. ECORP archaeologists surveyed the area between the pole line and the roads, as well as a buffer zone measuring an additional 30 meters wide on the far side of the pole line from the roads.

During the field survey, systematic pedestrian transects, spaced at intervals of 20 meters (65 feet), were used in all accessible areas. The survey team closely examined the ground surface for evidence of prehistoric and historic resources. Attention was also paid to any rock surfaces that had potential for rock art. An archaeological site was defined in accordance with the Office of Historical Preservation Bulletin 1989 as consisting "… of at least three associated artifacts or a single feature." Cultural resources not meeting the site criteria were recorded as isolated finds. Cultural resources located during the survey were recorded using Department of Parks and Recreation (DPR) 523 Forms. Resource locations were recorded using a hand-held GPS unit.

The field survey of the Proposed Substation and the Alternative Substation, the Proposed Subtransmission Source Line Route and Alternative Subtransmission Source Line Route and the Lakeview Telecommunication Fiber Optic Cable Segments 1 and 2 identified two previously recorded historic-period sites and three previously unrecorded historic-period sites. Three historic-age houses were located along Lakeview Avenue along Lakeview Telecommunication Fiber Optic Cable Segment 2. The field survey of the Lakeview Telecommunication Fiber Optic Cable to Moval Substation Segment

(Segment 3) found the four previously recorded prehistoric archaeological sites located within 30 meters of the Project area. Three previously unrecorded historic-period sites were also found during the field survey. Cultural resources in or near the project area are listed in Table 4.5.1 and 4.5.2 and descriptions of all resources are provided below.

Proposed Substation Site

P33-09030 - This historic-age irrigation feature is located 13 feet northwest of the unpaved northeast-southwest access road that divides the Proposed Substation site from the Alternative Substation site. The feature was originally recorded as a six-cylinder diesel engine mounted on a concrete platform with an associated water pump mounted on another concrete platform nearby (Landis 1993). The site now consists only of the two concrete platforms. The larger of the two, which formerly held the diesel engine, measures 5'5" (northeast-southwest) by 3' (northwest-southeast), and is 13" to 15" above the surrounding ground surface. The smaller platform, where the pump was mounted, is located 4'1" northeast of the larger platform. It measures 3'8.5" square, and is 3" to 6" inches above the surrounding ground surface. A 21"-diameter, dish-shaped (concave) steel hatch or cover is in the center of the platform, presumably to cover the well opening. Lessees of the land (Larry Minor and Brent Lunt of Agri-Empire of San Jacinto) where P33-09030 is located stated that the engine and pump that were formerly part of P33-09030 had not been in operation for 15 to 20 years. Both pieces of equipment were stolen in 2007.

Alternative Substation Site

No cultural resources were identified in the area of the Alternative Substation Site.

Nuevo Substation

The Nuevo Substation at the intersection of Lakeview Avenue and Palm Avenue will be decommissioned as part of the Lakeview Substation Project. The Nuevo Substation began service in January, 1950 (Reyes, personal communication 2010) and is therefore more than 50 years old. Evaluation of the Nuevo Substation using CRHR eligibility criteria is currently in process and the results will be provided in a separate report. If the Nuevo Substation is eligible for the CRHR, it would constitute a Historical Resource as defined by CEQA and demolition of the substation would result in a significant impact. If the Nuevo Substation is not eligible for the CRHR, it would not be a Historical Resource and there would be no significant impact.

Proposed Substransmission Source Line Route

P33-05130 – This is the Stalder Farm, located on the northeast corner of the intersection of 11th Street and Reservoir Avenue. The Proposed and Alternative Subtransmission Source Line Routes run along Reservoir Avenue along the western edge of the farmstead. The farm consists of a residence, a large barn, a milk house, an equipment shed, a blacksmith shop, a corral, numerous pieces of historical farm equipment, historical vehicles, and a sparse artifact scatter. The farm, which was established in 1917 by Edward R. Stalder, was purchased by Frank and Ethel Ybarrola in the 1949. The Ybarrolas demolished the original milk barn and built a new one. Over the next few

Table 4.5.1 Cultural Resources in the Project Area

Primary No. (P33)/ Field No. (CWA63)	Resource Type	Prehistoric/ Historic	Project Segment	Distance to Project Route	Comments
P33-09030	Pump platform	Historic	Proposed Substation	In Proposed Substation parcel	Engine and water pump no longer present
P33-05130	Farm Buildings	Historic	Proposed and Alternative Subtransmission Source Line	Farm buildings are within 50 feet of the Proposed and Alternative Subtransmission Source Lines	Buildings, facilities, and equipment at Stalder Farm; NRHP-eligible
CWA63-1	Irrigation Feature	Historic	Proposed and Alternative Subtransmission Source Line	In the Proposed and Alternative Subtransmission Source Line	Standpipe
CWA63-2	Trash Scatter	Historic	Proposed and Alternative Subtransmission Source Line, Lakeview Telecommunication Fiber Optic Cable Segment 1	In the Proposed and Alternative Subtransmission Source Line ,Lakeview Telecommunication Fiber Optic Cable Segment 1	Glass and ceramic fragments
CWA63-3	Irrigation Feature	Historic	Proposed Subtransmission Source Line	25 feet from the edge of the dirt road in which the poles for Proposed Subtransmission Source Line would be installed	Standpipe
P33-00525	Bedrock Milling	Prehistoric	Lakeview Telecommunication Fiber Optic Cable to Moval	65 feet west of the existing pole line upon	1 mortar and 3 slicks

Primary No. (P33)/ Field No. (CWA63)	Resource Type	Prehistoric/ Historic	Project Segment	Distance to Project Route	Comments
			Substation (Segment 3)	which the new fiber optic cable would be installed	
P33-00526	Bedrock Milling	Prehistoric	Lakeview Telecommunication Fiber Optic Cable to Moval Substation (Segment 3)	65 feet northwest of the existing pole line upon which the new fiber optic cable would be installed	1 slick
P33-02951	Bedrock Milling	Prehistoric	Lakeview Telecommunication Fiber Optic Cable to Moval Substation (Segment 3)	16 feet southwest of the existing pole line upon which the new fiber optic cable would be installed	1 slick
P33-00608	Bedrock Milling	Prehistoric	Lakeview Telecommunication Fiber Optic Cable to Moval Substation (Segment 3)	98 feet southwest of the existing pole line upon which the new fiber optic cable would be installed	2 slicks
CWA63-4	Irrigation Feature	Historic	Lakeview Telecommunication Fiber Optic Cable to Moval Substation (Segment 3)	25 feet southeast of the existing pole line upon which the new fiber optic cable would be installed	Well house, partially collapsed
CWA63-5	Irrigation Feature	Historic	Lakeview Telecommunication Fiber Optic Cable to Moval Substation (Segment 3)	65 feet east of the existing pole line upon which the new fiber optic cable	Water tank made of rock and mortar

Primary No. (P33)/ Field No. (CWA63)	Resource Type	Prehistoric/ Historic	Project Segment	Distance to Project Route	Comments
				would be installed	
CWA63-6	Irrigation Feature	Historic	Lakeview Telecommunication Fiber Optic Cable to Moval Substation (Segment 3)	30 feet west of the existing pole line upon which the new fiber optic cable would be installed	Pump stand and well

Table 4.5.2. Historic-Age Buildings Adjacent to the Lakeview Telecommunication Fiber Optic Cable Route 2 Survey Area

Address	Assessor's Parcel Number	Notes	Year Built	Source
30101 Lakeview Ave.	426-460-024	Ranch-style single-story house with attached garage. Good integrity and condition. Set back approximately 50 feet (15 meters) from pole line.	1959	Riverside County Assessor's Records
30111 Lakeview Ave.	426-460-016	Contractor/builder design single-story house and detached garage. Good integrity but poor condition. Set back approximately 30 feet (9 meters) from pole line.	1940	Riverside County Assessor's Records
30651 Lakeview Ave.	426-130-021	Neocolonial-style single-story house and detached garage. Good integrity and condition. Set back approximately 50 feet (15 meters) from pole line.	1956	Riverside County Assessor's Records

decades, the farmhouse was extensively remodeled, and a modern corrugated sheet metal equipment barn was constructed (Cotterman and Mason 2010).

CWA63-1 - This historic-age irrigation feature consists of a concrete irrigation standpipe, located along the proposed route shared by Proposed and Alternative Subtransmission Source Line Routes, just southwest of the Proposed Substation and Alternative Substation. The feature is made from a section of prefabricated concrete pipe mounted vertically in the ground. The pipe measures 39" in diameter, and stands 39" to 40" above the surrounding ground surface. The pipe wall is 2.75" thick.

CWA63-2 - This historic archaeological site consists of a very sparse scatter of domestic glass and ceramic sherds, located along the route shared by the Proposed and Alternative Subtransmission Source Line Routes and Lakeview Telecommunication Fiber Optic Cable Segment 1. The site currently measures approximately 150 meters (northeast-southwest) by 40 meters (northwest-southeast). Decades of plowing and disking have spread the artifacts out over a wide area, and will probably continue to destroy the site as long as agricultural activities continue. Artifacts consist of a bottle fragments and white ceramic fragments. No identifiable manufacturer's marks were found on any of the artifacts; however, the presence of exclusively machine-made bottle and jar fragments indicates the scatter dates to after 1903. The presence of threaded lips and one bottle with a patent finish suggests a period of deposition during the 1920s or early 1930s.

CWA63-3 - This historic-age irrigation feature consists of a concrete irrigation standpipe made from a prefabricated pipe segment set vertically in the ground. The feature is located along the Proposed Subtransmission Source Line Route, just north of the extension of 11th Street. The pipe is 39" in diameter with a wall thickness of 2.75" and stands 36" to 40" above the surrounding ground surface.

Alternative Subtransmission Source Line Route

P33-05130 – This is the Stalder Farm, located on the northeast corner of the intersection of 11th Street and Reservoir Avenue. The Proposed and Alternative Subtransmission Source Line Routes run along Reservoir Avenue along the western edge of the farmstead. The farm consists of a residence, a large barn, a milk house, an equipment shed, a blacksmith shop, a corral, numerous pieces of historical farm equipment, historical vehicles, and a sparse artifact scatter. The farm, which was established in 1917 by Edward R. Stalder, was purchased by Frank and Ethel Ybarrola in the 1949. The Ybarrolas demolished the original milk barn and built a new one. Over the next few decades, the farmhouse was extensively remodeled, and a modern corrugated sheet metal equipment barn was constructed (Cotterman and Mason 2010).

CWA63-1 - This historic-age irrigation feature consists of a concrete irrigation standpipe, located along the proposed route shared by the Proposed and Alternative Subtransmission Source Line Routes, just southwest of the Proposed Substation and Alternative Substation. The feature is made from a section of prefabricated concrete pipe mounted vertically in the ground. The pipe is 39" in diameter with a wall thickness of 2.75" and stands 36" to 40" above the surrounding ground surface.

CWA63-2 - This historic archaeological site consists of a very sparse scatter of domestic glass and ceramic sherds, located along the route shared by The Proposed and Alternative Subtransmission Source Line Routes and Lakeview Telecommunication Fiber Optic Cable Segment 1. The site currently measures approximately 150 meters (northeast-southwest) by 40 meters (northwest-southeast). Decades of plowing and disking have spread the artifacts out over a wide area, and will probably continue to destroy the site as long as agricultural activities continue. Artifacts consist of a bottle fragments and white ceramic fragments. No identifiable manufacturer's marks were found on any of the artifacts; however, the presence of exclusively machine-made bottle and jar fragments indicates the scatter dates to after 1903. The presence of threaded lips and one bottle with a patent finish suggests a period of deposition during the 1920s or early 1930s.

Lakeview Telecommunication Fiber Optic Cable Segment 1

CWA63-2 - This historic archaeological site consists of a very sparse scatter of domestic glass and ceramic sherds, located along the route shared by the Proposed and Alternative Subtransmission Source Line Routes and Lakeview Telecommunication Fiber Optic Cable Segment 1. The site currently measures approximately 150 meters (northeast-southwest) by 40 meters (northwest-southeast). Decades of plowing and disking have spread the artifacts out over a wide area, and will probably continue to destroy the site as long as agricultural activities continue. Artifacts consist of a bottle fragments and white ceramic fragments. No identifiable manufacturer's marks were found on any of the artifacts; however, the presence of exclusively machine-made bottle and jar fragments indicates the scatter dates to after 1903. The presence of threaded lips and one bottle with a patent finish suggests a period of deposition during the 1920s or early 1930s.

Lakeview Telecommunication Fiber Optic Cable Segment 2

Three houses more than 50 years old were identified along Lakeview Avenue. The house at 30101 Lakeview Avenue dates to 1959; the house at 30111 Lakeview Avenue dates to1940; and the house at 30651 Lakeview Avenue dates to 1956.

Lakeview Telecommunication Fiber Optic Cable to Moval Substation Segment (Segment 3)

P33-00525 - This prehistoric site consists of three bedrock milling slicks and one bedrock mortar. The site is approximately 20 meters west of the pole line upon which the new cable would be installed, on the same side of the unpaved access road as the poles.

P33-00526 - This prehistoric site consists of a single bedrock milling slick. The site is situated approximately 20 meters northwest of the pole line upon which the new cable would be installed, on the same side of the unpaved access road as the poles.

P33-02951 - This prehistoric site consists of one bedrock milling slick and is situated along a segment of the proposed fiber optic cable route that parallels Davis Road. The site is located approximately five meters southwest of the pole line upon which the new cable would be installed, on the same side of the unpaved access road as the poles.

P33-00608 - This prehistoric site consists of two bedrock milling slicks on separate outcrops approximately 25 meters apart. It is located near a segment of the proposed fiber optic cable route that parallels Davis Road. It is approximately 30 meters southwest of the pole line upon which the new cable would be installed, on the same side of the unpaved access road as the poles.

CWA63-4 - This historic-period site consists of a partially collapsed structure, possibly a well house. It is approximately 25 feet southeast of the pole line upon which the new cable would be installed, on the same side of the unpaved access road as the poles. The foundation of the structure is a rectangular concrete perimeter footing wall measuring 9' (northwest-southeast) by 8.75' (northeast-southwest). The footing is 8" wide and stands approximately 4" to 8" above the surrounding ground surface. Four steel studs are embedded in the top of the concrete. The studs still hold a 2"-by-10"

board along the northwest side of the feature, and a 2”-by-4” board along the southwest side. The boards from the northeast and southeast sides are missing. Partially collapsed 7’ walls, with lumber framing fastened with round wire nails, are on the southwest, southeast, and northeast sides. The northwest side does not appear to have had a wall. The walls are covered with corrugated, galvanized steel. A flat or shed roof of the same materials as the walls is mostly collapsed, and a few pieces of corrugated sheet metal are scattered nearby.

CWA63-5 - This historic-period site consists of an earthen mound approximately 6’ high and 60’ in diameter with a cylindrical water tank in its center. The tank is made of locally collected, angular granite cobbles and stones that are mortared together. The tank is 20’ in diameter and its walls are 18” to 24” thick. The inside of the tank is lined with a layer of cement plaster approximately ½” thick. The upper edge of the tank wall is level with the top of the earthen mound, and the part that once stood above the mound has collapsed into the interior. It is located along the southern half of the proposed fiber optic cable route, approximately 65’ east of the unpaved pole-line access road, on the same side as the poles upon which the cable would be installed. It is 75’ south of an intersecting east-west dirt road.

Artifacts inside the tank consisted of a cylindrical tobacco can labeled “Prince Albert,” with an internal friction lid; a crushed, rectangular chemical-type can with a soldered cap and “SEALED AT THE FACTORY” embossed on top; an aluminum-end beverage can with a pull-tab opening; several crushed, rusted, unidentifiable can fragments; and several lumber fragments, including a 4”-by-4” with a galvanized 3/8” carriage bolt attached.

CWA63-6 - This historic-period site consists of the remains of an irrigation pumping feature and a capped well. It is located in a former agricultural field, approximately 30’ west of the pole line upon which the cable would be installed. The site consists of two features.

Feature 1 is a possible pump stand, now missing its pumping equipment. It includes a concrete slab footing measuring approximately 5’ (east-west) by 4’ (north-south), with an 8”-diameter steel pipe projecting upwards from its east half to a height of approximately 6’. The concrete footing and steel pipe are flanked by two concrete irrigation standpipes. One of the standpipes, adjacent to the north side of the footing, is 18” in diameter and approximately 12” high. The other standpipe, near the south side of the footing, is 15” in diameter and approximately 18” high.

Feature 2 appears to be a capped well, located approximately 55’ north-northeast of Feature 1, and 20’ west of Moreno Beach Drive. Feature 2 consists of a 12”-diameter steel pipe, set in concrete, and projecting to a height of 42” above the surrounding ground surface. The top of the pipe is covered with a flat steel plate, and the sides are coated with tar.

Paleontological Resources

The results of a search of the Regional Paleontological Locality Inventory (RPLI) at the San Bernardino County Museum (SBCM) indicate that two previously-known paleontological resource localities are recorded within one-quarter to one-half mile of portions of the project area. Localities SBCM 5.3.151 and 5.3.153 are located very near

Proposed Lakeview Substation and the Alternative Substation and the Proposed and Alternative Subtransmission Source Line Routes. These localities have yielded fossils of late Pleistocene vertebrates including mammoths, horses, and bison from Pleistocene older alluvium. The proximity of these localities to the proposed project demonstrates the high paleontological sensitivity of Pleistocene older alluvium at the surface and in the subsurface in this region.

4.5.2 Regulatory Setting (State and Local)

State Regulations (California)

The California Environmental Quality Act (CEQA) defines cultural resources to include prehistoric and historic era archaeological sites, districts, and objects; historic buildings, structures, objects and districts; and traditional/cultural sites or the locations of important historic events. CEQA Guidelines (Section 15064.5) state that a project may have a significant environmental effect if it causes a substantial adverse change in the significance of an historic resource. Additionally, CEQA requires consideration of properties eligible for listing on the California Register of Historical Resources (CRHR) or that are defined as a unique archaeological resource in CEQA Section 21083.2.

CEQA Archaeological Site Significance Criteria

Cultural and historic resources are defined as prehistoric or historic archaeological sites, buildings, districts, artifacts, or other physical evidence of human activity. In general, cultural and historic resources must be a minimum of 45 years old to be considered historic for the purpose of CEQA. However, according to CEQA, cultural resources can also include places used for traditional Native American observances or places with special cultural significance. CEQA states that if a project would result in significant impacts to cultural and historical resources, then alternative plans or mitigation measures must be considered. However, only significant resources need to be addressed. A significant cultural or historical resource is a resource listed or eligible for listing on the CRHR (Public Resources Code [PRC] Section 5024.1). A resource may be eligible for inclusion on the CRHR if:

(1) It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(2) It is associated with the lives of persons important in our past;

(3) It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

(4) It has yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting one or more of the above criteria, cultural and historical resources must also contain enough integrity to be recognizable as historical resources. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. CEQA Guidelines (Section 15064.5) also require consideration of unique archaeological sites. If an archaeological site does not meet the criteria for inclusion in the CRHR, but does meet the definition of a unique

archaeological resource as outlined in PRC Section 21083.2, it may be treated as a significant historical resource.

Paleontological resources consists of fossilized evidence of prehistoric plants or animals preserved in rock or soil, that are of paleontological interest and that provide information about the history of life on earth, with the exception of materials associated with cultural resources.

Local Regulations

Segments of the Project cross the jurisdiction of the County of Riverside (County), which has ordinances or other requirements promoting the protection and preservation of cultural and paleontological resources. The California Public Utilities Commission (CPUC), as lead agency over the Project, has primary jurisdiction over the Project because it authorizes the construction, operation, and maintenance of public utility facilities in the State of California. Although such projects are exempt from local land use and zoning regulations and permitting, General Order (GO) No. 131-D, Section III C requires "the utility to communicate with, and obtain the input of, local authorities regarding land use matters and obtain any non-discretionary local permits." Such consultation would include addressing any issues that may arise concerning the following regulations related to cultural and paleontological resources.

Cultural Resources

The County ensures compliance with CEQA regulations regarding mitigation of impacts to cultural resources by requiring that cultural resources reports for development projects that need permits from the County be prepared by an archaeologist on the County's List of Qualified Archaeological Consultants who has signed the County's Memorandum of Understanding (MOU) for the preparation of archaeological reports. Reports must be prepared following the County's Archaeological Report Outlines. All reports for projects requiring permits from the County must be reviewed and approved by the County Archaeologist.

Paleontological Resources

The County ensures compliance with CEQA regulations regarding mitigation of impacts to paleontological resources by requiring that paleontological resources reports for development projects that need permits from the County be prepared by a paleontologist on the County's List of Qualified Paleontological Consultants who has signed the County's MOU for the preparation of paleontological reports. All reports for projects requiring permits from the County must be reviewed and approved by the County Geologist.

4.5.3 Significance Criteria

The significance of potential impacts was addressed in accordance with Appendix G of the CEQA Guidelines (14 California Code of Regulations [CCR] 15000 et seq.), which indicate that a proposed project would have a significant impact on cultural resources and paleontological resources if it would:

- Cause a substantial adverse change in the significant of a historical resource as defined in Section 15064.5

- Cause a substantial adverse change in the significant of an archaeological resource pursuant to Section 15064.5
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature
- Disturb any human remains, including those interred outside of formal cemeteries

4.5.4 Impact Analysis

The impact analysis of the Proposed Project and alternatives considered the results of the records search and fieldwork and evaluated the results against the CEQA Significance Criteria.

Would the project cause a substantial adverse change in the significance of a historical resources as defined in Section 15064.5?

Construction Impacts

All potentially significant impacts would occur as a result of construction. Cultural resources impacts from operation and maintenance of the substation, source lines, and fiber optic Telecommunication cable is considered unlikely, but will be better defined during final engineering. In addition to impacts from construction resulting in destruction or physical alteration of an eligible resource, impacts to the integrity of setting (sometimes termed "visual impacts") of eligible above-ground structures, infrastructure, and facilities in the APE could also result in significant impacts.

Proposed Substation Site

P33-09030 is a historic-age irrigation feature consisting of two concrete platforms that formerly supported a diesel engine and a water pump. The engine and pump are no longer present, having been stolen in 2007. Because the engine and pump are missing, P33-09030 does not possess integrity and is not eligible for the CRHR. Therefore, P33-09030 is not a Historical Resource as defined in Section 15064.5 and impacts to P33-09030 from Project construction would not be significant.

Proposed Subtransmission Source Line Route

P33-05130 is the Stalder Farm with buildings, structures, and equipment. It was established in 1917 by Edward R. Stalder. After the farm was purchased by Frank Ybarrola in 1949, many of the buildings were remodeled or demolished. The Stalder Farm has been evaluated as not eligible for the CRHR under any criteria (Cotterman and Mason 2010). It is not associated with important events in history (Criterion 1), such as early settlement in the Lakeview area. The original settlement of the Lakeview area took place in the 1890s, but the Stalder Farm was not established until 1917. The original owner of the Stalder Farm, Edward R. Stalder, was not an important historical figure (Criterion 2), although other members of the Stalder family were instrumental in the early settlement of Mira Loma (north of Riverside), originally named Stalder. The Stalder Farm buildings are not architecturally distinctive (Criterion 3) and most lack integrity of materials and workmanship, having been altered or demolished during the Ybarrola tenure. The single archaeological deposit (Feature 1) identified at the Stalder Farm has

been disturbed by farm vehicles, blading, and artifact collecting. Little or no artifacts remain to provide information about history (Criterion 4). Recent construction near Stalder Farm has comprised the integrity of the setting. Therefore, Stalder Farm (P33-05130) is not eligible for the CRHR under any criteria and is not a Historical Resource as defined in Section §15064.5. Impacts to P33-05130 from Project construction would not be significant.

CWA63-1 and CWA63-3 are historic-age irrigation features each consisting of a concrete irrigation standpipe. Irrigation standpipes are ubiquitous throughout southern California and are not associated with important historical events or persons. They have no distinctive engineering design characteristics, and have no potential to provide important information. Thus, CWA63-1 and CWA63-3 are not eligible for the CRHR and are not Historical Resources as defined in Section §15064.5. Impacts to CWA63-1 and CWA63-3 from Project construction would not be significant.

CWA63-2 consists of a very sparse scatter of glass and ceramic artifacts along 10th Street that most likely dates to the 1920s or 1930s. The integrity of the site has been destroyed by decades of agricultural plowing and disking. The lack of integrity and the low probability of linking the site to any historical context makes CWA63-2 not eligible for the CRHR because of lack of potential to yield important information. CWA63-2 is not eligible for the CRHR and is not a Historical Resource as defined in Section 15064.5. Impacts to CWA63-2 from Project construction would not be significant.

Since none of the cultural resources identified in Proposed Subtransmission Source Line Route constitute Historical Resources as defined by CEQA, there will be no impacts to Historical Resources if Proposed Subtransmission Source Line Route is constructed.

Lakeview Telecommunication Fiber Optic Cable Segment 1

CWA63-2 consists of a very sparse scatter of glass and ceramic artifacts along 10th Street that most likely dates to the 1920s or 1930s. The integrity of the site has been destroyed by decades of agricultural plowing and disking. The lack of integrity and the low probability of linking the site to any historical context makes CWA63-2 not eligible for the CRHR because of lack of potential to yield important information. CWA63-2 is not eligible for the CRHR and is not a Historical Resource as defined in Section 15064.5. Impacts to CWA63-2 from Project construction would not be significant.

Lakeview Telecommunication Fiber Optic Cable Segment 2

There are three houses of historic age (more than 50 years old) along Lakeview Avenue. Because the fiber optic cable will be installed on existing poles, there will be no direct or indirect impacts on these houses from Project construction. There will be no impacts on cultural resources if Lakeview Telecommunication Fiber Optic Cable Segment 2 is constructed.

Lakeview Telecommunication Fiber Optic Cable to Moval Substation Segment (Segment 3)

The Lakeview Telecommunication Fiber Optic Cable to Moval Substation Segment will be attached to existing distribution line poles except in one 2,400'-long segment near the Moval Substation where it will be placed underground. There will be no ground

disturbance where the line will be attached to existing distribution line poles and there are no cultural resources in the segment where ground disturbance will occur for underground installation of the line.

Operation Impacts

Maintenance and operation of the Proposed Project and Proposed Route would not involve the disturbance of subsurface soils or geologic formations. Therefore, operation of the Proposed Project would have no impact to historical resources.

Would the Proposed Project Cause a Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5?

Construction Impacts

The record search and field surveys reported that no archaeological resources are within the proposed area of construction for the Proposed Project. Because there will be no substantial adverse changes in an archaeological resource as defined in CCR Title 14, Section 15064.5 and because there are no CRHR-eligible archaeological resources in the Proposed Project there will be no impact to archaeological resources.

Operation Impacts

Maintenance and operation of the Proposed Project and Proposed Route would not involve the disturbance of subsurface soils or geologic formations. Therefore, operation of the Proposed Project and Proposed Route would have no impact to archaeological resources.

Would the Proposed Project Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature?

Construction Impacts

The Proposed Substation Proposed Subtransmission Source Line Route and the Fiber Optic Cable Routes are underlain by Pleistocene alluvial sediments with high potential to contain paleontological resources. Thus, ground-disturbing activities throughout almost the entire project have the potential to impact paleontological resources.

Applicant Proposed Measure PA-1. A paleontologist would monitor the excavation into rock units having high potential to contain significant nonrenewable paleontological resources. SCE would develop a paleontological monitoring plan describing paleontological monitoring activities.

Operation Impacts

Maintenance and operation of the Proposed Project would not involve the disturbance of subsurface soils or geologic formations. Therefore, operation of the Proposed Project would have no impact to paleontological resources.

Would the Proposed Project Disturb any Human Remains, Including Those Interred Outside of Formal Cemeteries?

Construction Impacts

The Proposed Project and Proposed Route will not disturb any human remains, including those interred outside of formal cemeteries. The record search and field surveys reported that no cultural resources are within the proposed area of construction for the Proposed Project and Proposed Route. Encountering human remains is unlikely as there are no known cultural resources. If human remains are encountered, all work must stop and the county coroner and a qualified archaeologist notified pursuant to Public Resources Code Sections 5097.98 and 5097.

Operation Impacts

Maintenance and operation of the Proposed Project and Proposed Route would not involve the disturbance of subsurface soils or geologic formations. Therefore, operation of the Proposed Project would have no impact to human remains.

4.5.5 Alternative Substation Site

No cultural resources were identified in the Alternative Substation Site. Therefore, there will be no impacts to cultural resources if Alternative Substation Site is constructed. There will be no substantial adverse changes in a Historical Resource or an archaeological resource as defined in Section 15064.5 and there will be no disturbance of human remains.

The Alternative Substation site is underlain by Pleistocene alluvial sediments with high potential to contain paleontological resources. Thus, ground disturbing activities throughout almost the entire project have the potential to impact paleontological resources.

4.5.6 Alternative Subtransmission Source Line Route

P33-05130 is the Stalder Farm with buildings, structures, and equipment. It was established in 1917 by Edward R. Stalder. After the farm was purchased by Frank Ybarrola in 1949, many of the buildings were remodeled or demolished. The Stalder Farm has been evaluated as not eligible for the CRHR under any criteria (Cotterman and Mason 2010). It is not associated with important events in history (Criterion 1), such as early settlement in the Lakeview area. The original settlement of the Lakeview area took place in the 1890s, but the Stalder Farm was not established until 1917. The original owner of the Stalder Farm, Edward R. Stalder, was not an important historical figure (Criterion 2), although other members of the Stalder family were instrumental in the early settlement of Mira Loma (north of Riverside), originally named Stalder. The Stalder Farm buildings are not architecturally distinctive (Criterion 3) and most lack integrity of materials and workmanship, having been altered or demolished during the Ybarrola tenure. The single archaeological deposit (Feature 1) identified at the Stalder Farm has been disturbed by farm vehicles, blading, and artifact collecting. Little or no artifacts remain to provide information about history (Criterion 4). Recent construction near Stalder Farm has comprised the integrity of setting. Therefore, Stalder Farm (P33-05130) is not eligible for the CRHR under any criteria and is not a Historical Resource as

defined in Section 15064.5. Impacts to P33-05130 from Project construction would not be significant.

CWA63-1 is a historic-age irrigation feature consisting of a concrete irrigation standpipe. Irrigation standpipes are ubiquitous throughout southern California and are not associated with important historical events or persons. They have no distinctive engineering design characteristics, and have no potential to provide important information. Thus, CWA63-1 is not eligible for the CRHR and is not a Historical Resource as defined in Section 15064.5. Impacts to CWA63-1 from Project construction would not be significant.

CWA63-2 consists of a very sparse scatter of glass and ceramic artifacts along 10th Street that most likely dates to the 1920s or 1930s. The integrity of the site has been destroyed by decades of agricultural plowing and disking. The lack of integrity and the low probability of linking the site to any historical context makes CWA63-2 not eligible for the CRHR because of lack of potential to yield important information. CWA63-2 is not eligible for the CRHR and is not a Historical Resource as defined in Section 15064.5. Impacts to CWA63-2 from Project construction would not be significant.

Since none of the cultural resources identified in the Alternative Subtransmission Source Line Route constitute Historical Resources as defined by CEQA, there will be no impacts to Historical Resources if the Alternative Subtransmission Source Line Route is constructed. There will be no substantial adverse changes in a Historical Resource or an archaeological resource as defined in Section 15064.5 and there will be no disturbance of human remains.

The Alternative Subtransmission Source Line Route is underlain by Pleistocene alluvial sediments with high potential to contain paleontological resources. Thus, ground disturbing activities throughout almost the entire project have the potential to impact paleontological resources.

4.5.7 References

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4.6 Geology and Soils

This section describes the geology and soils in the area of the Proposed Project. The potential impacts of the Proposed Project and alternatives are also discussed. A Geotechnical Investigation Report was conducted at the Proposed Substation Site in December 2009. For more information refer to Appendix F Geotechnical Report.

4.6.1 Environmental Setting

The Proposed Project is located in the north-central portion of the greater Peninsular Ranges Geomorphic Province. The Peninsular Ranges Geomorphic Province is characterized by a series of ranges separated by northwest trending valleys and faults. The valleys are alluvium-filled basins of Cenozoic sedimentary and Mesozoic granitic rocks (DMG, 1994). The structural geology of the area is dominated by faults. Major faults in the province are the San Jacinto and the Elsinore faults.

The Proposed Project is located on the Perris Plain, between the San Jacinto Valley and the Perris Valley, and is bounded by the Bernasconi Hills to the northwest and the Lakeview Mountains to the southeast. The average elevation of the alluvial-filled Perris Plain and numerous bedrock hills is 1,700 feet above mean sea level (msl) (Norris and Webb, 1990). The Perris Plain consists of active valley deposits (late Holocene) near the San Jacinto River, young alluvial-fan deposits (Holocene and late Pleistocene), old alluvial-fan deposits (late to middle Pleistocene), and granitic outcrops (Cretaceous) that form the surrounding mountain ranges (USGS, 2003; Morton, 2003). The geology of this area is shown on Figure 4.6-1, Geology.

Regionally, the ground surface slopes gently downward in a southwest direction. Topography at the Proposed Project is relatively flat and slopes gently to the northwest toward the San Jacinto River, located approximately 0.6 mile northwest of the Proposed Substation Site. The ground surface elevation at the Proposed Project is approximately 1,440 feet above msl (USGS, 1979).

Potential geologic hazards, including natural phenomena such as earthquakes, liquefaction, landslide and mudslide, and subsidence are discussed in subsequent sections of this report.

Faults

The Proposed Project is located in a seismically active area and therefore would likely be subjected to ground shaking from movement along one or more of the sufficiently active faults or well-defined faults[1] in the region.

An EQFault search identified a total of 60 sufficiently active faults and well-defined faults within a 100-mile radius of the Proposed Project (Blake, 2000). Active faults within a 20

[1] A “sufficiently active fault” (previously referred to as an “active fault”) is defined as a fault that has broken the surface in the past 11,000 years (CGS, 2007). A “well-defined fault” (previously referred to as “potentially active fault”) is defined as a fault whose trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface.

mile radius of the Proposed Substation Site with the potential to generate ground accelerations of 0.1 gravity (g) or greater are listed in Table 4.6-1, Major Active Faults within a 20 mile Radius of the Proposed Substation Site.

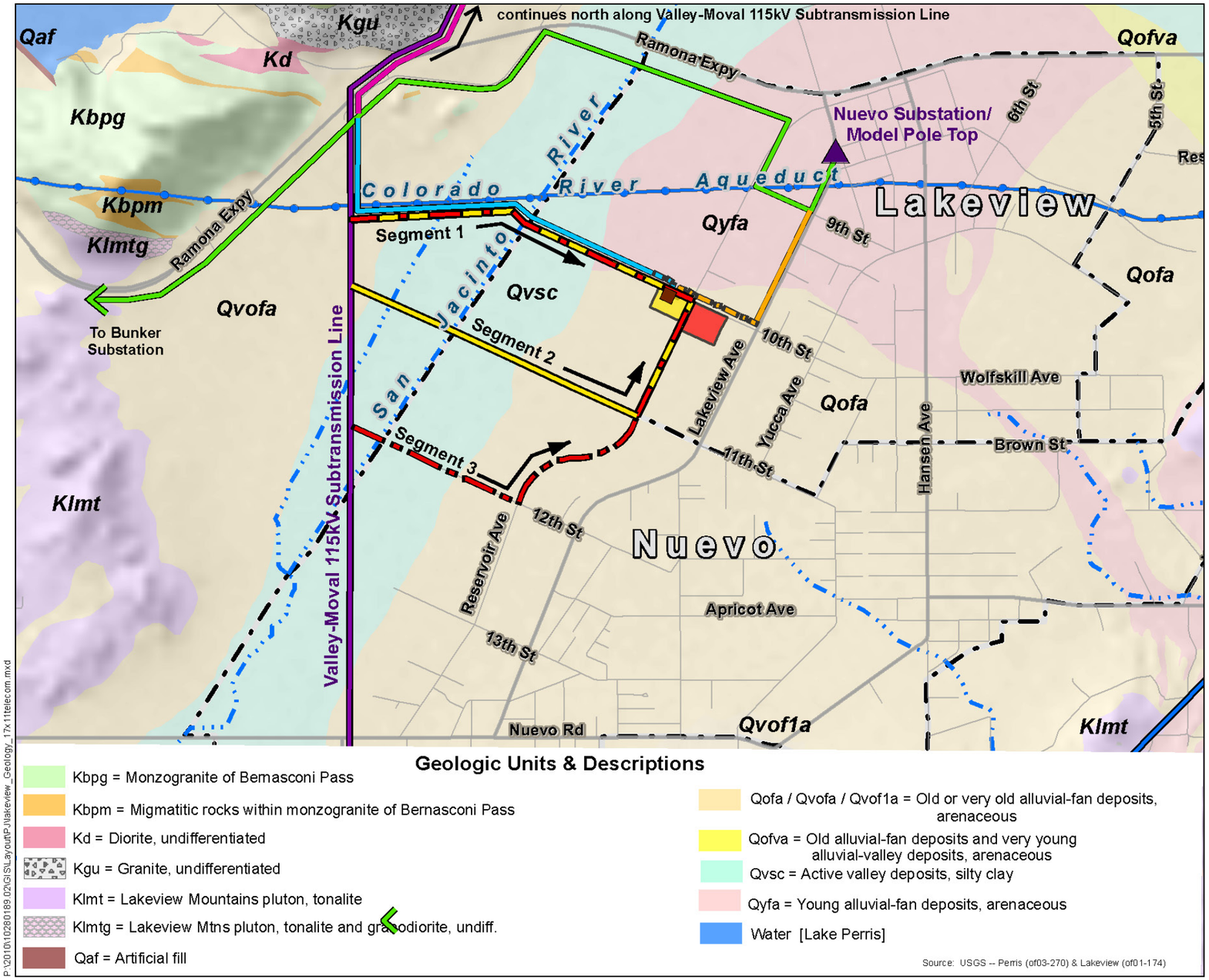
Table 4.6-1 Major Active Faults within a 20 mile Radius of the Proposed Substation Site

Fault Name	Distance in miles (kilometers)	Direction from Site	Estimated Maximum Earthquake Magnitude (Mw)	Peak Acceleration (g)
San Jacinto-San Jacinto Valley	5.3 (8.5)	NE	6.9	0.401
San Jacinto-Anza	13.9 (22.3)	SE	7.2	0.248
San Jacinto-San Bernardino	14.6 (23.5)	NW	6.7	0.167
Elsinore-Glen Ivy	17.8 (28.6)	SW	6.8	0.145
Elsinore-Temecula	17.8 (28.6)	S	6.8	0.145
San Andreas-San Bernardino	18.5 (29.7)	NE	7.3	0.202
San Andreas-Southern	18.5 (29.7)	NE	7.4	0.216

Source: Blake, 2000
Mw = Moment Magnitude
g = gravity

Structural design for potential accelerations of 0.1 g and above caused by earthquakes can be managed with proper foundational design based on geotechnical investigations. Regional faults within approximately 7.5 miles of the Proposed Project are shown on Figure 4.6-2, Regional Faults. No active fault zones are present within one mile of the Proposed Project.

The San Jacinto Valley section of the San Jacinto fault zone, located approximately 4 miles to the northeast of the Proposed Substation Site, has the greatest ground acceleration potential (0.401 g) in the vicinity of the Proposed Project. The San Jacinto Valley section includes the Casa Loma, Claremont, Hot Springs, and Park Hill faults. This section (approximately 37 miles in length) may be capable of generating a moment magnitude 6.9 earthquake, which would be considered the maximum credible event that could impact the Proposed Project (Blake, 2000; RCIP, 2000). In addition, the San Jacinto Valley section has the greatest probability of experiencing a 6.9 maximum magnitude earthquake within the next 20 years (RCIP, 2000). Studies suggest that the San Jacinto Valley section has a slip rate of greater than 5 millimeters per year, with a recurrence interval for large earthquakes of 65 to 98 years (USGS, 2010). The maximum historical earthquake magnitude on the Claremont segment was a 6.9 magnitude in 1918 (USGS, 2010).



Geologic Units & Descriptions

- Kbpg = Monzogranite of Bernasconi Pass
- Kbpm = Migmatitic rocks within monzogranite of Bernasconi Pass
- Kd = Diorite, undifferentiated
- Kgu = Granite, undifferentiated
- Klmt = Lakeview Mountains pluton, tonalite
- Klmtg = Lakeview Mtns pluton, tonalite and granodiorite, undiff.
- Qaf = Artificial fill
- Qofa / Qvofa / Qvof1a = Old or very old alluvial-fan deposits, arenaceous
- Qofva = Old alluvial-fan deposits and very young alluvial-valley deposits, arenaceous
- Qvsc = Active valley deposits, silty clay
- Qyfa = Young alluvial-fan deposits, arenaceous
- Water [Lake Perris]

Source: USGS -- Perris (of03-270) & Lakeview (of01-174)

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Lakeview Substation Project

Figure 4.6-1
Geology

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

- Pull box (not to scale)

Existing Features

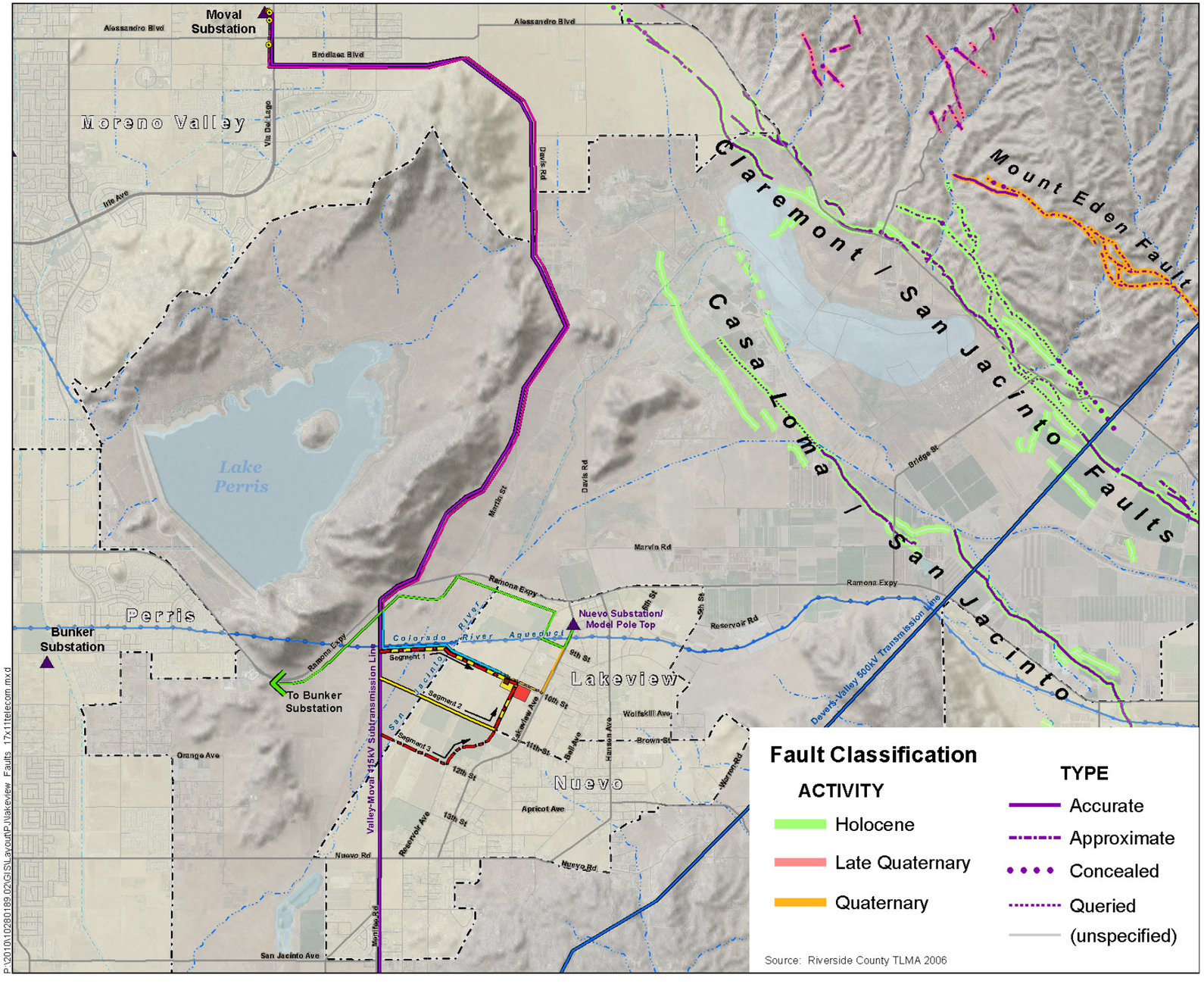
- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities
- Intermittent Stream

Sources: NavTeq, SCE, AECOM 2010

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Lakeview Substation Project

Figure 4.6-2
Regional Faults

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

- Pull box
- Manhole

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities
- Intermittent Stream

Sources: NAIP 2009, NavTeq, SCE, AECOM 2010

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Fault Rupture

The Proposed Project is located in seismically active Southern California, a region that has experienced numerous earthquakes. A review of the Alquist-Priolo (AP) Earthquake Fault maps (DMG, 2000) and the Riverside County AP Earthquake Hazard Zone Map (RCIP, 2000) shows that the Proposed Substation Site and the Proposed Subtransmission Source Line Route are not located within a currently established AP fault zone. The closest AP fault zone is the San Jacinto Fault Zone (DMG, 1994), located approximately 4 miles northeast of the Proposed Substation Site. The AP fault zone and faults included within the zone are shown in Figure 4.6-3, Alquist-Priolo Fault Hazards. Earthquake-induced ground rupture at the Proposed Project is considered to be unlikely because there are no known active fault traces on the Proposed Project.

Seismic Ground Shaking

Numerous earthquakes of moderate to strong magnitude have occurred in the Lakeview area in historic time. Earthquakes ranging in magnitude from 6.0 to 6.8 have occurred on the San Jacinto and Lake Elsinore faults, located approximately 4 miles northeast and 15 miles southwest of the Proposed Substation Site, respectively. Based on the California Geological Survey's Probabilistic Seismic Hazards Mapping Ground Motion Page (2003), there is a 10 percent probability of earthquake ground motion exceeding 0.614 g at the Proposed Substation Site over a 50-year period. The Proposed Subtransmission Source Line Route is located in an area with the same potential for ground acceleration as the Proposed Substation Site. However, the central portion of the telecommunications route is within 1.5 miles of the Casa Loma Fault of the San Jacinto fault zone and potential peak ground acceleration in this area increases to between 0.5 and 0.8 g. In the event of an earthquake, the Proposed Project could be subjected to strong ground shaking.

Liquefaction

Liquefaction is a soil condition in which seismically induced ground motion causes an increase in soil water pressure in saturated, loose, sandy soils, resulting in loss of soil shear strength. Liquefaction can lead to near-surface ground failure, which may result in loss of foundation support and/or differential ground settlement. Sandy deposits deeper than 50 feet below ground surface (bgs) are not usually prone to causing surface damage. In addition, soils above the groundwater table (soils that are not saturated) will not liquefy.

The California Geological Survey (CGS) has mapped the potential for earthquake-induced liquefaction in portions of the state. However, the Proposed Project is located in an area that has not been mapped by the CGS. The potential liquefaction susceptibility in the vicinity of the Proposed Project, based on the County of Riverside General Plan (RCIP, 2000) is shown on Figure 4.6-4, Liquefaction Susceptibility. This mapping indicates that the Proposed Project is located in an area with deep groundwater and with a low susceptibility to liquefaction. Based on the on-site borings, drilled for preliminary geotechnical investigation conducted for the Proposed Project, the groundwater is not present to a depth of at least 51 feet bgs, and is estimated to be approximately 160 feet bgs (TDBU, 2009). The Proposed Project is not considered susceptible to liquefaction.

Landslides

Figure 4.6-5, Landslide Susceptibility, based on Earthquake-Induced Slope Instability Maps in the County of Riverside General Plan (Earth Consultants International, 2000; LSA Associates, Inc., 2000) shows areas in the vicinity of the Proposed Projects that have been mapped by Riverside County as being susceptible to earthquake induced landslides. Based on this information, the Proposed Project is not located in an area susceptible to earthquake induced landslides. Additionally, the Proposed Project is not considered to be in an area with the potential for permanent ground displacement due to earthquake-induced landslides because surface topography at and near the Proposed Project is relatively flat, and there is an absence of nearby slopes (USGS, 1979).

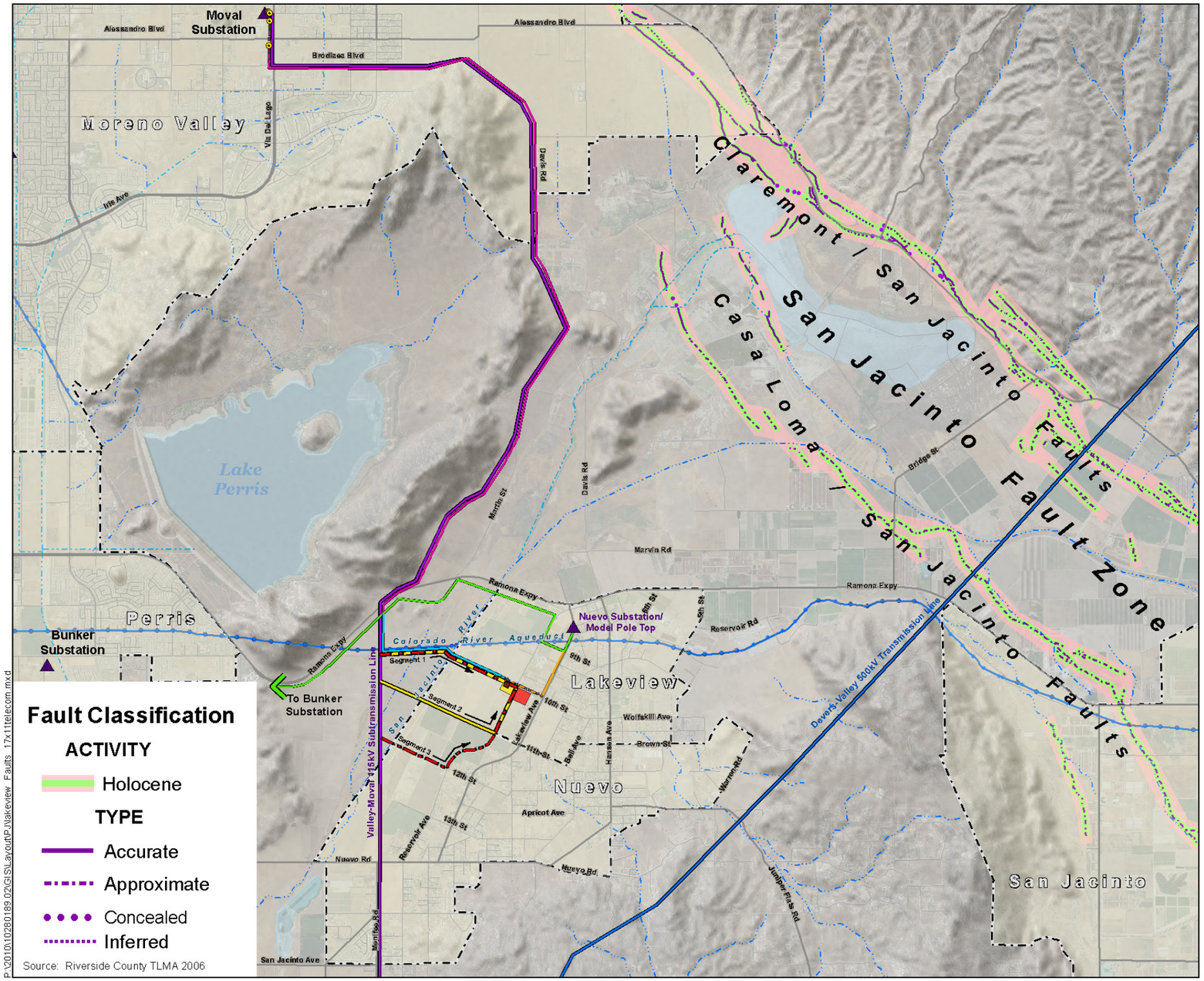
The majority of the proposed telecommunication line routes would be located along the existing Valley-Moval Subtransmission Line. The New Cable to Moval will use existing poles in the Valley-Moval Subtransmission Line route. Approximately two thirds of the proposed New Cable to Moval is located along the southeastern base of the Bernasconi Hills. These hills have steep slopes with angles of 30% and greater (RCIP, 2000). The existing Valley-Moval Subtransmission Line is located just outside earthquake-induced landslide areas based on a review of Earthquake-Induced Slope Instability Maps (Earth Consultants International, 2000; LSA Associates, Inc., 2000). Based on a review of geologic maps (Dibblee, 2003; Morton and Miller, 2006) and topographic maps of the Bernasconi Hills active or inactive landslides along the Valley-Moval Subtransmission Line were not identified. Since the New Cable to Moval would be attached above the ground surface to the existing Valley-Moval Subtransmission Line and the existing line is in a topographically flat area with no mapped landsides, the potential for earthquake-induced landslides to affect the New Cable to Moval is considered low.

Subsidence

Subsidence and fissures resulting from groundwater withdrawal and hydrocollapse have been documented in the San Jacinto Valley (RCIP, 2000). Fissures are caused by the lowering of groundwater tables and by hydrocollapse when groundwater tables rise. Fissures have been reported in Riverside County along active faults that bound the San Jacinto Valley (RCIP, 2000). Fissures due to groundwater withdrawal have been mapped approximately 2 miles northeast of the Proposed Project (DMG, 2000). Decreased groundwater production in the Lakeview sub-basin has caused water levels to increase between 1997 and 2004. Fissures associated with groundwater levels or faults have not been reported at the Proposed Project. The risk of fissures and subsidence at the Proposed Project is considered to be low due to increasing groundwater levels and the depth to groundwater.

Collapsible Soils

Alluvial soils in arid and semi-arid environments have the tendency to possess characteristics that make them prone to collapse with increase in moisture content and without increase in external loads. In Riverside County, collapsible soils predominantly occur at the base of the mountains where Holocene-aged alluvial sediments have been deposited during rapid runoff events (RCIP, 2000). Additionally, some windblown sands may be vulnerable to collapse and hydroconsolidation (RCIP, 2000). The Proposed Project is located in a geologic environment where some potential exists for the occurrence of collapsible soils



Lakeview Substation Project

Figure 4.6-3
Alquist-Priolo Fault Hazards

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

- Pull box
- Manhole

Existing Features

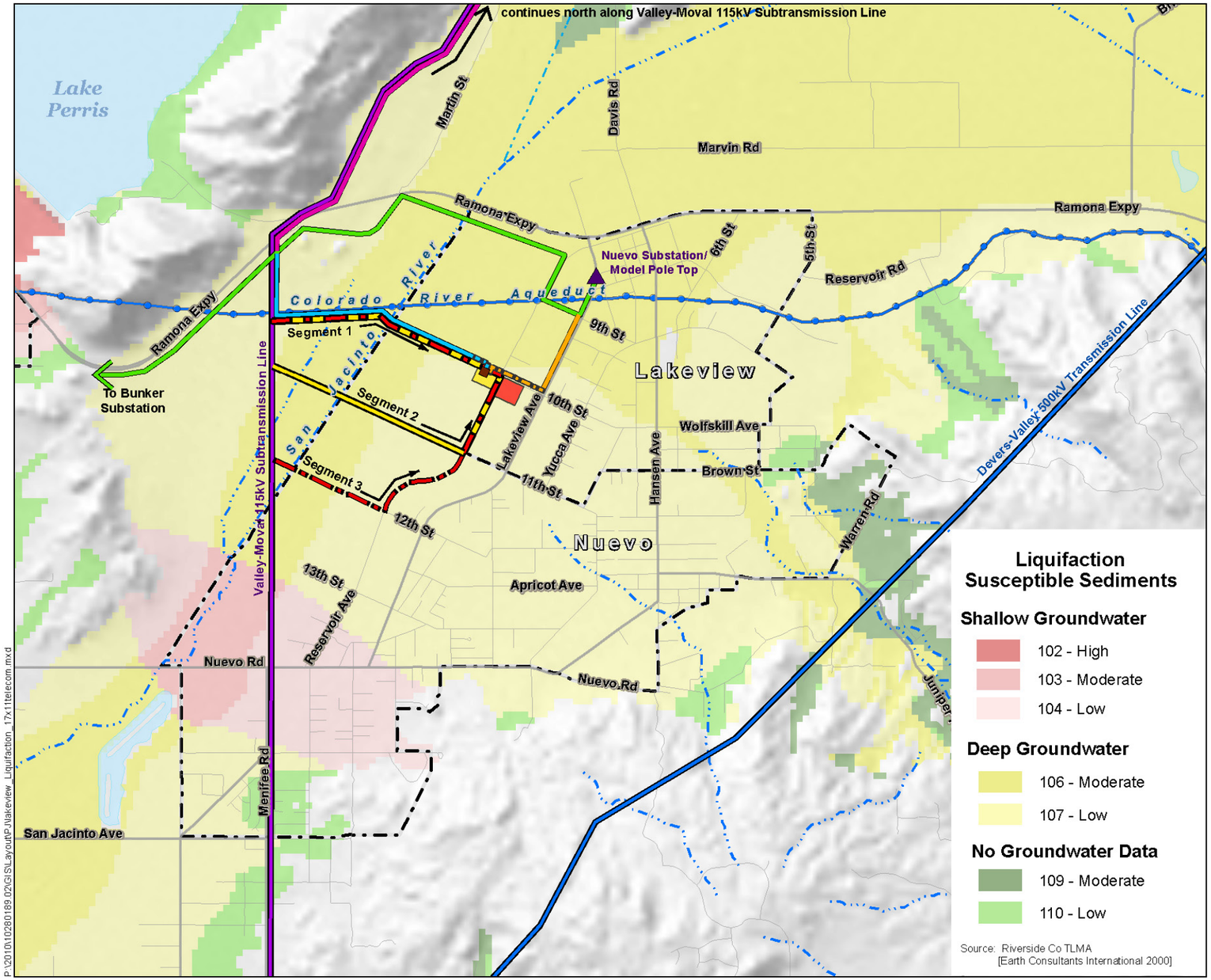
- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities
- Intermittent Stream

Sources: NAIP 2009, NavTeq, SCE, AECOM 2010

0 1 2 3 Miles



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Liquifaction Susceptible Sediments

Shallow Groundwater
- 102 - High
- 103 - Moderate
- 104 - Low

Deep Groundwater
- 106 - Moderate
- 107 - Low

No Groundwater Data
- 109 - Moderate
- 110 - Low

Source: Riverside Co TLMA
[Earth Consultants International 2000]

Lakeview Substation Project

Figure 4.6-4
Liquifaction Susceptibility

Project Features
- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead / Underground
- Proposed Segment 1
- Proposed Segment 2
- Proposed Segment 3
- Pull box (not to scale)

Existing Features
- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities
- Intermittent Stream

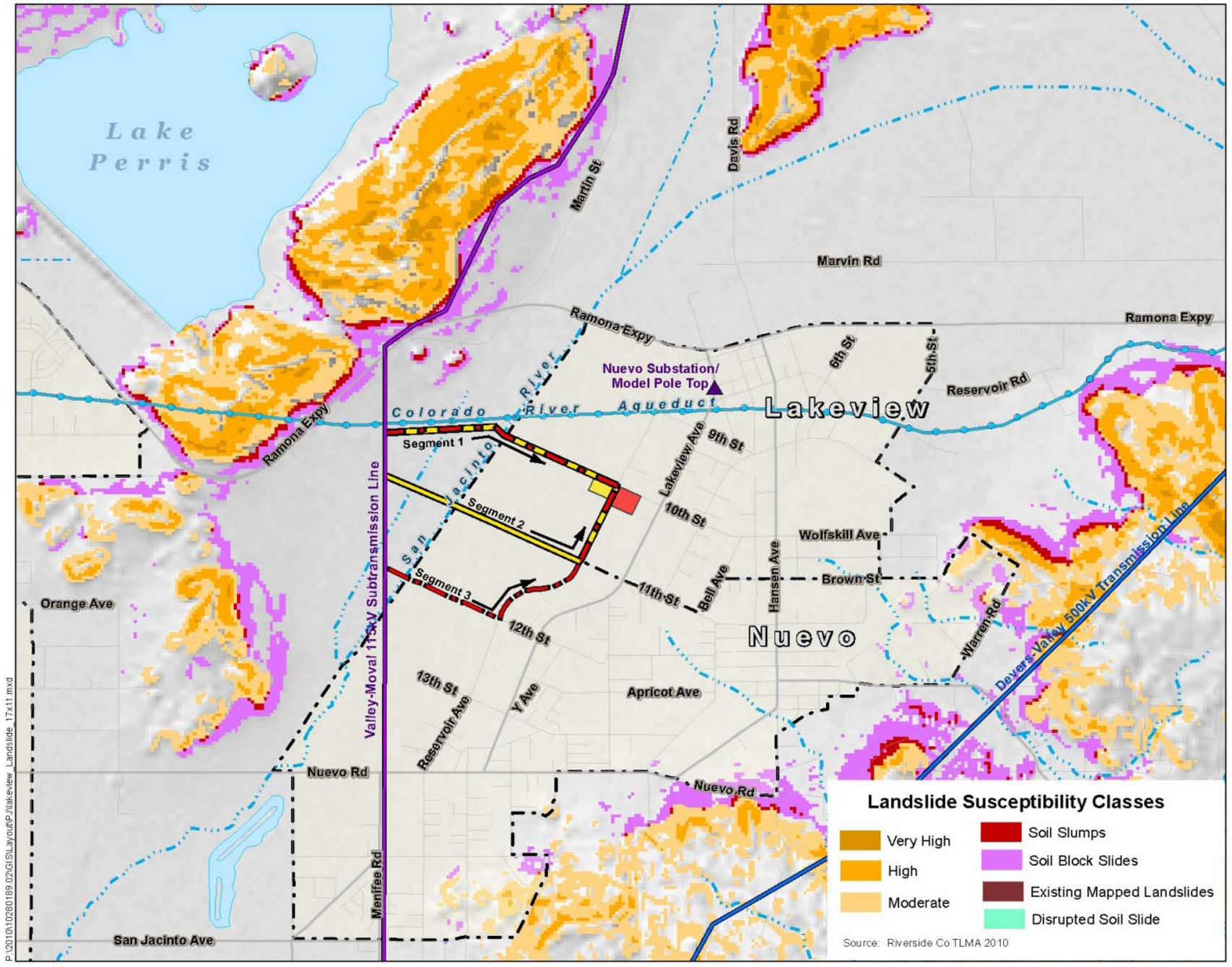
Sources: NavTeq, SCE, AECOM 2010

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Lakeview Substation Project

Figure 4.6-5
Landslide Susceptibility

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Existing Features

- Substation
- Transmission Line
- Subtransmission Line
- Cities/Communities
- Intermittent Stream

Sources:
NavTeq, SCE, AECOM 2010

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SOUTHERN CALIFORNIA EDISON

Collapsible soils occur when there is an increase in moisture content, such as a rise in groundwater levels or from a rain event. The potential for collapse as a result of rising groundwater levels is considered low, because groundwater beneath the Proposed Substation Site is approximately 160 feet bgs. With the exception of landscaped areas around the perimeter, the substation would not be irrigated, and the site is located in a region with relatively low precipitation, so collapse occurring as a result of minimal infiltrating surface waters is also considered unlikely. No fissures have been mapped by the CGS and evidence of collapse at the Proposed Substation Site was not noted in the geotechnical report. The potential for soil collapse is considered low.

Although the potential for soil collapse is considered low, SCE would overexcavate the soil within and around shallow foundations, place the soil back into the excavation and compact as specified in the Geotechnical Report conducted for the site. Because the potential for soil collapse is near the surface deep bore foundations would not be impacted.

Seismic Settlement

Seismically induced settlement can occur in areas where earthquake shaking causes densification of relatively loose sediments. Settlement can result in damage to surface and near-surface structures.

Due to its proximity to an active fault zone, the Proposed Project could experience moderate to high levels of earthquake-induced ground shaking. The initial geotechnical investigation conducted at the Proposed Substation Site (TDBU, 2009) did not identify unstable geologic units and did not provide an estimate of the magnitude of seismic settlement based on geotechnical borings. Provided that measures for sub-grade improvements are implemented as part of the Proposed Project design process, as recommended in the geotechnical report prepared for the substation site (TDBU, 2009), the potential for damage due to seismic settlement is considered to be low.

Erosion

Erosion is the displacement of solids (soil, mud, rock, and other particles) by wind, water, or ice and by downward or down-slope movement in response to gravity. Due to generally flat terrain, the Proposed Project currently is not prone to significant mass erosion. Soil characteristics at the Proposed Project consist predominantly of coarse sandy loam, with minor components of fine sandy loam and sandy loam, as mapped by the United States Department of Agriculture, Natural Resource Conservation Service (NRCS, 2010). The County of Riverside General Plan (RCIP, 2000) has classified the soils at the Proposed Project as having a moderate susceptibility to wind erosion hazards.

Expansive Soil

Expansive soil is composed of naturally occurring clay that has a material composition susceptible to shrinking and swelling. It is generally found in areas that were historically a flood plain or lake area, but it can also occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil and the material composition of the clay. As water is initially introduced into the soil (by rainfall or watering), expansion takes place. If dried out, the soil will contract, often

leaving fissures or cracks. Excessive drying and wetting of the soil can progressively deteriorate structures over the years by leading to differential settlement beneath or within buildings and other improvements.

Based on the preliminary geotechnical investigation at the Proposed Substation Site (TDBU, 2009), soils are expected to consist of silty sand. This suggests that the expansion potential of onsite soils is very low.

Soils

The soil types found within the Proposed Project area are listed in Table 4.6-2, Soil Types Underlying the Proposed Project. Soils at the Proposed Substation Site range from coarse- to fine-sandy loam, with moderate to high erosion potential, well drained soil, and low liquid limits. The liquid limit of a soil is an index corresponding to the moisture content at which the soil passes from a plastic to a liquid. In well drained soils, water is removed from the soil readily but not rapidly.

Table 4.6-2 Soil Types Underlying the Proposed Project

Location	Soil Type	Erosion Class	Drainage Class	Liquid Limit x[1]
Proposed Substation Site and Alternative Substation Site	Hanford Coarse Sandy Loam	Moderate to High	Well Drained	Low
	Pachappa Fine Sandy Loam	Moderate to High	Well Drained	Low
	Exeter Sandy Loam	Moderate to High	Well Drained	Low
	Greenfield sandy loam	Moderate to High	Well Drained	Low
Proposed and Alternative Subtransmission Source Line Routes	Domino silt loam	Moderate	Moderately to Well Drained	Low
	Exeter sandy loam	Moderate to High	Well Drained	Low
	Greenfield sandy loam	Moderate to High	Well Drained	Low
	Hanford coarse sandy loam	Moderate to High	Well Drained	Low
	Pachappa fine sandy loam	Moderate to High	Well Drained	Low
	Ramona sandy loam	Moderate to High	Well Drained	Low
	Riverwash	Slight	Excessively Drained	Low
	Willows silty clay	Slight	Poorly Drained	Moderate

Source: USDA, 2010

[1] Soils with an average reported liquid limit between 40 and 60 percent were considered moderate.

Soil types along the Proposed and Alternative Subtransmission Source Line Routes range from silty loam to coarse sandy loam. These soils have a moderate to high potential for erosion, are well drained, and have low liquid limits. In the areas where the Proposed and Alternative Subtransmission Source Line Routes cross the San Jacinto River, soils range from silty clay to Riverwash. The silty clay has a slight potential for erosion and is poorly drained, with moderate liquid limits.

4.6.2 Regulatory Setting

California Building Code

The Proposed Project is subject to the applicable sections of the California Building Code (CBC), which is administered by the California Building Standards Commission. The Riverside County Building Department is responsible for implementing the CBC for the Proposed Project.

Alquist-Priolo Earthquake Fault Zoning Act

The AP Earthquake Fault Zoning Act was enacted by the State of California in 1972 to mitigate the hazard of surface faulting to structures planned for human occupancy and other critical structures. The state has established regulatory zones (known as Earthquake Fault Zones and often referred to as “AP zones”) around the surface traces of active faults and has issued Earthquake Fault Zone Maps to be used by government agencies in planning and reviewing new construction. In addition to residential projects, structures planned for human occupancy that are associated with industrial and commercial projects are of concern. The Proposed Project is not located within an AP fault zone and there are no proposed structures planned for human occupancy; therefore, the AP Earthquake Fault Zoning Act does not apply to the Proposed Project. However, the AP Zone maps were reviewed as a reference for the locations of known active faults near the Proposed Project.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (Public Resources Code, Chapter 7.8, Section 2690-2699.6) directs the Department of Conservation, California Geological Survey, to identify and map areas prone to liquefaction, earthquake-induced landslides and amplified ground shaking. The purpose this program is to minimize loss of life and property through the identification, evaluation and mitigation of seismic hazards. Seismic Hazard Zone Maps that identify Zones of Required Investigation[2] are generated as a result of the program. Cities and counties are then required to use the Seismic Hazard Zone Maps in their land use planning and building permit processes. The Proposed Project is in an area that has not been mapped as part of the Seismic Hazards Mapping Act.

Riverside County’s Department of Building and Safety Requirements

The Proposed Project is subject to Riverside County’s Department of Building and Safety requirements for building and grading. The Riverside County Grading Code

[2] Zones of Required Investigation are areas prone to liquefaction and earthquake- induced landslides.

requires a grading permit for earth-moving activities exceeding 50 cubic yards of material.

4.6.3 Significance Criteria

The significance criteria for assessing the impacts to geology and soils were obtained from the California Environmental Quality Act (CEQA) Appendix G Environmental Checklist. According to the CEQA Checklist, a project causes a potentially significant impact if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, or injury, or death involving: 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.); strong seismic ground shaking; seismic-related ground failure, including liquefaction; and 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

- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property

- 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

4.6.4 Impact Analysis

No Impact

Construction and operation of the Proposed Project would not result in impacts for the following CEQA criterion:

Would the project 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?

The Proposed Substation Site is currently not connected to sewer and potable water service; therefore, the Proposed Substation Site would be equipped with a restroom consisting of a portable chemical unit maintained by an outside service company. No septic or alternative waste water disposal systems requiring soils capable of supporting these systems will be installed at the Proposed Substation Site. As a result, there would be no impact to soils unable to support a septic system or alternative waste water disposal systems.

Construction Impacts

Construction of the Proposed Project has the potential to result in impacts for the following CEQA criterion:

Would the project result in substantial soil erosion or the loss of topsoil?

During construction, loss of topsoil and erosion could result from construction activities including the operation of heavy machinery on unimproved roadways; grading activities; excavation; drilling; or wind or water erosion of stockpiled fill/excavated materials at staging area, laydown areas, or marshalling yards. Preparation of the marshalling yard may result in the loss of topsoil; however, the application of road base or crushed rock would serve to reduce erosion potential. Existing and new access roads would also result in the loss of topsoil; however, compaction would serve to minimize erosion on roadways.

Erosion due to water and wind would be minimized by the implementation of Best Management Practices (BMPs) that would be provided in the Storm Water Pollution Prevention Plan (SWPPP) prepared for the Proposed Project (please see Section 3.2, Proposed Project Construction Plan, for more information on BMPs and the SWPPP). In addition, the grading permit issued by the County of Riverside would include surface improvements that would minimize soil erosion and the loss of topsoil at the Proposed Substation Site. Implementation of the Worker Environmental Awareness Plan (WEAP), as described in Section 3.9, Worker Environmental Awareness Training, would provide site personnel with instruction on the individual responsibilities under the Clean Water Act, the project SWPPP, and site-specific BMPs. Site preparation, design and construction in compliance with the SWPPP and the grading permit as well as implementation of the WEAP would make impacts due to soil erosion and loss of topsoil less than significant.

Operation Impacts

Operation of the Proposed Project has the potential to result in impacts for the following CEQA criteria:

Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, or injury, or death involving: 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.); strong seismic ground shaking; seismic-related ground failure, including liquefaction; and landslides?

Operation of the Proposed Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, or injury, or death involving: rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction and landslides. Impacts from liquefaction, landslides, and ground failure are considered to be less than significant.

Due to its proximity to an active fault zone, the Proposed Project could experience moderate to high levels of earthquake-induced ground shaking. Even though the Proposed Project is located in an area susceptible to earthquake forces, the structures

would not be utilized for human occupancy and would be unmanned with the exception of routine maintenance activities. Structures would also be designed consistent with the IEEE 693, Recommended Practices for Seismic Design of Substations. Similarly, the Proposed Subtransmission Source Line Route would be designed consistent with California Public Utilities Commission (CPUC) G.O. 95 to withstand seismic loading. Therefore, anticipated impacts due to seismic activity during operation of the Proposed Project would be less than significant.

Would the project result in substantial soil erosion or the loss of topsoil?

The Proposed Project has been mapped as having potential for moderate to high erosion. However, the surface of the Proposed Substation Site would have semi-permeable and impervious materials, reducing the erosion potential or loss of the topsoil. In addition, following the completion of construction, all areas that were temporarily disturbed by Proposed Project construction activities would be restored. Restoration areas could be inclusive of, but are not limited to: some access roads, material staging yards, pull and tension sites, splicing sites and pull box locations. Restoration of these areas would include restoring original contours and reseeding with native seed mix to stabilize soils and minimize future soil and topsoil erosion.

Recommendations based on the results of the initial geotechnical investigation include permanent erosion control measures for the Proposed Substation Site. Permanent BMPs that will be implemented would reduce water and wind erosion of soils, or loss of topsoil, from operation of the project to less-than-significant levels.

Would the project 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?

The potential for risk from on- or off-site landslides is considered to be less than significant because the topography at the Proposed Project is relatively flat, and there is an absence of nearby slopes. The proposed New Cable to Moval telecommunications route (Segment 3) is located along the base of the Bernasconi Hills outside the designated earthquake-induced slope instability area delineated by the County of Riverside (Earth Consultants International, 2000; LSA Associates, Inc., 2000). This proposed New Cable to Moval telecommunications route has a low potential for earthquake-induced landslides.

Fissures, subsidence, and liquefaction at the Proposed Project are considered to be unlikely due to increasing groundwater levels in the basin and the depth to groundwater beneath the site. The Proposed Project is located in a geologic environment where some potential exists for collapsible soils. Fissures, subsidence, and collapsible soils can be associated with increases and decreases in water table levels beneath the site. Groundwater levels in the groundwater basin beneath the Proposed Project area have been increasing since 1995 when groundwater pumping in the area decreased.[3] Groundwater levels in the Lakeview Basin appear to have stabilized and are comparable to groundwater elevations in adjacent groundwater basins (MWD, 2007). The potential

[3] The decrease in groundwater production from the Lakeview sub-basin between 1995 and 2004 was attributed to poor water quality in the basin. Total dissolved solids concentrations in the sub-basin exceeded 10,000 milligrams per liter (MWD, 2007).

for fissures, subsidence, and collapsible soils in the Proposed Project area are very low because groundwater elevations in the Lakeview Basin are at approximately 1,240 feet msl (MWD, 2007), The ground surface elevation at the Proposed Project is approximately 1,440 msl placing groundwater beneath the site at approximately 160 (TDBU, 2009) to 200 feet below the ground surface. The occurrence of groundwater at these depths makes it very unlikely that groundwater will rise to levels that may cause fissures, collapsible soils, subsidence, and/or liquefaction. .Provided that measures for sub-grade improvements are implemented as recommended in the geotechnical report for the substation (TDBU, 2009), the potential for damage due to collapsible soils and seismically induced settlement is considered to be very low.

The initial geotechnical investigation conducted at the Proposed Substation Site (TDBU, 2009) did not identify unstable geologic units. In addition, unstable geologic units or soils were not identified during a review of available data. Impacts due to unstable geologic units or soils are therefore considered to be less than significant.

Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Expansive soils were not encountered during the initial geotechnical investigation conducted for the Proposed Substation Site (TDBU, 2009); therefore, it is unlikely that expansive soils are present at the Proposed Substation Site. The initial geotechnical report also provides site-specific project design and construction recommendations, such as over-excavation of soil for earthwork at the Proposed Substation Site. Based on the initial geotechnical investigation at the Proposed Substation Site (TDBU, 2009), soils are expected to consist of silty sand, suggesting that the expansion potential of on-site soils is very low. Impacts from expansive soils are considered to be less than significant.

4.6.5 Alternative Substation Site

The Alternative Substation Site is located on the corner of 10th Street and Reservoir Avenue, adjacent to and east of the Proposed Substation Site. The Alternative Substation Site is very similar to the Proposed Substation Site in topography, soils, and potential geologic hazards. It is not located in an area with a known fault trace or in an earthquake-induced landslide hazard area. It has a low potential for seismic settlement, subsidence, expansive soils, erosion, and is not susceptible to liquefaction. The Alternative Substation Site has the same potential for experiencing strong ground shaking in the event of an earthquake as the Proposed Substation Site. As a result, construction and operation at the Alternative Substation Site would have similar impacts to geology and soils as the Proposed Substation Site. With the implementation of the geotechnical recommendations (TDBU, 2009) for the design and construction of the Proposed Project, impacts of the Alternative Substation Site on geology and soils would be less than significant.

4.6.6 Alternative Subtransmission Source Line Route

Geologic and soil conditions along the Alternative Subtransmission Source Line Route are similar to those of the Proposed Subtransmission Source Line Route. As a result, impacts to geology and soils for the Alternative Subtransmission Source Line Route are similar to those of the Proposed Project Subtransmission Source Line Route. Impacts would be less than significant.

4.6.7 References

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4.7 Greenhouse Gas Emissions

This section describes greenhouse gas (GHG) emissions. The potential impacts of the Proposed Project and the alternatives are also discussed.

4.7.1 Environmental Setting

GHG that may contribute to global climate change include water vapor, carbon dioxide (CO_2), several trace gases, and aerosols. Currently, man-made (anthropogenic) emissions are regulated in California for the following gases: CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6). SF_6 gas is used in substation circuit breakers and can potentially leak from the equipment. CO_2, CH_4, and other trace combustion products are emitted by fuel burning equipment during construction and operation of the proposed facilities.

Anthropogenic emissions of CO_2 in developed countries occur largely from combustion of fossil fuels. In California, the major categories of fossil fuel combustion CO_2 sources can be separated into residential, commercial, industrial, transportation, and electricity generation sectors. Other GHG emissions, such as CH_4 and N_2O, are also tracked, but occur in much smaller quantities. California's anthropogenic GHG emissions are a small fraction of the world's total anthropogenic emissions, and are relatively minor when compared to estimates of naturally occurring CO_2 emissions. When quantifying GHG emissions, the different global warming potentials of GHG pollutants are usually taken into account by normalizing their rates to an equivalent CO_2 emission rate (CO_2e).

Atmospheric CO_2 concentrations are the result of natural and anthropogenic sources, as well as natural sinks, such as the oceans and plant photosynthesis. Ice cores have been used to estimate historical CO_2 levels. Continuous atmospheric measurements with sophisticated instrumentation have only been available since 1954. The ice core data indicates that CO_2 levels may have been 10 or 20 times higher in the geologic past than in the present. CO_2 has periodically cycled between 200 and 300 parts per million (ppm) during the last 400,000 years. However, during the past 50 years, CO_2 has increased to 390 ppm as measured by instruments in Hawaii. Present levels are much lower than during most of the world's history; however, CO_2 is estimated to be much higher today than it has been for several thousand years.

Historic global temperatures are difficult to estimate, and much debate has occurred regarding methodologies that have been used. However, it is widely accepted that historic global temperatures have cycled periodically much hotter and much colder than present conditions. As recently as 1,000 years ago, the Medieval Warm Period was probably much warmer than today. Only 500 years ago, the Little Ice Age was probably much cooler than today.

A more extensive discussion of GHG emissions and the effects that they may cause is available in the "Final Statement of Reasons for Regulatory Action, Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97" (California Natural Resources Agency, 2009).

4.7.2 Regulatory Setting

Federal Mandatory Reporting of Greenhouse Gases (40 CFR Parts 86, 87, 89 et. al)

The U.S. Environmental Protection Agency (EPA) promulgated this rule in 2009 to require mandatory reporting of GHG from large GHG emissions sources within 31 source categories in the United States. In general, the threshold for reporting is 25,000 metric tons or more of CO_2e. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial greenhouse gases along with vehicle and engine manufacturers will report at the corporate level. Facilities and suppliers began collecting data on January 1, 2010. The first emissions report is due on March 31, 2011, for emissions during 2010. Manufacturers of vehicles and engines outside of the light-duty sector will begin reporting CO_2 for model year 2011 and other GHGs in subsequent model years as part of existing EPA certification programs. This rule does not currently require reporting SF_6 emissions from electrical equipment.

California Global Warming Solutions Act of 2006 (AB 32)

The California Global Warming Solutions Act of 2006 (AB 32) charges the California Air Resources Board (CARB) with the responsibility to monitor and regulate sources of GHG emissions in order to reduce those emissions. CARB established a scoping plan in December 2008 for achieving reductions in GHG emissions and must develop regulations by January 1, 2011 for reducing those emissions by the year 2020. AB 32 also directs CARB to recommend a *de minimis* threshold of GHG emissions below which emission reduction requirements will not apply.

California Mandatory Greenhouse Gas Reporting Regulation (17 California Code of Regulations Sections 95100 - 95133)

Pursuant to AB 32, CARB adopted the Mandatory Greenhouse Gas Reporting Regulation. The facilities required to annually report their GHG emissions include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and industrial sources that emit over 25,000 metric tons per year of CO_2 from stationary source combustion. In particular, retail providers of electricity are required to report fugitive emissions of SF_6 related to transmission and distribution systems, substations, and circuit breakers located inside California that the retail provider or marketer is responsible to maintain in proper working order.

4.7.3 Significance Criteria

The significance criteria for assessing the impacts from greenhouse gas emissions come from the California Environmental Quality Act (CEQA) Environmental Checklist. According to the CEQA Checklist, a project causes a potentially significant impact if it would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment

- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases

4.7.4 Impact Analysis

No Impact

Construction and operation of the Proposed Project would not result in impacts for the following CEQA criterion:

Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

CARB staff, in collaboration with interested stakeholders, is currently developing a control measure to address SF_6 emissions from electricity transmission and distribution equipment. However, this control measure has not yet been adopted.

The Climate Action Team, which consists of representatives from various state boards and departments, including the California Public Utilities Commission (CPUC), has issued various reports outlining strategies to reduce climate change-related emissions in California. The reports serve as the primary state guidance to date. No other plans, policies or regulations for the purpose of reducing emissions of greenhouse gases have been adopted that would be applicable to the Proposed Project. The Proposed Project is therefore analyzed in light of whether it is consistent with the applicable GHG reduction measures recommended by the Climate Action Team's reports.

SF_6 Gas Management Guidelines. Southern California Edison's (SCE) SF_6 Gas Management Guidelines require proper documentation and control of SF_6 gas inventories, whether in equipment or in cylinders.[1] Inventories are documented on both a quarterly and a yearly basis. SCE assumes that any SF_6 gas that is purchased and not used to fill new equipment is needed to replace SF_6 gas that has inadvertently leaked from equipment already in service. This assumption forms the basis for SCE to track and manage SF_6 gas emissions. Currently, SCE voluntarily reports these emissions to the California Climate Action Registry, which was created by the California legislature to help companies track and reduce GHG emissions.

SCE has taken proactive steps in the effort to minimize GHG emissions since 1997. In 1997, SCE established an SF_6 Gas Resource Team to address issues pertaining to the environmental impacts of SF_6. The team developed the Gas Management Guidelines that allow for rapid location and repair of equipment leaking SF_6 gas. In addition, in 2001, SCE's parent organization, Edison International, joined the EPA's voluntary SF_6 gas management program, committing SCE to join the national effort to minimize emissions of this GHG. Importantly, SCE's SF_6 emissions in 2006 were 41 percent less than in 1999, while the inventory of equipment containing SF_6 gas actually increased by 27 percent during the same time period.

SCE has made a significant investment in not only improving its SF_6 gas management practices, but also in purchasing state-of-the-art gas handling equipment that minimizes SF_6 leakage. The new equipment has improved sealing designs that virtually eliminate possible sources of leakage. SCE has also addressed SF_6 leakage on older equipment

[1] Until CARB finalizes its proposed SF6 emissions reductions rules, SCE will continue to follow its internal company policy.

by performing repairs and replacing antiquated equipment through its infrastructure replacement program. It is expected that the Proposed Project would have a minimal amount of SF_6 leakage as a result of the installation of state-of-the-art equipment and SCE's SF_6 gas management practices. Pursuant to its existing practices, SCE would reduce potential GHG impacts resulting from the Proposed Project to the greatest extent practicable.

Low Emission Fleet. The SCE fleet incorporates a significant number of clean diesel, electric and hybrid-electric service vehicles. In addition to meeting CARB emission standards for air quality criteria pollutants, SCE is aggressively lowering GHG emissions from SCE fleet operations.

Since SCE complies with all Climate Action Team guidance, the Proposed Project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing emissions of greenhouse gases. There would be no impact.

Construction and Operation Impacts

Construction and operation of the Proposed Project has the potential to result in impacts for the following CEQA criterion:

Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Project-specific GHG emission thresholds have yet to be developed by most responsible agencies. However, the South Coast Air Quality Management District (SCAQMD) has adopted specific CEQA GHG emissions threshold guidelines for projects in which they are the lead agency. SCAQMD developed their thresholds with the involvement of CARB, the Office of Planning and Research (OPR), other agencies, and stakeholders. The latest draft of the CARB statewide guidelines is consistent with the SCAQMD guidelines. In the absence of statewide project-specific significance thresholds, the analysis of potential impacts in this Proponent's Environmental Assessment (PEA) compares the emissions to the SCAQMD significance thresholds and the draft CARB recommendations.

The applicable numeric significance threshold for projects within the SCAQMD is 10,000 metric tons per year of CO_2 equivalent GHGs. This threshold includes construction emissions, amortized over 30 years, plus operational emissions. The current draft of the CARB recommendations has an applicable numeric threshold of 7,000 metric tons per year of CO_2e GHGs. CARB's threshold does not include construction emissions. Their current draft suggests that they may recommend fuel efficiency and other mitigation measures for construction activities.

Construction Period GHG Emissions

Fuel combustion in construction equipment and motor vehicles would be the source of GHG emissions during construction of the Proposed Project. GHG emissions from construction equipment and motor vehicle fuel combustion during construction were calculated by applying GHG emission factors from the SCAQMD CEQA Handbook webpage (SCAQMD, 2009) to construction data in Chapter 3, Project Description (please see Appendix C, Air Quality Calculations, for details). The estimated total

emissions of GHGs from the Proposed Project construction activities are 1,685 metric tons CO_2e. Amortized over 30 years, the value is 56 metric tons per year.

Operation Period GHG Emissions

Fuel combustion in motor vehicles used during routine inspection, maintenance and testing of the Lakeview Substation and 115 kV subtransmission lines would be a source of GHG emissions during operation of the Proposed Project. GHG emissions from these motor vehicles were calculated by applying GHG emission factors to the estimated distances traveled annually for these activities. New circuit breakers installed at the Proposed Substation would be insulated with SF_6. Leakage of SF_6 from the circuit breakers during operation of the Proposed Project would also generate GHG emissions. GHG emissions from SF_6 leakage were calculated by multiplying the amount of SF_6 contained in new circuit breakers by the estimated annual leakage rate. The estimated annual emissions of greenhouse gases from the operational activities are 21 metric tons CO_2e, primarily from SF_6 leakage (please see Appendix C, Air Quality Calculations, for details).

The total of amortized construction emissions and annual operational emissions is 77 metric tons CO_2e per year. This estimate is much lower than the 10,000 metric ton SCAQMD threshold or the 7,000 metric ton draft CARB threshold. Since GHG emissions from the Proposed Project would be well below the SCAQMD threshold and draft CARB recommendation, the Proposed Project is not expected to have a significant impact from GHG emissions.

4.7.5 Alternative Substation Site

Construction and operation of the Alternative Substation Site would require essentially the same construction equipment and motor vehicle usage as construction of the Proposed Substation Site, because the design of the Alternative Substation Site would be essentially the same as the design of the Proposed Substation Site. Therefore, GHG emissions during construction and operation of the Alternative Substation Site would be similar to those of the Proposed Substation Site. Thus, construction and operation of the Alternative Substation Site would have similar impacts as the Proposed Substation Site. Impacts would be less than significant.

4.7.6 Alternative Subtransmission Source Line Route

Construction and operation of the Alternative Subtransmission Source Line Route would require essentially the same construction equipment and motor vehicle usage as construction and operation of the Proposed Subtransmission Line Source Line Route, because the Alternative Subtransmission Source Line Route is similar in length and only slightly longer than the Proposed Subtransmission Source Line Route. Therefore, GHG emissions during construction and operation of the Alternative Subtransmission Source Line Route would be similar to those of the Proposed Subtransmission Source Line Route. Thus, construction and operation of the Alternative Subtransmission Source Line Route would have similar impacts as the Proposed Subtransmission Source Line Route. Impacts would be less than significant.

4.7.7 References

California Natural Resources Agency, 2009. Final Statement of Reasons for Regulatory Action, Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97. [online] http://ceres.ca.gov/ceqa/guidelines/ [cited June 2009].

SCAQMD 2009. CEQA Handbook webpage. [online] http://www.aqmd.gov/ceqa/hdbk.html [cited July 2009].

4.8 Hazards and Hazardous Materials

This section describes the hazards and hazardous materials in the area of the Proposed Project. The potential impacts of the Proposed Project and the alternatives are also discussed.

4.8.1 Environmental Setting

Hazardous Waste

Southern California Edison (SCE) conducted a Phase I Environmental Site Assessment (ESA) titled: Proposed SCE Lakeview Substation Property (October 26, 2009) for the Proposed Project Substation Site (please see Appendix E, Phase I ESA, for more information). The results of the ESA indicate that, based on the available public records searched and the site visit, no evidence of potential environmental concerns was identified for the Proposed Substation Site. Based on this information, there is a very low potential to encounter soil or groundwater contamination at the Proposed Substation Site.

The Proposed Project would include decommissioning of both Nuevo Substation and Model Pole Top. Facilities at the Nuevo Substation include transformers, circuit breakers, metering transformers, oil filled station, light and power potential transformers, remote terminal unit/USAT system, wood poles, and associated equipment (e.g., disconnects, insulators, surge arrestors, cross arms). The transformers and associated equipment for the two sites contain approximately 17,500 gallons of mineral oil.

An online search was conducted of state and federal investigation and cleanup sites to identify if properties were listed in the vicinity of the Proposed Subtransmission Source Line Route segments, proposed telecommunications route, Nuevo Substation, and Model Pole Top property. No evidence of potential environmental concerns was identified. In addition, no facilities of concern (i.e., investigation or cleanup sites) were identified in the area of the Proposed Substation Site (Rubicon Engineering Corporation, 2009).

Emergency Response

Riverside County has developed both an Operational Area Emergency Operations Plan (EOP), and an Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan (LHMP) to respond to a number of natural and man-made disasters (Riverside County Fire Department, 2005; Riverside County Fire Department, 2006). Additional detail regarding fire protection services provided in Riverside County is provided in Section 4.14, Public Services.

Wildland Fires

The Riverside County Fire Department contracts with the California Department of Forestry and Fire Protection (CAL FIRE) to provide fire protection services to the unincorporated area of Riverside County. CAL FIRE provides fire protection services to the unincorporated areas of Riverside County, including the community of

Lakeview/Nuevo where the Proposed Project is located (Riverside County Fire Department, 2010).

The Riverside Unit of CAL FIRE has implemented the 2005 Riverside Unit Fire Management Plan (CAL FIRE, 2005). The Riverside Unit is broken down into 15 battalions (or districts), and Battalion 1 - Perris includes the Community of Lakeview/Nuevo and the Proposed Project. Battalion 1 consists of light grass in the populated areas on the west and east sides of the battalion. The medium fuels are in some of the same areas, but in the more sparsely populated areas, such as Santa Rosa Mine Road and Juniper Flats. The primary ignition source for wildland fires in the Riverside Unit over the past ten years has been from equipment. Riverside Unit further identified equipment caused fires into mowing, welding/grinding, miscellaneous electrical, and miscellaneous equipment. Mowing does not appear to be a significant factor in ignitions, whereas miscellaneous electrical, welding/grinding, and miscellaneous equipment seem to be the significant ignition sources. (2005 Riverside Unit Fire Management Plan) Excluding undetermined and miscellaneous ignitions sources, arson constitutes the next highest ignition source. The Proposed Substation Site and portions of the Proposed Subtransmission Source Line Route are classified as non-wildland/non-urban and a portion of the Proposed Subtransmission Source Line Route and the proposed telecommunications route are classified as other moderate fire area (CAL FIRE, 2007). Figure 4.8, Fire Hazard Severity Zones, presents the five hazard classes found in the vicinity of the Proposed Project.

Airports and Airstrips

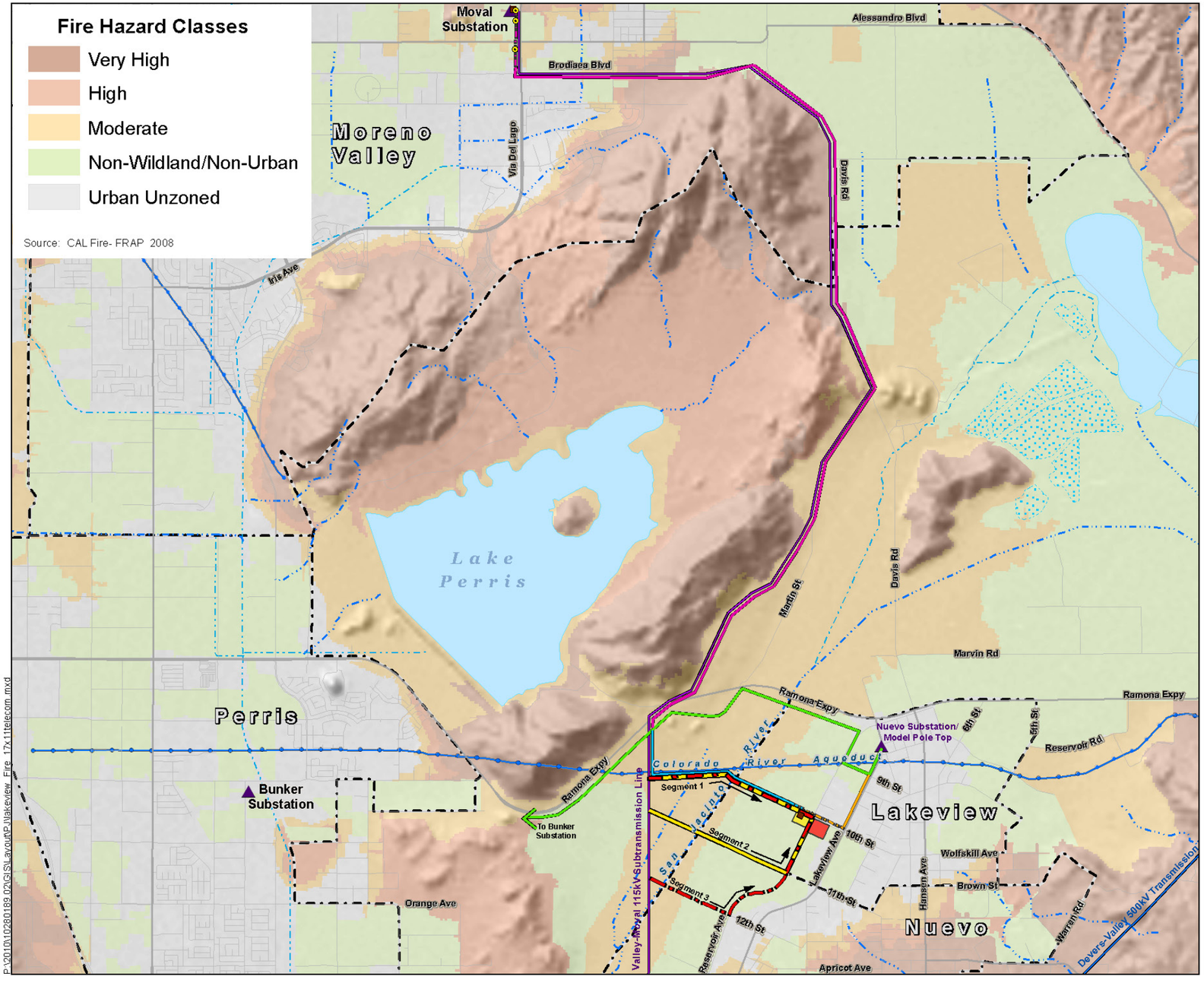
There are no public airports or private airstrips within 2 miles of the Proposed Project. One helipad was located within 2 miles of the Proposed Project. The Riverside County Regional Medical Center is located approximately 1.2 mile west of the proposed telecommunication line route. Perris Valley Airport (privately owned) is located approximately 6.5 miles southwest of the Proposed Substation Site, Hemet-Ryan Airport (publicly owned) is located approximately 8.4 miles to the southeast of the Proposed Substation Site, March Global Port is located approximately 8.8 miles northwest, Skylark Field near Temecula 16 miles to the southwest, Pines Airpark 12 miles to the south-southeast, and French Valley Airport is located approximately 17 miles to the south of the Proposed Substation Site. The nearest commercial airport is Ontario International Airport, located approximately 29 miles west from the Proposed Project (FltPlan.com, 2010; Google Earth, 2008).

Schools

Four schools are located within one-quarter mile of the Proposed Project:

- Nuview Bridge Early College High School, located at 30401 Reservoir Avenue, Nuevo, approximately 0.25 mile northeast of the Proposed Project.

- Mountain Shadows Middle School, located at 30401 Reservoir Avenue, Nuevo, approximately 0.25 mile northeast of the Proposed Project.



Lakeview Substation Project

Figure 4.8
Fire Hazard Severity Zones

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

- Pull box
- Manhole

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities
- Intermittent Stream

Sources: NavTeq, SCE, AECOM 2010

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- Nuview Elementary School, located at 29680 Lakeview Avenue, Nuevo, approximately 0.17 mile southeast of the Proposed Subtransmission Source Line Route, but beyond 0.25 mile from the Proposed Project Substation Site

- New View Special School (California Online School), located at 29760 Lakeview Avenue, Nuevo, approximately 0.17 mile southeast of the Proposed Subtransmission Source Line Route, but beyond 0.25 mile from the Proposed Substation Site (Schoolaah, 2010)

These schools, and several other schools located outside of the Proposed Project Area, are shown in Section 4.14, Public Services on Figure 4.14-2, Schools in the Vicinity of the Proposed Project.

No other public or private preschool/day-care centers or K-12 schools were identified within one-quarter mile of the Proposed Project (Riverside County Office of Education, 2010; Nuview Unified School District, 2010; Google Earth, 2008). Additional detail regarding schools and community colleges in Riverside County is provided in Section 4.14, Public Services.

4.8.2 Regulatory Setting

Federal National Priorities List (40 CFR Part 300)

The U.S. Environmental Protection Agency (EPA) maintains a database of sites that are included on the National Priorities List (NPL). The NPL is the list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation and remediation. Sites are listed on the NPL upon completion of Hazard Ranking System screening, followed by consideration of public comments on proposed listings.

Federal Resource Conservation and Recovery Act (40 CFR Parts 239 - 282)

The federal Resource Conservation and Recovery Act (RCRA) regulates hazardous waste from the time that the waste is generated through its management, storage, transport, treatment, and final disposal. The EPA has authorized the California Department of Toxic Substance Control (DTSC) to administer the RCRA program in California.

Federal Hazardous Materials Regulations (49 CFR Parts 171 - 180)

The Federal Hazardous Materials Regulations (49 USC 1501 et seq.) identify the required shipping papers, package marking, labeling, transport vehicle placarding, training, and registrations applicable to the shipment and transportation of hazardous materials.

Clean Water Act (33 USC Section 1251 et seq.)The Clean Water Act was enacted to restore and maintain the chemical, physical, and biological integrity of the nation's waters by regulating point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. This includes the creation of a system, the National

Pollutant Discharge Elimination System (NPDES), which requires states to establish discharge standards specific to water bodies and regulates storm water discharge from construction sites through the implementation of a Storm Water Pollution Prevention Plan (SWPPP).

Spill Prevention, Control, and Countermeasure Rule (40 CFR Part 112)

The federal Spill Prevention, Control, and Countermeasure Rule (40 CFR 112) was enacted to require response and cleanup after a spill occurs and prevent discharge of oil into navigable waters of the United States or adjoining shorelines. Facilities subject to the rule must prepare and implement a plan called a Spill Prevention, Control and Countermeasure (SPCC) Plan.

Porter-Cologne Water Quality Act (California Water Code Section 13000 et seq)

The Porter-Cologne Water Quality Act is a state law that provides a comprehensive water quality management system for the protection of California waters. Porter-Cologne designated the State Water Resources Control Board (SWRCB) as the ultimate authority over state water rights and water quality policy, and also established nine Regional Water Quality Control Boards (RWQCB) to oversee water quality on a day-to-day basis at the local/regional level. The RWQCBs have the responsibility of granting NPDES permits for storm water runoff from construction sites.

CPUC G.O. 95 and CPUC G.O. 165

These General Orders by the California Public Utilities Commission (CPUC) specify construction, operation, and maintenance requirements for electrical facilities.

California Code of Regulations

The California Code of Regulations (CCR) is a catalog of state laws and regulations adopted by state agencies, including:

- 8 CCR 2700 et seq., High Voltage Electrical Safety Orders, establishes essential requirements and minimum standards for installation, operation, and maintenance of electrical equipment to provide practical safety and freedom from danger

- 14 CCR 1250-1258, Fire Prevention Standards for Electric Utilities, provides specific exemptions from electric pole and tower firebreak and electric conductor clearance standards, and specifies when and where standards apply

California Health and Safety Code Section 25501

California law defines a hazardous material as any material that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may pose a present or potential hazard to human health and safety or to the environment if released in the workplace or the environment (California Health and Safety Code Section 25501). A hazardous waste is defined as a discarded material of any form (e.g., solid, liquid, gas) that may pose a present or potential hazard to human health and safety or to the environment when improperly treated, stored, transported, disposed of, or otherwise managed (California Health and Safety Code Section 25117).

California Resource Conservation Recovery Act (22 CCR Division 4.5)

California's RCRA hazardous waste program is more stringent than the federal program, and certain wastes that would not qualify as hazardous based on federal standards may still qualify as hazardous waste according to California standards (termed non-RCRA hazardous waste). Handling and storage of fuels, flammable materials, and common construction-related hazardous materials are governed by the California Occupational Safety and Health Administration (Cal/OSHA).

California Public Resources Code

California Public Resources Code Sections 4292 and 4293 specify requirements related to vegetation management in transmission line corridors.

4.8.3 Significance Criteria

The significance criteria for assessing the impacts to hazards and hazardous materials come from the California Environmental Quality Act (CEQA) Environmental Checklist. According to the CEQA Checklist, a project causes a potentially significant impact if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- 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
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school
- 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, would it create a significant hazard to the public or the environment
- 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, would the project result in a safety hazard for people residing or working in the project area
- 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
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan
- 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

4.8.4 Impact Analysis

No Impact

Construction and operation of the Proposed Project would not result in impacts for the following CEQA criteria:

Would the project 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, would it create a significant hazard to the public or the environment?

Based on the Proposed SCE Lakeview Substation Property ESA (Rubicon Engineering Corporation, 2009), the Proposed Substation Site is not located on a known hazardous waste site. As a result, there would be no impact to the public or the environment from being located on a site included on a list of hazardous materials sites. An online search of federal and state investigation and cleanup sites was conducted. The results of the search indicate that, based on the available public database records searched (ECHO, 2010; CERCLIS, 2010; Envirostor, 2010), no evidence of potential environmental concerns was identified for the Proposed Subtransmission Source Line Route, the proposed telecommunications route, the Nuevo Substation, or Model Pole Top. There would be no impact.

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?

There are no private airstrips within 2 miles of the Proposed Project. Therefore, there would be no safety hazard for personnel during construction or operation of the Proposed Project, and no impact to people residing or working in the Proposed Project Area from a private airstrip. There would be no impact.

Operation of the Proposed Project would not result in impacts for the following CEQA criteria:

Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

There are four schools within one-quarter mile of the Proposed Project. There are two schools within one-quarter mile of the Proposed Subtransmission Source Line Route and two schools within one-quarter mile of the Proposed Substation Site. Since operation of the Proposed Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste, there would be no impacts to existing or proposed schools within one-quarter mile of the Proposed Project during operation. Impacts due to hazardous emissions or use of hazardous or acutely hazardous materials, substances, or waste would have no impact on existing or proposed schools.

Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Operation of the Proposed Project would not affect emergency plans or evacuation plans Electrical facilities are typically considered critical facilities in emergency response plans,

and every effort would be made by SCE to maintain electrical service during emergencies. As a result, operation of the Proposed Project would have no impact to emergency plans.

Construction Impacts

Construction of the Proposed Project has the potential to result in impacts for the following CEQA criteria:

Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Construction of the Proposed Project would require the use of fuel and lubricants inside vehicles and equipment. Additionally, decommissioning of the Nuevo Substation and Model Pole Top property would require the removal of equipment containing mineral oil. Equipment containing mineral oil would be evaluated at the time of decommissioning of the two sites to determine whether SCE can refurbish/rebuild a piece of equipment or retain for future use. Prior to any work being performed, a pre-walk would occur to determine equipment condition, safety, and logistics. Depending on the type, condition, and chemical composition (e.g., PCB free versus PCB containing mineral oil) of the mineral oil, SCE may elect to reuse or dispose of the mineral oil at SCE or an SCE-approved facility. All transport of hazardous materials would be in compliance with applicable laws, rules and regulations, including the acquisition of required shipping papers, package marking, labeling, transport vehicle placarding, training, and registrations. As a result, impacts due to the routine transport and use of hazardous materials would be less than significant.

Prior to removal of existing poles, the existing subtransmission lines, distribution lines and telecommunication lines (where applicable) will be transferred to the new poles. All remaining subtransmission, distribution and telecommunication lines that are not reused by SCE would be removed and delivered to a suitable facility for recycling. Depending on the type, condition and original chemical treatment, the wood poles removed could be reused by SCE for other purposes, disposed of in a Class I hazardous waste landfill, or disposed of in the lined portion of a RWQCB-certified municipal landfill.

Although there is a very low potential for contaminated soil to be encountered in the areas used by the Proposed Project, the geotechnical investigation conducted prior to construction of the project would include the collection and analysis of soil samples for common contaminants. If chemicals are detected in the soil samples at concentrations above action levels, SCE would decide whether to remove the contaminated soil, or modify the design of the Proposed Project to the extent necessary to avoid contaminated soil. Action levels refer to chemical-specific concentration thresholds in environmental media that, if exceeded, trigger some form of regulatory oversight. Therefore, impact to the public or the environment through the routine transport, use or disposal of hazardous materials would be less than significant.

Would the project 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?

Construction of the Proposed Project would require the limited use of hazardous materials, such as fuels, lubricants, and cleaning solvents. Due to the low volume and

low toxicity of the hazardous materials to be used during the construction of the Proposed Project, the potential for environmental impacts from hazardous material incidents is less than significant. All hazardous materials would be stored, handled and used in accordance with applicable regulations, and Material Safety Data Sheets would be made available at the construction site for all crew workers.

The most likely incidents involving these hazardous materials are associated with minor spills or drips. Impacts from such incidents would be avoided by thoroughly cleaning up minor spills as soon as they occur. A site-specific construction SWPPP (please see Section 3.2.1.1, Storm Water Pollution Prevention Plan, for more detail) would be prepared for the Proposed Project and would be implemented to ensure quick response to any spills to avoid impacts to the environment. The SWPPP would provide the locations for storage of hazardous materials during construction, as well as protective measures, notifications, and cleanup requirements for any incidental spills or other potential releases of hazardous materials. Any impacts that would result from an accidental release would be addressed through the SWPPP, and as a result, such impacts would be less than significant.

In addition, implementation of the Worker Environmental Awareness Plan (WEAP), as described in Section 3.9, Worker Environmental Awareness Training, would provide site personnel with instruction on the project SWPPP and site-specific BMPs. It would also provide instructions to notify the foreman and regional spill response coordinator in case of a hazardous materials spill or leak from equipment, or upon the discovery of soil contamination.

Decommissioning of the Nuevo Substation and Model Pole Top property would require the removal of mineral oil and equipment containing mineral oil. Mineral oil and equipment containing mineral oil would be handled in accordance with applicable regulations. The mineral oil will be tested for the potential presence of PCBs. If PCBs are detected, additional precautions will be taken to ensure proper handling and disposal of this material. Due to the low toxicity of mineral oil, the secondary containment structures in place, and best management practices implemented, the potential for environmental impacts from mineral oil is less than significant.

During construction and decommissioning activities for the Proposed Project, the potential exists that subsurface utilities (e.g., a natural gas line) or structures (e.g., an underground storage tank) might be encountered and damaged, resulting in a release of a hazardous material. Such incidents would be avoided by thoroughly screening for subsurface structures in areas prior to commencement of subsurface work. Screening activities would include use of Dig Alert, visual observations, and use of buried line locating equipment. As a result, such impacts would be less than significant.

Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

There are four schools located within one-quarter mile of the Proposed Project. The minimal quantities of hazardous materials that would be used during construction make it unlikely that schools or preschools/day care centers would be impacted by an accidental release of hazardous materials. The impacts would be less than significant.

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, would the project result in a safety hazard for people residing or working in the project area?

There are no public airports or public use airports within 2 miles of the Proposed Project. There would be no safety hazard for personnel during construction of the Proposed Project, and no impact to people residing or working in the Proposed Project Area from a public airport or public use airport.

There is one helipad (Riverside County Regional Medical Center) within 2 miles of the Proposed Project. The helipad is approximately 1.2 mile west of the proposed telecommunication line route (i.e., third fiber optic cable). The third fiber optic cable would extend from the Moval Substation along Moreno Beach Drive underground and transition from the subsurface onto the existing structures of the 115 kV Valley-Moval Subtransmission Line located just south of Alessandro Boulevard. Because personnel would only intermittently be present at the proposed telecommunication line route during construction, safety hazards resulting from the proximity of this helipad to personnel associated with the proposed telecommunication line route during construction would be less than significant.

Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

In places where the components of the Proposed Project span a road or may require a lane closure, construction and decommissioning activities would be coordinated with the local jurisdiction so as not to cause 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. Therefore, emergency access would not be impacted by construction of the Proposed Project and decommissioning of the Nuevo Substation and Model Pole Top because all streets would remain open to emergency vehicles at all times during these activities. As a result, construction and decommissioning activities would not physically interfere with or impair the implementation of adopted emergency response and evacuation plans. The impacts would be less than significant.

Would the project 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?

The Proposed Substation Site, the Nuevo Substation, Model Pole Top, and a portion of the Proposed Subtransmission Source Line Route would be built in an area mapped as non-wildland/non-urban. Since these components of the Proposed Project are not located in wildlands, they would not be exposed to wildland fires. A portion of the Proposed Subtransmission Source Line Route and the proposed telecommunications route would be built in an area mapped as moderate fire hazard area (see Figure 4.8, Fire Hazard Severity Zones).

SCE has standard protocols that are implemented when the National Weather Service issues a Red Flag Warning. These protocols include measures to 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. Trained fire suppression personnel and fire suppression equipment would be established at key locations, and the personnel and equipment would be capable of responding to a fire within 15 minutes of notification. Portable communication devices (e.g., radio or mobile telephones) would be available to construction personnel. In addition, SCE participates with CAL FIRE, the California Office of Emergency Services, the U.S. Forest Service and various city and county fire agencies in the Red Flag Fire Prevention Program and complies with California Public Resources Code Sections 4292 and 4293 related to vegetation management in transmission line corridors.

In addition to the protective measures, fire risks during construction would be low, as only a portion of the Proposed Project is located within a moderate fire hazard area. The rest of the Proposed Project is classified as non-wildland/non-urban area. The portions of the Proposed Subtransmission Source Line Route and proposed telecommunications route located within the moderate fire hazard area would be grubbed of vegetation and graded prior to the staging of equipment, minimizing the potential for a construction vehicle to start a fire. As a result, construction of the Proposed Project would have a less than significant impact to risk of loss, injury or death involving wildland fires.

Operation Impacts

Operation of the Proposed Project has the potential to result in impacts for the following CEQA criteria:

Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

During operation of the Proposed Project, routine inspections and emergency repair would require the use of fuel and lubricants inside vehicles and equipment. All transport of hazardous materials would be in compliance with applicable laws, rules and regulations, including the acquisition of required shipping papers, package marking, labeling, transport vehicle placarding, training, and registrations. As a result, impacts due to the routine transport, use, or disposal of hazardous materials would be less than significant.

Would the project 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?

The Proposed Substation would be equipped with transformer banks that contain mineral oil that could leak or spill if the transformers were damaged from a seismic event, fire, or other accident scenario. To minimize potential impacts in the event a transformer is damaged, the design of the substation would provide secondary containment and/or diversionary structures or equipment to prevent discharge of an oil spill, as described in the SPCC Plan that would be prepared for the Proposed Project during final design (please see Section 3.1.1.9, Substation Drainage and Ground Surface Improvement, for more information on SPCC requirements). An SPCC Plan would be prepared and implemented by SCE before any oil-containing equipment is brought to the Proposed Substation Site. Impacts would be less than significant.

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, would the project result in a safety hazard for people residing or working in the project area?

There are no public airports or public use airports within 2 miles of the Proposed Project. There would be no safety hazard for personnel during operation of the Proposed Project, and no impact to people residing or working in the Proposed Project Area from a public airport or public use airport.

There is one helipad (Riverside County Regional Medical Center) within 2 miles of the proposed telecommunication line route adjacent to Moreno Beach Drive and Alessandro Boulevard. Operation of the telecommunication line would consist of routine maintenance and emergency repair. Because personnel would only intermittently be present at the proposed telecommunication line during operation, safety hazards resulting from the proximity of this helipad to personnel associated with the proposed telecommunication line during operation would be less than significant.

Would the project 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?

The Proposed Project may pose a fire hazard if vegetation or other obstructions come into contact with energized electrical equipment. The Proposed Project would be constructed and maintained in a manner consistent with CPUC G.O. 95 and CPUC G.O. 165. Consistent with these and other applicable state and federal laws, SCE would maintain an area of cleared brush around the equipment, minimizing the potential for fire.

In addition, SCE participates with CAL FIRE, the California Office of Emergency Services, the U.S. Forest Service and various city and county fire agencies in the Red Flag Fire Prevention Program and complies with California Public Resources Code Sections 4292 and 4293 related to vegetation management in transmission line corridors. As a result, operation of the Proposed Project would have a less than significant impact to risk of loss, injury or death involving wildland fires.

4.8.5 Alternative Substation Site

The Alternative Substation Site is located on the southern corner of Reservoir Avenue and 10th Street, across Reservoir Avenue from the Proposed Substation Site. Like the Proposed Substation Site, the Alternative Substation Site is classified as non-wildland/non-urban area. As a result, the impacts with respect to hazards and hazardous materials would be the same as those for the Proposed Project. The impacts would be less than significant.

4.8.6 Alternative Subtransmission Source Line Route

The Alternative Subtransmission Source Line Route crosses primarily non-wildland/ non-urban areas except where the segments connect to Valley-Moval 115 kV Subtransmission Line, which has been identified as being located in a moderate fire hazard area. The Alternative Substation Source Line Route crosses fewer moderate fire hazard areas than the Proposed Subtransmission Source Line Route. As a result, the

impacts with respect to hazards and hazardous materials would be less than those for the Proposed Subtransmission Source Line Route. The impacts would be less than significant.

4.8.7 References

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4.9 Hydrology and Water Quality

This section describes the hydrology and water quality in the area of the Proposed Project. The potential impacts of the Proposed Project and alternatives are also discussed.

4.9.1 Environmental Setting

Surface Water

The Proposed Project is located in the South Coast Hydrological Region, Santa Ana Planning Area, and San Jacinto Valley Watershed. The area has a typical Mediterranean climate with wet, cool winters, and warm, dry summers. Most of the rainfall occurs between November and April, with an average annual rainfall in Nuevo of 11.4 inches (IDcide, 2010). The San Jacinto Watershed is 765 square miles in size, draining the northwestern corner of Riverside County. Urbanization in the lower part of the watershed has contributed to the degradation of sensitive aquatic and riparian habitats, water quality, and groundwater recharge. Despite this, the San Jacinto Valley Watershed still has important areas of riparian, wetland, and other critical wildlife habitat (DWR, 2010a).

The Proposed Project is located to the south and east of the San Jacinto River, which is the main hydrologic feature in the Proposed Project vicinity. The location of this water body is shown in Figure 4.9, Hydrology and Floodplain Boundaries. The San Jacinto River headwaters originate in the San Bernardino National Forest before flowing northwest towards the City of San Jacinto. From there, it veers southwest and passes through several artificial lakes and reservoirs (including Canyon Lake) before emptying into Lake Elsinore (DWR, 2010a). In the vicinity of the Proposed Project, the San Jacinto River is ephemeral, primarily flowing during storm events that occur in the watershed in the winter.

The Proposed Project, located within the San Jacinto River Basin hydrologic planning area, is under the jurisdiction of the Santa Ana Regional Water Quality Control Board (SARWQCB). The SARWQCB's Water Quality Control Plan (Basin Plan) for the Santa Ana River Basin (Region 8) identifies beneficial uses for surface and ground water in the basin. Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning. Reach 4 of the San Jacinto River (Nuevo Road to North-South Mid-Section Line, T4S/R1W-S8) is the closest waterbody to the Proposed Project Area. The Basin Plan identifies the following intermittent beneficial uses for this reach: agricultural supply, groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater habitat, and wildlife habitat. The Basin Plan also indicates that the Reach 4 waterbody has been specifically removed from the municipal and domestic supply beneficial use in accordance with the criteria specified in the SARWQCB's Sources of Drinking Water Policy. The Basin Plan identifies the following beneficial uses for Canyon Lake: municipal supply, agricultural supply, groundwater recharge, water contact recreation, non-contact water recreation, warm freshwater habitat, and wildlife habitat. The Basin Plan identifies the following beneficial uses for Lake Elsinore: water contact recreation, non-contact water recreation, warm freshwater habitat, and wildlife habitat. The Basin Plan also indicates that Lake Elsinore has been specifically removed from the municipal and domestic supply beneficial use in

accordance with the criteria specified in the SARWQCB's Sources of Drinking Water Policy (SARWQCB 2008, Table 3-1).

Lake Elsinore and Canyon Lake, which are the closest down-gradient water bodies to the Proposed Project, are both included on the 2006 Clean Water Act Section 303(d) list of impaired waterbodies. Impairments identified for these water bodies include polychlorinated biphenyls (PCBs) and unknown toxicity in Lake Elsinore, and pathogens in Canyon Lake (SARWQCB, 2010).

Although not up-gradient of the Proposed Project, Lake Perris is located approximately one mile from the Proposed Project. It is a man-made lake that was constructed by the California Department of Water Resources (DWR) in 1972; it is the last reservoir in the California State Water Project (SWP) that provides drinking water to Southern California residents (DWR, 2010b). Water from the lake is discharged through a 12.5 foot-diameter horizontal tunnel and conveyed to the Metropolitan Water District of Southern California's delivery facility, which is just southwest of the eastern dam abutment.

In 2005, DWR identified potential seismic safety risks in a section of Perris Dam's foundation. While there is no imminent threat to public safety, in 2009 the state determined that it was necessary to lower the lake's water level while additional analysis is performed and remedial alternatives are examined. Study work has begun, and the remediation of the Perris Dam facilities will be conducted in 2010 (DWR, 2010b).

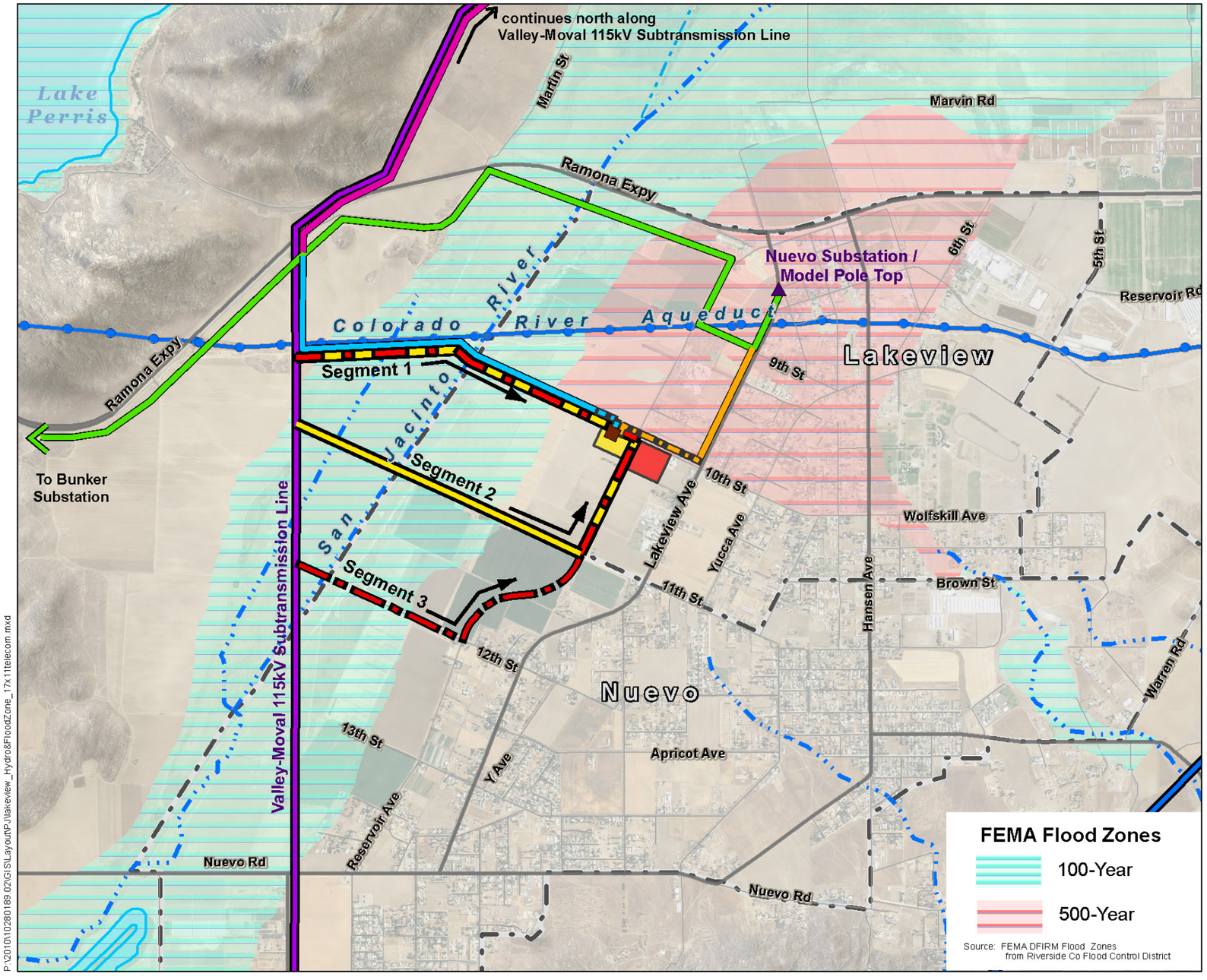
There are various other man-made reservoirs in the vicinity of Lake Perris, including Lake Mathews, Skinner Reservoir, Canyon Lake, Diamond Valley Lake, and Eden Lake; Lake Elsinore is the primary natural lake within the watershed.

Floodplains

Flood zones for the 100-year and 500-year[1] flood are mapped in the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM). Based on the Riverside County flood zone maps, which incorporate FEMA data, the major floodplains in the vicinity of the constructed portions of the Proposed Project are those associated with the San Jacinto River (Riverside County, 2010a) (see Figure 4.9, Hydrology and Floodplain Boundaries). Levees along the San Jacinto River reduce the extent of the 100-year flood zone; these areas are included in the 500-year flood zone shown in Figure 4.9, Hydrology and Floodplain Boundaries. Regional flood control planning and facility construction are conducted by the Riverside County Flood Control District (RCFCD). RCFCD is also responsible for the maintenance and operation of flood control facilities, which include debris dams, storm channels, and storm drains.

Flooding can also occur from dam failure. This flooding is referred to as dam inundation. The State of California requires that dam inundation maps, which depict a best estimate of the extent of water flow in the event of dam failure, must be approved and maintained by the Office of Emergency Services. These maps have been compiled by Riverside County. As presented in the Multi-Jurisdictional Local Hazard Mitigation Plan (Riverside County, 2005), failure of the Lake Hemet dam would pose a risk from dam inundation in

[1] A 100-year flood is calculated to be the level of floodwater expected to be equaled or exceeded every 100 years on average. A 100-year flood has a 1% chance of being equaled or exceeded in any single year. A 500-year flood has a 0.2% chance of occurring in any given year.



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Lakeview Substation Project

Figure 4.9
Hydrology and Floodplain Boundaries

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

Pull box
(not to scale)

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities
- Intermittent Stream

Sources:
NAIP 2009, NavTeq, SCE, AECOM 2010

0 2,000 4,000 6,000
Feet



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the Proposed Project area. The dam inundation zone in the Proposed Project area coincides with the 100-year flood zone limits.

Groundwater

The Proposed Project area is located in the West San Jacinto Groundwater Basin (WSJGB), which underlies the San Jacinto, Perris, Moreno, and Menifee valleys. The basin is bounded by the San Jacinto Mountains on the east, the San Timoteo Badlands on the northeast, the Box Mountains on the north, the Santa Rosa Hills and Bell Mountains on the south, and unnamed hills on the west.

The WSJGB is primarily recharged by natural percolation of flow in the San Jacinto River and its tributary streams. A lesser source of recharge is the infiltration of rainfall on the valley floor. Natural recharge is augmented by the SWP and by percolation of reclaimed water through infiltration ponds in the upper reaches of the San Jacinto River.

Percolation of water stored in Lake Perris has been an additional source of recharge since the 1970s.

DWR completed a Perris Dam Remediation Groundwater Study in August of 2006 (DWR, 2006). The study evaluated the quantity of seepage from Perris Reservoir and its effects on adjacent groundwater basins. The study concluded that seepage through the underlying Perris Dam alluvium has resulted in an approximate 100-foot average rise in the downstream groundwater table. Consequently, the groundwater storage volume of the WSJGB has significantly increased since the lake was filled in the 1970s (DWR, 2010b).

Artificial recharge rates can exceed natural recharge, particularly in years with low precipitation. Groundwater level trends have varied with the years. In 2001 and 2002, levels generally rose in the central part of the basin and declined in the northeastern and southern parts (DWR, 2003).

The County of Riverside General Plan (RCIP, 2000) identifies the Proposed Project as being located in an area with deep groundwater. The preliminary geotechnical investigation conducted for the Proposed Project found that groundwater beneath the Proposed Substation Site is approximately 160 feet below ground surface (bgs) (TDBU, 2009).

4.9.2 Regulatory Setting

Clean Water Act

The Federal Clean Water Act (CWA), as amended by the Water Quality Act of 1987, 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 and tributaries thereto, and adjacent wetlands.

In 1972, the CWA was amended to specify that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The 1987 amendments to the CWA added Section 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges under the

NPDES Program. The EPA has authorized the Regional Water Quality Control Boards (RWQCB) to implement this program.

The CWA includes Sections 404 and 401 (33 U.S.C. 1251-1376). Under Section 404, the US Army Corps of Engineers (USACE) and the EPA regulate the discharge of dredged or fill material into "waters of the United States." Under Section 404, the phrase "waters of the United States" includes wetland and non-wetland aquatic habitats within the jurisdictional extent of rivers and streams defined by the ordinary high water mark. Such discharges may result from navigational dredging, flood control channelization, levee construction, channel clearing, fill of wetlands for development, or other activities. These projects involve the removal or placement of soil, sediment, and other materials in or near waterbodies and require CWA Section 404 permits from the U.S. Army Corps of Engineers (USACE).

Under CWA section 401, applicants for the CWA Section 404 permit or license for any activity which may result in a discharge into jurisdictional waters of the United States must obtain a water quality certification (certification) from the state that the proposed activity would comply with the state's water quality standards. The RWQCB implements the Section 401 Certification program.

California Porter-Cologne Water Quality Act

The California Porter-Cologne Water Quality Act provides a comprehensive water quality management system for the protection of California waters. Porter-Cologne designated the State Water Resources Control Board (SWRCB) as the ultimate authority over state water rights and water quality policy, and also established nine RWQCBs to oversee water quality on a day-to-day basis at the local/regional level. The RWQCBs have the responsibility of granting NPDES permits for stormwater runoff from construction sites.

The State of California issued a new General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ, effective July 1, 2010, and commonly known as the "2009 CGP". The 2009 CGP includes special provisions for Linear Underground/Overhead Projects (LUP), which include any cable line or wire for the transmission of electrical energy, any cable line or wire communications and associated ancillary facilities including towers, poles, and substations. Because the Proposed Project is associated with a linear project, the LUP provisions apply.

One way that LUPs can be categorized into three risk types depends on the location, sediment risk and receiving water risk. Type 1 LUPs include those for which the risk assessment finds either: (1) both sediment risk and receiving water risk to be low; or (2) that either sediment risk or receiving water risk to be a medium risk where the other risk is low (SRWQCB, 2009). As discussed in the construction impacts section that follows, a risk assessment was performed for the Proposed Project and concluded that the location is a Type 1 LUP. Type 1 LUPs are not subject to numeric effluent standards nor required to develop Rain Event Action Plans but are required to implement good site management (housekeeping) measures for construction materials that could potentially be a threat to water quality if discharged. As discussed in the construction impacts section that follows, a risk assessment was performed for the Proposed Project and concluded that the location is a Type 1 LUP.

4.9.3 Significance Criteria

The significance criteria for assessing the impacts to hydrology and water quality come from the California Environmental Quality Act (CEQA) Environmental Checklist. According to the CEQA Checklist, a project causes a potentially significant impact if it would:

- Violate any water quality standards or waste discharge requirements
- 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
- 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 (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)
- 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
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
- Otherwise substantially degrade water quality
- 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
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows
- 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
- Inundation by seiche, tsunami, or mudflow

4.9.4 Impact Analysis

No Impact

Construction and operation of the Proposed Project would not result in impacts for the following CEQA criterion:

Would the project 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?

Because the Proposed Project does not involve housing, there would be no impacts associated with placing housing within a 100-year floodplain.

Construction Impacts

Construction of the Proposed Project has the potential to result in impacts for the following CEQA criteria:

Would the project violate any water quality standards or waste discharge requirements?

Construction of the Proposed Project would not discharge effluent from the construction sites without an NPDES permit for stormwater discharge obtained from the SARWQCB (please see Section 3.2.1, Storm Water Pollution Prevention Plan, for more information). A Storm Water Pollution Prevention Plan (SWPPP) would be prepared based on final engineering design and would include all project components.

As discussed in the Environmental Setting section, one way that LUPs can be categorized into three risk types depends on the location, sediment risk and receiving water risk. Type 1 LUPs include those for which the risk assessment finds either: (1) both sediment risk and receiving water risk to be low; or (2) that either sediment risk or receiving water risk to be a medium risk where the other risk is low (SRWQCB, 2009).

A LUP project has a low receiving water risk if the project area is not located within a Sediment Sensitive Watershed. A Sediment Sensitive Watershed is defined as a watershed draining into a receiving water body listed on EPA's approved CWA 303(d) list for sediment/siltation turbidity or a water body designated with beneficial uses of spawning, reproduction and development habitat, migratory habitat and cold freshwater habitat. The Proposed Project does not discharge into receiving water bodies that meet the Sediment Sensitive Watershed criteria of either being listed as a 303(d) listed waterbody impaired by sediment/siltation turbidity nor does the Proposed Project discharge to a waterbody with a designated beneficial use of spawning, reproduction and development, migratory, and cold freshwater habitat. Therefore the receiving water risk factor is low.

A LUP project has a low sediment risk if the sediment risk is less than 15 tons/acre and a medium sediment risk if the sediment risk is more than 15 tons/acre but less than 75 tons/acre. The Proposed Project has a watershed erosion estimated rate that corresponds to a medium site sediment risk factor. This estimate is determined by the product of the erosivity index, and the combination of the soil-erodibility factor with the hillslope-length/hillslope-gradient factors. Using the Proposed Substation Site location and assuming a construction period duration of 1 year, the erosivity index is 12 (EPA, 2010). The USEPA EMAP for Risk Categories indicates that the combination of the soil-erodibility factor and the hillslope-length/hillslope-gradient factors is 1.3 (SWRCB,2010). Therefore the product of the erosivity index, and the combined soil-erodibility factor with the hillslope-length/hillslope-gradient factors is about 15.6 tons per acre. This watershed erosion estimate meets a medium site sediment risk factor of between 15 and 75 tons per acre (SWRCB, 2010).

Combining the low receiving water risk with a medium sediment risk factor, the Proposed Project is considered a Type 1 risk level LUP project. Type 1 projects are not subject to numeric effluent standards nor required to develop Rain Event Action Plans but are required to implement good site management (housekeeping) measures for construction materials that could potentially be a threat to water quality if discharged. For Type 1 LUPs, areas disturbed during construction activities would implement equivalent environmental protection at the end of the day to minimize the potential for erosion and sediment deposition.

Implementation of the SWPPP and associated Best Management Practices (BMPs) would minimize impacts on water quality from erosion, accidental spills, and other potential water quality impacts during construction. The SWPPP would include a scheduling BMP that recommends sequencing of construction activities and implementation of erosion/sedimentation control BMPs while taking local conditions into consideration. Proper sequencing of construction activities to reduce potential impacts to storm water quality would be considered, especially during the rainy season and for activities planned in the 100-year flood zone. If practical, activities that have a high potential for erosion or other impact to water quality, such as major excavations and resulting stockpiles, would be scheduled for dry periods or would be sequenced so that construction activities are mitigated before new activities begin. For example, excavation activities could be sequenced so that stockpiled soils are addressed before additional excavation begins. Non-active areas including laydown areas would be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation (CASQA, 2003).

The SWPPP would include non-storm water management and material management BMPs. Implementation of non-storm water management and material management BMPs minimize impacts on water quality from storing materials or equipment, including laydown areas, in the 100-year flood zone. Non-storm water management and material management BMPs are source-control BMPs that prevent impacts by limiting or reducing potential pollutants at their source and eliminating off-site discharge. For example, implementing the concrete waste management BMP would either require concrete washout to occur off site or outside of the 100-year flood plain at the Proposed Substation Site. Implementation of these BMPs would reduce the impact from construction in the 100-year flood zone and would reduce water quality impacts during a 100-year flood.

A further discussion of impacts associated with accidental spills and storage of hazardous materials during construction can be found in Section 4.8.4, Hazards and Hazardous Materials Construction Impacts. Any sanitary waste produced during construction (e.g., from portable toilets) would be disposed of according to applicable laws, rules, and regulations.

In addition, implementation of the Worker Environmental Awareness Plan (WEAP), as described in Section 3.9, Worker Environmental Awareness Training, would provide site personnel with instruction on the individual responsibilities under the CWA, the project SWPPP and site-specific BMPs. As a result, construction of the Proposed Project would not violate any water quality standards or waste discharge requirements. Impacts would be less than significant.

Would the project 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 ground water table level?

During installation of foundations for the Proposed Project, including the foundations for the equipment at the Proposed Substation Site and the Proposed Subtransmission Source Lines, groundwater would not likely be encountered, because the anticipated depth to groundwater was recently determined to be approximately 160 ft bgs. However if localized, perched groundwater is encountered during excavation or drilling operations, dewatering systems could be installed as appropriate to allow construction to continue under dry conditions. Dewatering activities would be temporary and would not affect groundwater levels in the region. Any localized, perched groundwater collected by a dewatering system would be containerized and transported for disposal off-site because the quantity would likely be small

The Proposed Substation includes developing 17,700 square feet of impervious surfaces that include the substation equipment foundations, cable trenches and the internal driveway. This increase in impervious surfaces represents about 7.5% of the total approximate surface area (235,000 square feet) for the Proposed Substation Site. Thus, the increase in impervious surfaces would not substantially alter the groundwater recharge capabilities of the Proposed Substation Site.

As a result, construction of the Proposed Project would not 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. Impacts would be less than significant.

Would the project 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?

Currently, stormwater sheet flows to the west over the agricultural land that occupies the Proposed Substation Site, which is relatively flat with minor sloping downward to the west. Construction of the Proposed Substation would involve grading and the installation of surface improvements that would alter the natural flow of runoff in the area. However, the stormwater improvement portion of the grading plan would be designed to control the discharge of stormwater runoff from the site. If required by the County of Riverside as part of the final drainage plan, a detention basin would be installed within the enclosed substation to accommodate on-site stormwater detention. The detention basin would be designed to meet Riverside County requirements. Prior to substation construction, SCE would obtain a grading permit from the County of Riverside, at which time a final site drainage plan would be developed. The Proposed Substation Site would also be surfaced with gravel, which would reduce erosion from stormwater events and sediment transport in surface stormwater flows. The remaining portion of the 2.7-acre Proposed Project parcel would maintain its existing drainage pattern and provide areas for safety buffers, landscaping, and undeveloped setbacks.

Construction of the Proposed Subtransmission Source Line Route would span drainages, but SCE does not anticipate placing structures within drainages. Each sub-transmission line structure (Tubular Steel Poles) would have a footprint of up to four feet in diameter and will be spaced approximately every 200 feet. If a TSP was located in a

flood area, the footprint cross-sections of these structures are less than two percent of the total available area. Thus, the TSPs would not substantially alter the drainage pattern for the area or a stream or watercourse, or increase runoff in a manner that would result in erosion or siltation on or off-site.

Construction of the access roads for the Proposed Subtransmission Source Line segments may cross ephemeral drainages or man-made drainage ditches. If this is the case, SCE may install temporary drainage structures such as wet crossings or pipe culverts to maintain the natural flow of surface stormwater runoff in the area for access during the rainy season. If SCE determines that temporary drainage structures are necessary for access road construction, an evaluation of jurisdictional waters would be conducted. If needed, SCE will seek a Section 401 certification from the SARWQCB and a Section 404 permit from the USACE. SCE does not anticipate a need to construct an access road across the San Jacinto River since both sides of the river are accessible from existing roads for construction equipment.

The Telecommunications Facilities would not add any new aboveground structures. Therefore, there would not be any impact to the existing drainage patterns of the area or of any stream or watercourse from the telecommunications portion of the Proposed Project.

The decommissioning of the Nuevo Substation/Model Pole Top would involve grading and the removal of surface improvements that have not altered the natural flow of runoff in the area. The Nuevo Substation/Model Pole Top site is relatively flat and covered with gravel with minor sloping downward to the west. The stormwater flow after decommissioning would continue to sheet flow generally to the west to Lakefield Avenue and then south until it crosses Lakefield Avenue into the agricultural land to the southwest.

Because construction of the Proposed Project would not alter the course of a stream or river or substantially increase the rate or amount of surface water runoff in a manner that would result in erosion or siltation on or off-site, impacts would be less than significant.

Would the project 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?

Although the Proposed Substation Site development would include the placement of semi-permeable and impervious material, stormwater runoff from the substation site would continue to flow to the west. As discussed above, the Proposed Substation Site development would change about 7.5 percent of the site area to impervious surfaces. Prior to substation construction, SCE would obtain a grading permit from the County of Riverside, at which time a final site drainage plan would be developed. If the Riverside County review of the grading permit determines that the small increase in impervious surfaces requires mitigation, the stormwater improvement portion of the grading plan would be evaluated using the County stormwater manual and designed to control the discharge of stormwater runoff from the site. If required by the County of Riverside as part of the final drainage plan, a detention basin could be included within the enclosed substation to control the rate of off-site discharge of stormwater. The detention basin would be designed to meet Riverside County requirements. As a result, construction of

the Proposed Substation would not substantially alter the existing drainage pattern of the site or area, or produce a substantial increase in the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

As discussed above, the existing drainage pattern of the remaining portion of the parcel, on which the Proposed Substation is located, would not be affected by the Proposed Project since it would be left for safety buffers, landscaping, and undeveloped setbacks.

As discussed above, construction of the Proposed Subtransmission Source Line Route would span drainages, but SCE does not anticipate placing structures within drainages. Each subtransmission line structure (Tubular Steel Pole) would have a footprint of up to four feet in diameter and would be spaced approximately every 200 feet. If a TSP was located in a flood area, the footprint cross-sections of these structures are only approximately two percent of the total available area. Thus, the TSPs would not substantially alter the drainage pattern of the area or a stream or watercourse, or increase runoff in a manner that would result in flooding on- or off-site.

As discussed above, construction of the access roads for the Proposed Subtransmission Source Line Route may cross ephemeral drainages or man-made ditches. If this is the case, SCE may install temporary drainage structures such as wet crossings or pipe culverts if needed to maintain the natural flow of surface stormwater runoff in the area for access during the rainy season. If SCE determines that temporary drainage structures are necessary for access road construction, an evaluation of jurisdictional waters would be conducted. If needed, SCE will seek a Section 401 certification from the SARWQCB and a Section 404 permit from the USACE. SCE does not anticipate a need to construct an access road across the San Jacinto River since both sides of the river are accessible from existing roads for construction equipment. Any access roads built with a steep grade would incorporate features such as water bars, overside drains, and energy dissipaters to protect both the integrity of the road and the surrounding area from the effects of uncontrolled stormwater flow.

The Telecommunications Facilities would not add any new aboveground structures. Therefore, there would not be any alteration of the course of a stream or river or substantially increase the rate or amount of surface water runoff in a manner that would result in flooding on- or off-site from the telecommunications portion of the Proposed Project.

The decommissioning of the Nuevo Substation/Model Pole Top would involve grading and the removal of surface improvements that have not altered the natural flow of runoff in the area. The Nuevo Substation/Model Pole Top is relatively flat and covered with gravel with minor sloping downward to the west. The stormwater flow rate from this location after decommissioning would continue to sheet flow at the same rate as is found currently.

Because construction of the Proposed Project would not alter the course of a stream or river or substantially increase the rate or amount of surface water runoff in a manner that would result in flooding on- or off-site, impacts would be less than significant.

Would the project create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

As discussed above, the Proposed Substation Site may be designed and graded to detain stormwater on-site, if required, by directing runoff water into a detention basin. The grading design with the detention basin would reduce the existing peak stormwater runoff flow rate from the site. Prior to construction, RCFCD would be consulted regarding SCE's grading plans for the Proposed Substation Site. SCE would also be required to obtain an NPDES permit for construction phase stormwater discharge because the Proposed Project would involve disturbance of approximately 2.7 acres, which is greater than the one-acre minimum requirement for obtaining a NPDES permit. The NPDES permit requires the development of a SWPPP, which would include appropriate BMPs to minimize potential water quality impacts. In 2009, California adopted a new Construction General Permit that assigns permit requirements based on a project's determined type. As discussed above the Proposed Project would qualify as a Type 1 LUP and so would comply with applicable permit requirements. The Statewide Construction General Permit (Order No. 2009-0009-DWQ), is effective July 1, 2010 (SWRCB, 2010).

Due to the small footprint of the construction areas for the Proposed Subtransmission Source Line Route and access roads, and the small amount of additional impervious area associated with the new construction, the capacity of any existing or planned stormwater systems would not be affected by construction of these facilities. These facilities would also be subject to the conditions of the Proposed Project's NPDES permit for stormwater discharge.

The Telecommunications Facilities would not add any new aboveground structures. Therefore, there would not be any contribution to surface water runoff. The decommissioning of the Nuevo Substation/Model Pole Top would involve grading and the removal of surface improvements that have not altered the natural flow of runoff in the area. The Nuevo Substation/Model Pole Top is relatively flat and covered with gravel with minor sloping downward to the west. The stormwater flow rate from this location after decommissioning would continue to sheet flow at the same rate as is found currently and would not result in an increase to the capacity of existing stormwater drainage systems.

Because construction of the Proposed Project would not substantially increase the rate or amount of surface water runoff in a manner that would result in exceeding the capacity of existing or planned stormwater drainage systems or provide a substantial additional source of polluted runoff, the impact would be less than significant.

Would the project otherwise substantially degrade water quality?

As discussed above regarding the construction of the components of the Proposed Project relating to flooding, erosion, siltation, and discharge of pollutants, there are no additional activities associated with the construction of the Proposed Project that have the potential to substantially degrade water quality. Prior to construction, SCE would secure all appropriate permits for construction-related activities, including the Statewide Construction General Permit (Order No. 2009-0009-DWQ), and appropriate Sections 401 and 404 permits. Use of hazardous materials at the site is discussed in Section 4.8, Hazards and Hazardous Materials. Impacts would be less than significant.

Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

The Proposed Substation Site is located immediately outside of the 100-year flood hazard area. During construction of the Proposed Project, a portion of the Proposed Subtransmission Source Line Route would be located within a 100-year floodplain (see Figure 4.9, Hydrology and Floodplain Boundaries). However, the poles and foundations would not alter drainage patterns and do not have a large cross-section that would significantly impede flood flows. The Telecommunications Facilities would not add any new aboveground structures. The decommissioning of the Nuevo Substation/Model Pole Top would involve the removal of surface improvements that are within the 100-year flood hazard area. Impacts would be less than significant.

Would the project 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?

The Proposed Substation Site is located outside of the 100-year flood hazard area, as shown in Figure 4.9, Hydrology and Floodplain Boundaries. During construction of the Proposed Project, a portion of the Proposed Subtransmission Source Line Route segments would be located within a 100-year floodplain. However, the poles and foundations would not alter drainage patterns and would be designed to survive effects of floods. The Telecommunications Facilities would not add any new aboveground structures subject to flooding. The decommissioning of the Nuevo Substation/Model Pole Top would involve the removal of surface improvements that are within the 100-year flood hazard area.

Up-gradient of the Proposed Project is Hemet Dam, which created Lake Hemet. Hemet Dam is located approximately 30 miles from the Proposed Project Area. It is likely that the rise in water level in the San Jacinto River from the failure of Hemet Dam would be attenuated once the water reached the Lakeview area. As discussed in the Environmental Setting section, the dam inundation zone caused by a failure of Hemet Dam coincides with the 100-year flood zone limits. The closest dam to the Proposed Project is Perris Dam. However the topography adjacent to Perris Dam would cause floodwaters to flow to the southwest of the dam and in a direction away from the Proposed Project. The resulting impacts from the failure of a dam would be less than significant.

The Proposed Substation is outside of the area protected from a 100-year flood by levees along the San Jacinto River (see Figure 4.9, Hydrology and Floodplain Boundaries). Therefore, failure of a levee would not expose the Proposed Substation Site to flooding. Since the Proposed Sub-transmission Source Line Route would be designed to withstand the effects of a 100-year flood, the impacts due to flooding as a result of the failure of a levee would be less than significant.

Would the project expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?

Seiche waves could occur in Lake Perris as a result of seismic activity. However, as of 2009, the water level in Lake Perris has been lowered, and the dam will be strengthened and designed for greater seismic stability (DWR, 2010b). Construction of the Proposed Project would occur upstream of the area that could potentially be affected by a seiche from Lake Perris; the site is approximately one mile from the lake at the closest point. Additionally, the southern boundary of Lake Perris is the Bertasconi Hills, which would protect the Proposed Project from a seiche. Due to the temporary nature of the

construction period, the upstream location of the Proposed Project relative to Lake Perris, and the intervening terrain, impacts due to inundation by seiche would be less than significant.

Construction of the Proposed Project would occur on the inland side of a topographical divide from the Pacific Ocean, and would not be affected by tsunami. Effects from mudslides are discussed in Section 4.6, Geology and Soils.

Operation Impacts

Operation of the Proposed Project has the potential to result in impacts for the following CEQA criteria:

Would the project violate any water quality standards or waste discharge requirements?

The grading plan for the Proposed Substation Site would be designed in consultation with RCFCD, and the ground surface improvements installed at the site would be designed to minimize discharge of materials that would contribute to a violation of water quality standards or waste discharge requirements. A discussion of impacts associated with transport and storage of hazardous materials during operation of the Proposed Project can be found in Section 4.8.4, Hazards and Hazardous Materials Operation Impacts.

The Proposed Substation Site is not presently served by a public sewer system. The Proposed Substation would be equipped with a portable chemical unit within the substation perimeter wall for use during operation and would be maintained by an outside service company. Any sanitary waste produced during operation (i.e. from the restroom facility) would be treated and disposed of according to applicable laws, rules, and regulations by an outside service company.

The operation of the Proposed Subtransmission Source Lines or Telecommunication Facilities would not result in the discharge of effluent. As a result, operation of the Proposed Project would not violate any water quality standards or waste discharge requirements. Impacts would be less than significant.

Would the project 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 ground water table level?

Operation of the Proposed Substation may indirectly use groundwater (through a water agency) to maintain landscaping, but this usage is not expected to deplete groundwater supplies. In addition, the impermeable surfaces associated with the Proposed Substation would not substantially interfere with groundwater recharge, as they do not represent a substantial portion of the total developed area. As a result, operation of Proposed Substation would not 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 ground water table. Impacts would be less than significant.

The Proposed Subtransmission Source Lines would not require the use of substantial amounts of groundwater during operation. Wood poles utilized for the Proposed Project would be direct-buried; however, the tubular steel poles would require concrete

foundations that would be approximately five to eight feet in diameter. The area of impermeable surface from the TSPs represents an insignificant portion of the total area of the Subtransmission Source Line Route and would not interfere with the existing groundwater recharge in these areas. The Telecommunications Facilities would not add any new aboveground structures that could require the use of groundwater. Impacts would be less than significant.

Would the project 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 substantial erosion or siltation on- or off-site?

As discussed above in the Construction Impacts section, the grading design for the Proposed Substation Site would direct all runoff from the substation into an on-site detention basin, if required by the County of Riverside, to reduce the existing peak stormwater flow rate. If the detention basin is required, stormwater would be detained on-site, increasing the stormwater infiltration into the subsurface. Also, engineered ground surface improvements designed to minimize the effects of uncontrolled water flow would be installed during construction of the Proposed Project. These ground surface improvements would be maintained during operation of the Proposed Project and would minimize the change in the rate or amount of surface water runoff in the area.

In addition, following the completion of construction, all areas that were temporarily disturbed by Proposed Project construction activities would be restored. Restoration areas could include, but are not limited to: selected access roads, material staging yards, pull and tension sites, splicing sites, and pull box locations. Restoration of these areas would include restoring pre-existing contours and reseeding with native seed mix to stabilize soils and minimize future soil and topsoil erosion. The Telecommunications Facilities would not add any new aboveground structures that could increase surface runoff. As a result, operation of the Proposed Project would not alter the existing drainage pattern of the area in a manner that would result in substantial erosion or siltation on- or off-site. Impacts would be less than significant.

Would the project 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 flooding on- or off-site?

As discussed above, engineered ground surface improvements designed to minimize the effects of uncontrolled water flow would be installed during construction of the Proposed Project. These ground surface improvements would be maintained during operation of the Proposed Project and would minimize the change in the rate or amount of surface water runoff in the area. As a result, operation of the Proposed Project would not alter the existing drainage pattern of the area in a manner that would result in substantial flooding on- or off-site. Impacts would be less than significant.

Would the project create or contribute to runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

As discussed above in the Construction Impacts section, the RCFCD would be consulted during the preparation of the grading permit for the Proposed Project.

Riverside County may require the plan to include the design of a permanent on-site detention basin to capture all site runoff and reduce peak storm flows. If the detention basin is required as part of the grading plan, stormwater would be detained on-site, increasing the stormwater infiltration into the subsurface. Also, engineered ground surface improvements designed to minimize the effects of uncontrolled water flow would be installed during construction of the Proposed Project. These ground surface improvements would be maintained during operation of the Proposed Project and would minimize the change in the rate or amount of surface water runoff in the area. These measures would minimize any adverse effects to any existing or planned stormwater drainage systems.

Because the operation of the Proposed Substation would include the use and storage of transformer oil on-site, SCE would be required to prepare and implement a Spill Prevention Control and Countermeasure (SPCC) plan for the site in compliance with 40 CFR Parts 112.1 through 112.7. SPCC measures include the installation of secondary containment, curbs, berms, and basins designed to contain spills, should they occur. These features would be part of SCE's final engineering design for the Proposed Project and would minimize the potential for hazardous materials to migrate off-site. Additional discussion of impacts associated with the storage and use of hazardous materials during operation of the Proposed Project can be found in Section 4.8.4, Hazards and Hazardous Materials Operation Impacts.

As discussed above in the Construction Impacts section, the small footprints of the Proposed Subtransmission Source Lines would not substantially contribute to runoff water or provide substantial additional sources of polluted runoff. The Telecommunications Facilities would not add any new aboveground structures that could provide sources of runoff.

Because operation of the Proposed Project would not substantially increase the rate or amount of surface water runoff in a manner that would result in exceeding the capacity of existing or planned stormwater drainage systems or provide a substantial additional source of polluted runoff, impacts would be less than significant.

Would the project otherwise substantially degrade water quality?

As discussed above regarding the operation of the components of the Proposed Project relating to flooding, erosion, siltation, and discharge of pollutants, there are no other activities associated with the operation of the Proposed Project that have the potential to substantially degrade water quality. Impacts would be less than significant.

Would the project place within a 100-year flood hazard area structures which would impede or redirect flood flows?

As discussed above in the Construction Impacts section, portions of the Proposed Subtransmission Source Line Route would be within a 100-year floodplain (see Figure 4.9, Hydrology and Floodplain Boundaries). However, the poles and foundations would not alter drainage patterns and do not have a large cross-section that would significantly impede flood flows. Impacts would be less than significant.

Would the project 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?

As discussed above in the Construction Impacts section, portions of the Proposed Subtransmission Source Line Route would be within a 100-year floodplain. However, the poles and foundations would not alter drainage patterns and would be designed to survive effects of floods. As discussed above, the Proposed Subtransmission Source Line Route is located within an area susceptible to flooding resulting from the failure of Hemet Dam. This dam inundation zone coincides with the 100-year flood plain. Since the poles and foundations would be designed to survive the effects of the 100-year flood, impacts due to flooding as a result of the failure of Hemet Dam would be less than significant.

As discussed above in the Construction Impacts section, the Proposed Substation Site is located outside of the area protected from a 100-year flood by levees along the San Jacinto River (see Figure 4.9, Hydrology and Floodplain Boundaries). Therefore, failure of a levee would not expose the Proposed Substation Site to flooding. Since the Proposed Subtransmission Source Line Route would be designed to withstand the effects of a 100-year flood, the impacts due to flooding as a result of the failure of a levee would be less than significant.

Would the project expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?

As discussed above in the Construction Impacts section, seiche waves could occur in Lake Perris as a result of seismic activity. However, as of 2009, the water level in Lake Perris has been lowered, and the dam will be strengthened and designed for greater seismic stability (DWR, 2010b). Construction of the Proposed Project would occur upstream of the area that could potentially be affected by a seiche from Lake Perris; the site is approximately 1 mile from the lake at the closest point. Additionally, the southern boundary of Lake Perris is the Bernasconi Hills, which would protect the Proposed Project from a seiche. The temporary nature of the construction period, the upstream location of the Proposed Project relative to Lake Perris, and the intervening terrain would produce less-than-significant impacts from the Proposed Project in the event of a seiche.

The Proposed Project would be located on the inland side of a topographical divide from the Pacific Ocean, and would not be affected by tsunami. Effects from mudslides are discussed in Section 4.6, Geology and Soils.

4.9.5 Alternative Substation Site

The Alternative Substation Site is located immediately to the east of the Proposed Substation Site and has identical topographic variation to the Proposed Substation Site (see Figure 4.9, Hydrology and Floodplain Boundaries). The Alternative Substation Site is currently used for agricultural purposes. As a result, construction and operation of the Alternative Substation Site is expected to have the same potential for impacts to hydrology and water quality as the Proposed Substation Site. As noted in the previous sections, both the Construction and Operational impacts would be less than significant.

4.9.6 Alternative Subtransmission Source Line Route

The Alternative Subtransmission Source Line Route would be located in an area that has identical topographic variation to the Proposed Project (see Figure 4.9, Hydrology and Floodplain Boundaries). The Alternative Route is approximately 0.1 miles longer than the Proposed Route and would likely include more source line poles which would disturb a negligible amount of additional land compared with the Proposed Source Line Route. The Alternative Subtransmission Source Line Segment Three is located approximately 0.5 miles south and parallel to Segment Two of the Proposed Subtransmission Source Line Route. As a result, construction and operation of the Alternative Subtransmission Line Route would have the same potential for impacts to hydrology and water quality as the Proposed Project; these impacts would be less than significant.

4.9.7 References

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4.10 Land Use and Planning

This chapter describes land use and planning considerations in the area of the Proposed Project and analyzes potential impacts from project construction and operation of the Proposed Project, as well as the Alternative Substation Site and Alternative Subtransmission Source Line Route.

The Proposed Substation Site is located on a 5.4 acre portion of a 36.2 acre parcel which was previously being used for agricultural activities. This parcel was formerly privately owned; however, Southern California Edison (SCE) purchased and now owns the 5.4 acre portion of the property. The parcel is located at the southwest corner of Reservoir Avenue and 10th Street, in the community of Lakeview, within unincorporated Riverside County, California. The parcel is bounded on all sides by privately owned parcels that are currently used for agriculture, rural residential and light industrial activities.

SCE would establish vehicular access to the Proposed Substation Site from 10th Street. New right-of-way (ROW) and easement rights would be required for the subtransmission facilities and access roads. The proposed location of the substation site, as well as the alignment of the subtransmission source lines, are shown in Figure 3.2 Subtransmission Source Line Route Description.

The Proposed Project is compatible with land use plans and policies adopted by local agencies responsible for land use planning in the Proposed Project Area. The California Public Utilities Commission (CPUC) has sole and exclusive jurisdiction over the siting and design of the project because the CPUC regulates and authorizes the construction of investor-owned public utility (IOU) facilities. Although such projects are exempt from local land use and zoning regulations and permitting, General Order No. 131-D, Section III.C requires "the utility to communicate with, and obtain the input of, local authorities regarding land-use matters and obtain any non-discretionary local permits." As part of its environmental review process, SCE considered local and state land use plans and policies, and local land use priorities and concerns.

Regarding land use compatibility, California Government Code Section 51238 indicates that electrical facilities are compatible with the Williamson Act and other agricultural uses; see Section 4.2 for further discussion regarding agricultural uses.

4.10.1 Environmental Setting

The rural communities of Lakeview and Nuevo are located approximately 75 miles southeast of Los Angeles in Riverside County. The Proposed Project is located within the Lakeview/Nuevo Planning Area[1] which exclusively contains entirely unincorporated land. The incorporated cities of Perris and San Jacinto about the Planning Area on the western and eastern borders, respectively.

[1] The Lakeview-Nuevo Planning Area is a broad valley lying between the Bernasconi Hills (to the west and northwest) and the Lakeview Mountains (to the east and southeast). Traversing the valley is the San Jacinto River which, although dry much of the year, is one of the County's major watersheds. The Lakeview-Nuevo area is composed of three small, rural communities: Lakeview, Nuevo and Juniper Flats (Riverside County, 2006).

The Lakeview/Nuevo Planning Area is within a wide valley formed by the San Jacinto River. This valley contains agricultural land as well as much of the local development. The Bernasconi Hills create a border to the northwest, while the Lakeview Mountains form the eastern boundary. The rural community of Juniper Flats is located east of Nuevo, near the Lakeview Mountains. The San Jacinto Wildlife Area (SJWA) is located at the foot of the Bernasconi Hills and forms the northern boundary of the planning area. The Colorado River Aqueduct runs underground in an east-to-west orientation through the northern portion of the planning area (Riverside County, 2003).

The existing character of the Lakeview/Nuevo Planning Area is that of a rural, rustic and ranch area with single-story architecture, vast open space, and small, informal commercial areas. Major land uses consist of a range of rural and low-density residential uses, agricultural uses and open fields, and a large thoroughbred farm. Existing streetscapes have a definite rural character with few curbs, large setbacks and a wide variety of fencing and walls. Most of existing residential lots are fenced. In general, both residential and commercial areas lack unifying streetscape amenities, creating an often inconsistent and eclectic appearance (Riverside County, 2006).

There are no public airports or private airstrips within 2 miles of the Proposed Project. Perris Valley Airport (privately owned) is located approximately 6.5 miles southwest of the Proposed Substation Site, Hemet-Ryan Airport (publicly owned) is located approximately 8.4 miles to the southeast of the Proposed Substation Site, March Global Port is located approximately 8.8 miles northwest of the Proposed Substation Site, Skylark Field near Temecula 16 miles to the southwest, Pines Airpark 12 miles to the south-southeast, March Air Reserve Base 15 miles to the west, and French Valley Airport is located approximately 17 miles to the south of the Proposed Substation Site. The nearest commercial airport is Ontario International Airport, located approximately 29 miles west from the Proposed Project (FltPlan.com, 2010; Google Earth, 2008).

Due to the distance of active airport operations, the Proposed Project is not anticipated to be incompatible with these airport operations, as the new facilities would be similar to existing SCE facilities within the area.

Existing transmission lines are present in the Proposed Project Area as shown on Figure 1.1, Electrical Needs Area. The Electrical Needs Area for the Proposed Project is defined as the portion of unincorporated western Riverside County served by SCE's existing Nuevo Substation (33/12 kV) and Model P.T. (a temporary Pole-Top transformer). These facilities currently provide electrical service to approximately 1,800 metered customers. However, these facilities will not meet forecasted, long term electrical demand within the Electrical Needs Area.

Planned and Proposed Development

The Proposed Substation Site is within the Riverpark Specific Plan area. Conversations with County staff, however, indicate that this project is no longer being processed and has been suspended for the time being due to lack of funding (Straite, 2010).

Approximately 1,250 feet northeast of the Proposed Substation Site on Reservoir Avenue, a Tract Map has been approved for subdivision of a 6.74-acre lot into six, one-acre single family residential lots.

Approximately 1,500 feet east of the Proposed Substation Site on 10th Street at Lakeview Avenue, a Tract Map has been approved for 104 single family lots on approximately 65 acres.

Approximately 2,400 feet northeast of the Proposed Substation Site on Lakeview Avenue, north of 10th Street, a Tract Map has been approved for subdivision of five acres into six single family residential lots (Riverside County, 2007).

General Plan Land Use Designation, Existing Land Use and Zoning

Proposed Substation Site

Land Use

The Proposed Substation Site can be characterized as rural, consisting only of agricultural uses. SCE owns the Proposed Substation Site which was previously used for agricultural operations, specifically potato cultivation. The area immediately surrounding the Proposed Substation Site is used primarily for agriculture and associated uses. The site is bounded on all sides by privately owned parcels that are currently used for agricultural activities. There is a property zoned light industrial less than 500 feet across from and diagonal to the Proposed Substation Site on the north side of 10th Street near Reservoir Avenue (Riverside County, 2007). Existing land uses designations in the Proposed Project Area are shown on Figure 4.10 General Plan Land Use Designations.

Lakeview/Nuevo Area Plan Designation

The County of Riverside General Plan recognizes 19 geographic planning areas within the county. The Proposed Project is located within the Lakeview/Nuevo Area Plan. The purpose of these area plans is to provide more detailed policy direction regarding local issues such as land use, circulation, open space and other topical areas.

The Lakeview/Nuevo Area Plan currently designates the Proposed Substation Site parcel of land as Medium Density Residential (MDR) (Riverside County, 2003). The County of Riverside changed the proposed site to residential during their 2003 General Plan Update to accommodate future growth. At one point, a new development known as "Riverpark" had been planned, but is no longer proceeding due to a lack of funding (Straite, 2010). The Land Use Element in the General Plan defines the MDR land use designation as providing for the development of conventional single family detached houses and suburban subdivisions. Limited agriculture and animal-keeping uses, such as horses, are also allowed within this land use category. The density range is specified as 2.0 to 5.0 dwelling units per acre, which allows for a lot size that typically ranges from 5,500 to 20,000 square feet.

The Proposed Substation Site is adjacent to lands designated as low-density residential, light industrial, and medium-density residential (Riverside County, 2007).

Zoning

The Proposed Substation Site is located within the Lakeview Area Zoning District of Riverside County and is designated as Rural Residential (R-R) (Riverside County,

2007). According to Riverside County's Zoning Ordinance, Article V, Section 5.1-b, some public utility use is permitted as part of this designation as follows:

B. Public Utility Uses.

(1) Structures and installations necessary to the conservation and development of water such as dams, pipelines, water conduits, tanks, canals, reservoirs, wells and the necessary pumping and water production facilities.

(2) Structures and the pertinent facilities necessary and incidental to the development and transmission of electrical power and gas such as hydroelectric power plants, booster or conversion plants, transmission lines, pipelines and the like.

(3) Radio broadcasting stations.

(4) Telephone transmission lines, telephone exchanges and offices.

(5) Railroads, including the necessary facilities in connection therewith.

(6) Television broadcasting stations, antennas, and cable installations, and microwave relay stations (Riverside County, 2008a).

Proposed Subtransmission Source Line Route - Segment One

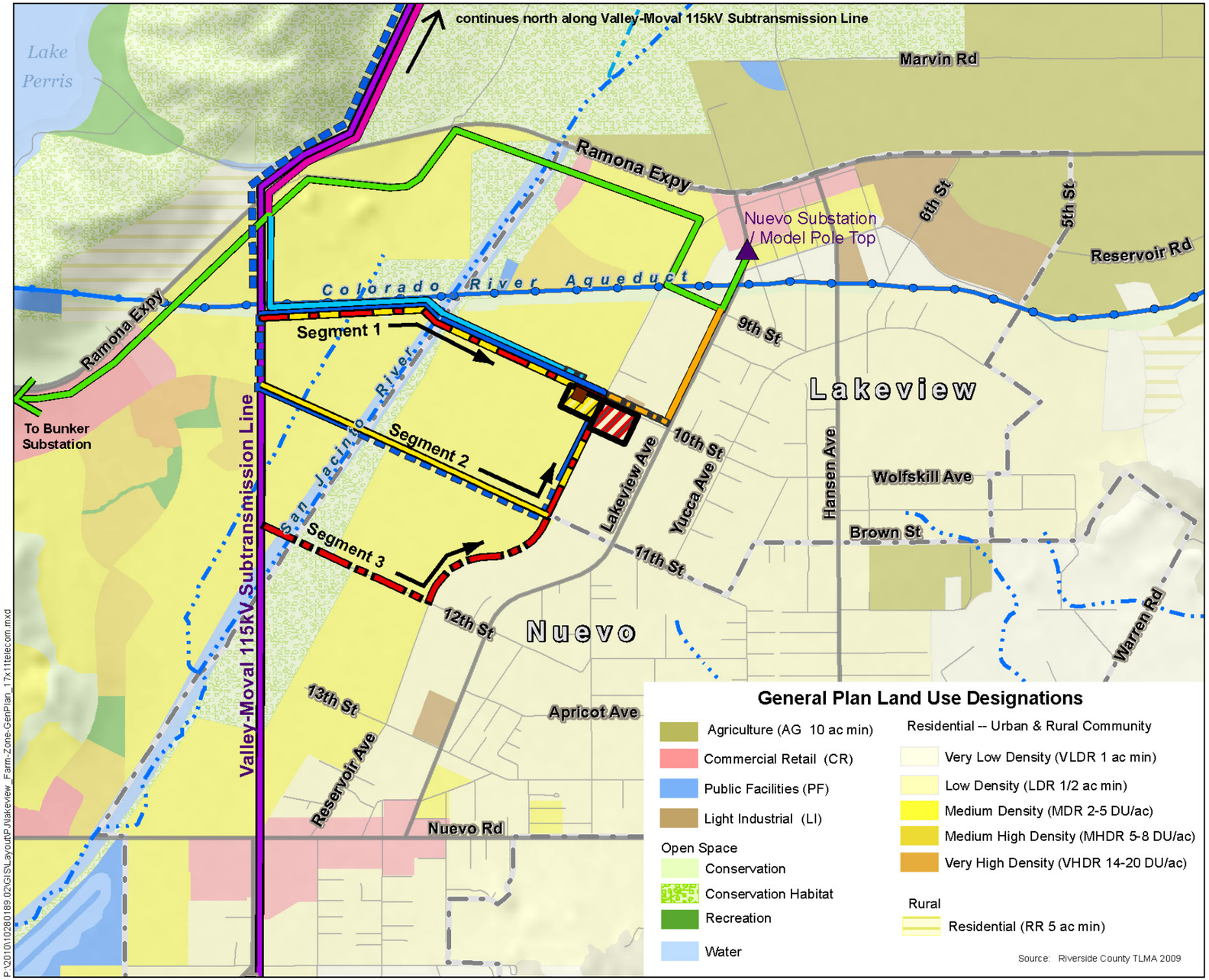
Land Use Designations

Segment One of the Proposed Subtransmission Source Line Route traverses approximately 1.5 miles of land including lands designated by the County of Riverside General Plan (Riverside County, 2007) as:

- MDR: Medium Density Residential
- OS-W: Open Space – Water
- OS-CH: Open Space – Conservation Habitat

The definition of MDR was provided previously for the Proposed Substation Site. The Land Use Element of the General Plan defines Open Space – Water (OS-W) land use as follows:

> OS-W designated areas include bodies of water and major floodplains and natural drainage corridors. Ancillary structures or uses may be permitted for flood control or recreational purposes. The extraction of mineral resources subject to an approved surface mining permit may be permissible, provided that the proposed project can be undertaken in a manner that does not result in increased flooding hazards and that is consistent with maintenance of long-term habitat and riparian values (Riverside County, 2008b).



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Lakeview Substation Project

Figure 4.10-1
General Plan Land Use Designations

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead / Underground

- Proposed Segment 1
- Proposed Segment 2
- Proposed Segment 3
- Pull box

- New Access Road
- Potential Rehabilitated Access Road

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities

Sources: NavTeq, SCE, AECOM 2010

0 2,000 4,000 6,000 Feet



SOUTHERN CALIFORNIA EDISON

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The General Plan Land Use Element defines Open Space – Conservation Habitat (OS-CH) as follows:

> The OS-CH land use designation applies to public and private lands conserved and managed in accordance with adopted Multiple Species Habitat Conservation Plans. Ancillary structures or uses may be permitted for the purpose of preserving or enjoying open space. Actual building or structure size, siting, and design is determined on a case by case basis (Riverside County, 2008b).

The terrain crossed by Segment One is primarily flat, and consists of agricultural and rural land with a few scattered residences. Segment One would cross the San Jacinto River, as well as some of the conservation habitat contained within the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Refer to Section 4.4 Biological Resources for more information.

Zoning

Segment One travels through the Lakeview Area Zoning District of Riverside County, including lands designated as Rural Residential (R-R) and Residential Agriculture (R-A) (Riverside County, 2007). Refer to the Zoning discussion provided above for the Proposed Substation Site for a description of permitted uses (specifically public utilities) for the R-R land use.

Zoning within the Proposed Project Area is shown in Figure 4.2-2, Zoning, located in the previous Section 4.2, Agriculture and Forestry Resources.

Proposed Subtransmission Source Line Route - Segment Two

Segment Two traverses approximately 1.8 miles of land with the same types of land use as Segment One.

4.10.2 Regulatory Setting

State Plans, Policies, Regulations and Laws

This section describes the relevant goals and policies relating to land use for the jurisdictional agencies.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) has sole and exclusive jurisdiction over the siting and design of the project because the CPUC regulates and authorizes the construction of investor-owned public utility (IOU) facilities. Although such projects are exempt from local land use and zoning regulations and permitting, General Order No. 131-D, Section III.C requires “the utility to communicate with, and obtain the input of, local authorities regarding land-use matters and obtain any non-discretionary local permits.” As part of its environmental review process, SCE considered local and state land use plans and policies, and local land use priorities and concerns.

California Department of Transportation

There are no state designated scenic highways or vistas in the Proposed Project Area.

The Ramona Expressway is shown as a County-Eligible Scenic Highway in the Lakeview/Nuevo Area Plan. This highway serves as a major entrance to Lake Perris, one of the County's most important recreation areas. It passes the Bernasconi Hills, San Jacinto River, Mystic Lake corridor, San Jacinto Wildlife area, and agricultural land.

Regional and Local Plans, Policies, Regulations and Ordinances

County of Riverside General Plan

As the Proposed Project is entirely located in unincorporated Riverside County, the County's General Plan was reviewed for applicable land use goals and policies. The policies contained in the Riverside County General Plan address countywide issues that are general in nature and may apply to numerous locations and land use designations within the Proposed Project Area.

The Land Use Element and Multipurpose Open Space Element of the County's General Plan, in addition to the Lakeview/Nuevo Area Plan, govern land use in the County and Proposed Project Area. The Land Use Element presents goals and policies that guide future geographic patterns of development in the county. The Multipurpose Open Space Element outlines the County's intentions for protecting and preserving natural resources, agriculture, open space, and recreational opportunities (Riverside County, 2008b).

Relevant land use goals and policies listed in the Riverside County General Plan include the following:

Land Use (LU)

- **LU 5.4:** Ensure that development and conservation land uses do not infringe upon existing public utility corridors, including fee owned rights-of-way and permanent easements, whose true land use is that of "public facilities". This policy will ensure that the "public facilities" designation governs over what otherwise may be inferred by the large scale general plan maps.

- **LU 13.5**: Require new or relocated electric or communication distribution lines, which would be visible from Designated and Eligible State and County Scenic Highways, to be placed underground.

- **LU 25.1**: Accommodate the development of public facilities in areas appropriately designated by the General Plan and area plan land use maps.

Open Space (OS)

- **OS 20.2:** Prevent unnecessary extension of public facilities, services, and utilities, for urban uses, into Open Space-Conservation designated areas.

Lakeview/Nuevo Area Plan

The Lakeview/Nuevo Area Plan helps implement the vision of the County as a "family of special communities in a remarkable environmental setting" (Riverside County, 2003). As unincorporated land within the County, the Proposed Project Area it is subject to policy direction and land use authority of the Board of Supervisors.

The Lakeview/Nuevo Area Plan contains specific policies that guide the physical development of this particular part of the County to be used in conjunction with Riverside County General Plan and Vision Statement. Relevant policies listed in the Lakeview/Nuevo Area Plan include the following circulation policy, along with agriculture and recreation policies that are considered in Sections 4.2, Agriculture and Forestry Resources and 4.15, Recreation of this PEA:

Circulation

- **LNAP 10.1**: Protect the scenic highways in the Lakeview/Nuevo planning area from change that would diminish the aesthetic value of views of the Bernasconi Hills, the San Jacinto River, the Mystic Lake Corridor, and the San Jacinto Wildlife Area in accordance with the Scenic Highways section of the General Plan Land Use, Multipurpose Open Space, and Circulation Elements.

Lakeview/Nuevo Design Guidelines

The purpose of the Lakeview-Nuevo Design Guidelines is to "guide future development in ways that maintain and enhance the rural and ranch character of this special area" (Riverside County, 2006). This document was reviewed for information about the environmental setting and to understand the overall vision for the developing Lakeview-Nuevo communities.

Western Riverside County Multiple Species Habitat Conservation Plan

The Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) is a comprehensive, multi-jurisdictional plan focusing on conservation of species and their associated habitats in Western Riverside County. This plan is one of several large, multi-jurisdictional habitat-planning efforts in Southern California with the overall goal of maintaining biological and ecological diversity within a rapidly urbanizing region.

4.10.3 Significance Criteria

The significance criteria for assessing the impacts to land use and planning were based on the California Environmental Quality Act (CEQA) Environmental Checklist. The project would cause a potentially significant impact if it would:

- Physically divide an established community

- Conflict with an applicable environmental plan, policy, or regulation of an agency with jurisdiction over the project (including, 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

- Conflict with any applicable habitat conservation plan or natural community conservation plan

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." Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the county and city regulations are not applicable, as the county and cities do not have jurisdiction over the Proposed Project.

4.10.4 Impact Analysis

Following project site visits, various documents were reviewed to complete this land use analysis, including the Riverside County General Plan, Lakeview/Nuevo Area Plan, land use maps, aerial photographs, GIS maps, web searches, environmental impact reports for other projects in the area, and discussions with county planners.

The following analysis focuses mainly on the Proposed Substation, Subtransmission Source Line Route, and their alternatives, as these would involve entirely new facilities in the landscape. The Proposed Telecommunications Facilities are not expected to impact land use, as they would be co-located on existing poles and/or placed underground. The new telecommunication infrastructure would include additions and modifications to the existing system and would not create any land use conflicts.

No Impact

Construction and operation of the Proposed Project would not produce significant impacts for the following CEQA criteria:

Would the project physically divide an established community?

Construction and operation of the Proposed Project would not physically divide an existing community. The Proposed Substation Site would be located at the edge of the existing Lakeview community and the Proposed Subtransmission Source Line Route and access roads would cross undeveloped agricultural lands and open space. The Proposed Project would be located in a rural area not within the center of town. Thus, it would not physically divide an established community, and there would be no impact.

Would the project conflict with an applicable environmental plan, policy, or regulation of an agency with jurisdiction over the project (including, 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?

The Proposed Project is not under the jurisdiction of the County of Riverside. The Proposed Project would be constructed and operated on a parcel owned by SCE that is was previously used for agriculture and designated by Riverside County for residential land use. The Proposed Project is generally compatible with Riverside County and the communities of Lakeview/Nuevo land use, zoning and future planning for the area. The Proposed Project is also compatible with existing and proposed nearby agricultural,

residential and light industrial uses. The construction and operation of a substation site, subtransmission source lines, new access roads, ROWs and easement areas would not be expected to create significant new land use impacts.

The project may be inconsistent with two local policies:

- LU 13.5: Require new or relocated electric or communication distribution lines, which would be visible from Designated and Eligible State and County Scenic Highways, to be placed underground.

- Policy OS 20.2: Prevent unnecessary extension of public facilities, services, and utilities, for urban uses, into Open Space-Conservation designated areas. The Proposed Project would be inconsistent with this policy as it would extend utilities into an Open Space-Conservation designated area.

The CPUC's jurisdiction over electric power line projects and substations exempts the Proposed Project pursuant to General Order No. 131-D from local land use regulations, therefore no mitigation measures are proposed.

Construction and operation of the Proposed Project would not conflict with an applicable environmental plan, policy, or regulation of an agency with jurisdiction over the Proposed Project. There would be no impact.

Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?

The Proposed Project would be located within the established Western Riverside County MSHCP boundary. SCE is a participating entity in the Western Riverside County MSHCP and the conditions of placing facilities within the plan boundaries are discussed in Section 4.4, Biological Resources. From a land use and planning perspective, construction and operation of the Proposed Project would not conflict with or impact a habitat conservation plan or natural community conservation plan.

Potential impacts associated with the Western Riverside County MSHCP are discussed in Section 4.4, Biological Resources.

4.10.5 Alternative Substation Site

The Alternative Substation Site is located on an approximately 6.0 acre portion of an 11.83-acre privately owned parcel that is currently being used for agricultural activities. The parcel is located across the street (Reservoir Avenue) from the Proposed Substation Site, at the southeast corner of Reservoir Avenue and 10th Street. The parcel is bounded on all sides by privately owned parcels with agricultural activities to the south, east and west and with single family residential usage to the east and light industrial to the north.

Although the Alternative Substation Site is used for agriculture, the Lakeview/Nuevo Area Plan currently designates the parcel of land as Rural Community – Low Density Residential (LDR-RC) which is defined by the County of Riverside General Plan as:

- Single-family detached residences on large parcels of one-half to 1 acre

- Limited agriculture, intensive equestrian and animal keeping uses are expected and encouraged

- One-half acre minimum (building density / intensity range)

The Alternative Substation Site is located within the Lakeview Area Zoning District of Riverside County and is zoned as Rural Agriculture (R-A).

Typical uses for R-A include:

- One-family dwellings

- Mobile home on permanent foundations on lots less than 2 and one-half acres

- Noncommercial keeping of horses, cattle, sheep, and goats on lots over 20,000 square feet and 100 feet in width. Two such animals on each 20,000 square feet up to 1 acre, and two such animals on each additional acre

- Some agricultural uses, and limited noncommercial animal husbandry, 4-H projects

- Agricultural mobile homes permitted for owner/farm worker for each 10 acres being farmed. Mobile home parks with approved conditional use permit. Churches with approved public use permit

The Proposed Substation Site and the Alternative Substation Site are located in close proximity to one another and would be subject to the same regulatory policies. Therefore, the Alternative Substation Site would have the same impacts to land use and planning as the Proposed Substation Site. There would be no impact.

4.10.6 Alternative Subtransmission Source Line Route

The Alternative Substransmission Source Line Route would consist of two segments, the first of which would follow the same route as Segment One of the Proposed Subtransmission Source Line. The other segment (known as Segment Three) would connect to the Valley-Moval 115 kV subtransmission line south of the Proposed Subtransmission Source Line Route Segment Two. The 115 kV subtransmission facilities (Segment Three) would then extend southeast, spanning the San Jacinto River, before reaching 12th Street. The new 115 kV subtransmission facilities (Segment Three) would then follow 12th Street to the intersection with Reservoir Avenue extending north before entering the Proposed Substation Site. Segment Three is approximately 1.9 miles long.

The Alternative Subtransmission Source Line Route would travel through the same land uses as the Proposed Subtransmission Source Line Route.

Both the Proposed Subtransmission Source Line Route and the Alternative Subtransmission Source Line Route are in close proximity to one another and would be subject to the same regulatory policies. Therefore, the Alternative Subtransmission Source Line Route would have the same impacts to land use and planning as the Proposed Subtransmission Source Line Route. There would be no impact.

4.10.7 References

Riverside County. 2003. Lakeview/Nuevo Area Plan [online] http://www.rctlma.org/genplan/content/ap2/lnap.html [cited March 2010].

Riverside County. 2006. Lakeview | Nuevo Design Guidelines [online] http://www.rctlma.org/planning/content/devproc/guidelines/lvn_design/lvn_design_guidelines.pdf [cited March 2010].

Riverside County. 2007. County of Riverside Land Information System [online] http://www3.tlma.co.riverside.ca.us/pa/rclis/index.html [cited March 2010].

Riverside County. 2008a. Riverside County Zoning Ordinance [online] http://www.rctlma.org/planning/content/zoning/ordnance/ord348a.html#article_vib [cited March 2010].

Riverside County. 2008b. County of Riverside General Plan [online] http://www.rctlma.org/genplan/content/gp/chapter03.html#TOC4_4 [cited March 2010].

Riverside County. 2009. Riverside County Transportation and Land Management Agency. GIS database (TLMA) [cited March 2010].

Straite, M. 2010. Personal communication with Matthew Straite, Riverside County, regarding Riverpark planned community. March 2010.

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4.11 Mineral Resources

This section describes the mineral resources in the area of the Proposed Project. The potential impacts of the Proposed Project and alternatives are also discussed.

4.11.1 Environmental Setting

Mineral resources include oil, natural gas, and metallic and non-metallic deposits. No mineral deposits have been identified within the boundaries of the Proposed Project (USGS, 2010). In addition, there are no oil or natural gas fields located at or near the Proposed Project (California Department of Conservation, 2007).

Non-metallic deposits have been identified near the Proposed Project. There is one closed mine and one mineral prospect within two miles of the Proposed Project. The closest mine is the Bernasconi Quarry (USGS record number 1064677), located approximately 1.8 miles to the northwest of the Proposed Project. This mine is not currently active, but in the past, it produced stone from surface operations (United States Geological Survey, 2010). A mineral prospect, Wier Feldspar (USGS record number 10237265), located approximately 2 miles south of the Proposed Project, is listed as a prospect for feldspar (United States Geological Survey, 2010). Other mineral deposit locations listed near the Proposed Project are found in the Lakeview Mountains and in the Bernasconi Hills and consist of beryllium, mica, tantalum, and silica deposits.

The mineral resources in Riverside County include extensive deposits of clay, limestone, iron, sand, and aggregates (Riverside County Integrated Project, 2000). These deposits are an important part of the economic well-being of the county and industries outside of the county. The County of Riverside General Plan (2000) recognizes the importance of these resources and has developed policies to reduce or minimize conflicts between urban growth/development and mineral resources and their future extraction potential (Riverside County Integrated Project, 2000).

Mineral Resources Zones (MRZ), as classified by the State Mining and Geology Board, were established to designate lands that contain mineral deposits. The Proposed Project is located in an area mapped as MRZ-3, which is an area where the available geologic information indicates that mineral deposits exist or are likely to exist; however, the significance of the deposit is undetermined.

4.11.2 Regulatory Setting

There are no laws, ordinances, rules, or regulations that apply to the mineral resources that may exist within the boundaries of the Proposed Project.

4.11.3 Significance Criteria

The significance criteria for assessing the impacts to mineral resources come from the California Environmental Quality Act (CEQA) Environmental Checklist. According to the CEQA Checklist, a project causes a potentially significant impact if it would:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state

- Result in loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan

4.11.4 Impact Analysis

No Impact

Construction and operation of the Proposed Project would not result in impacts for the following CEQA criterion:

Would the project result in 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 County of Riverside General Plan does not designate areas outside those already designated by the State of California as having important mineral resources. As a result, there would be no impact to a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan due to construction and operation of the Proposed Project.

Construction Impacts

Construction of the Proposed Project has the potential to result in impacts for the following CEQA criterion:

Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

The Proposed Project is located in an area designated by the State of California as an area where the available geologic information indicates that mineral deposits are likely to exist, but the significance of the deposits is undetermined (MRZ-3). This area is relatively undeveloped and could be considered available for mineral resource exploration and extraction. However, because the MRZ-3 zone in Riverside County has been mapped over most of western Riverside County, encompassing both developed and undeveloped areas, the land required for construction of the Proposed Project would not represent a significant area that would be unavailable for exploration and extraction of mineral resources. As a result, construction of the Proposed Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the state. Impacts would be less than significant.

Operation Impacts

Operation of the Proposed Project has the potential to result in impacts for the following CEQA criterion:

Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

Similar to the potential effects to mineral resources during construction, as described above in Construction Impacts, the land that would be made unavailable for mineral exploration and extraction by the Proposed Project would represent a very small fraction of the developed and undeveloped land in Riverside County that has been classified as MRZ-3 by the State of California. Impacts from the Proposed Project relating to the loss of availability of a known mineral resource would be less than significant.

4.11.5 Alternative Substation Site

The mineral resources at the Alternative Substation Site are similar to the Proposed Substation Site. As a result, impacts from the Alternative Substation Site would be less than significant.

4.11.6 Alternative Subtransmission Source Line Route

The mineral resources at the Alternative Subtransmission Source Line Route are similar to the Proposed Subtransmission Source Line Route. As a result, impacts from the Alternative Subtransmission Source Line Route would be less than significant.

4.11.7 References

California Department of Conservation, Department of Oil, Gas, and Geothermal Resources (DOC). 2007. District 1 Wildcat Maps, Map W1-7 [online] ftp://ftp.consrv.ca.gov/pub/oil/maps/dist1/w1-7/Mapw1-7.pdf, December 18, 2007 [cited March 2010].

Riverside County. 2000. County of Riverside General Plan.

Riverside County Integrated Project (RCIP), 2000. General Plan Final Program Environmental Impact Report, Volume I, Riverside County, California.

United States Geological Survey (USGS). 2010. Mineral Resources Spatial Data [online] http://mrdata.usgs.gov/website/MRData-US/viewer.htm [cited March 2010].

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4.12 Noise

This section describes the ambient noise conditions in the vicinity of the Proposed Project. The potential noise impacts of the Proposed Project and of the alternatives are also discussed.

4.12.1 Environmental Setting

Noise is defined as unwanted or objectionable sound. Sound is usually considered unwanted when it interferes with normal activities, when it causes physical harm, and when it has adverse effects on health. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance and, in the extreme, hearing impairment.

Decibel (dB) is the unit of measure used to describe the loudness of sound. Because the range of sound that humans can hear is quite large, the dB scale is logarithmic, making calculations more manageable. A number of factors affect people's perception of sound. These factors include the actual level of noise, the frequencies involved, the period of exposure to the sound, and changes or fluctuations in the sound level during exposure. In order to measure sound in a manner that accurately reflects human perception, several measuring systems or scales have been developed. The A-weighted scale reflects the fact that the human ear does not perceive all pitches or frequencies equally; therefore, decibel measurements are adjusted (or weighted) to compensate for the human lack of sensitivity to low-pitched and high-pitched sounds. The adjusted unit is known as the A-weighted decibel (dBA).

To reflect the fact that ambient noise levels from various sources vary over time, they are generally expressed as an equivalent noise level (L_{eq}), which is a computed steady noise level over a specified period of time as the noise varies. L_{eq} values are commonly expressed for one-hour periods, but different averaging times may be specified.

For the evaluation of community noise effects, Community Noise Equivalent Level (CNEL) is often used. It represents the average A-weighted noise level during a 24-hour day with a 5-decibel addition for the period from 7:00 p.m. to 10:00 p.m. and a 10-decibel addition for the period from 10:00 p.m. to 7:00 a.m.

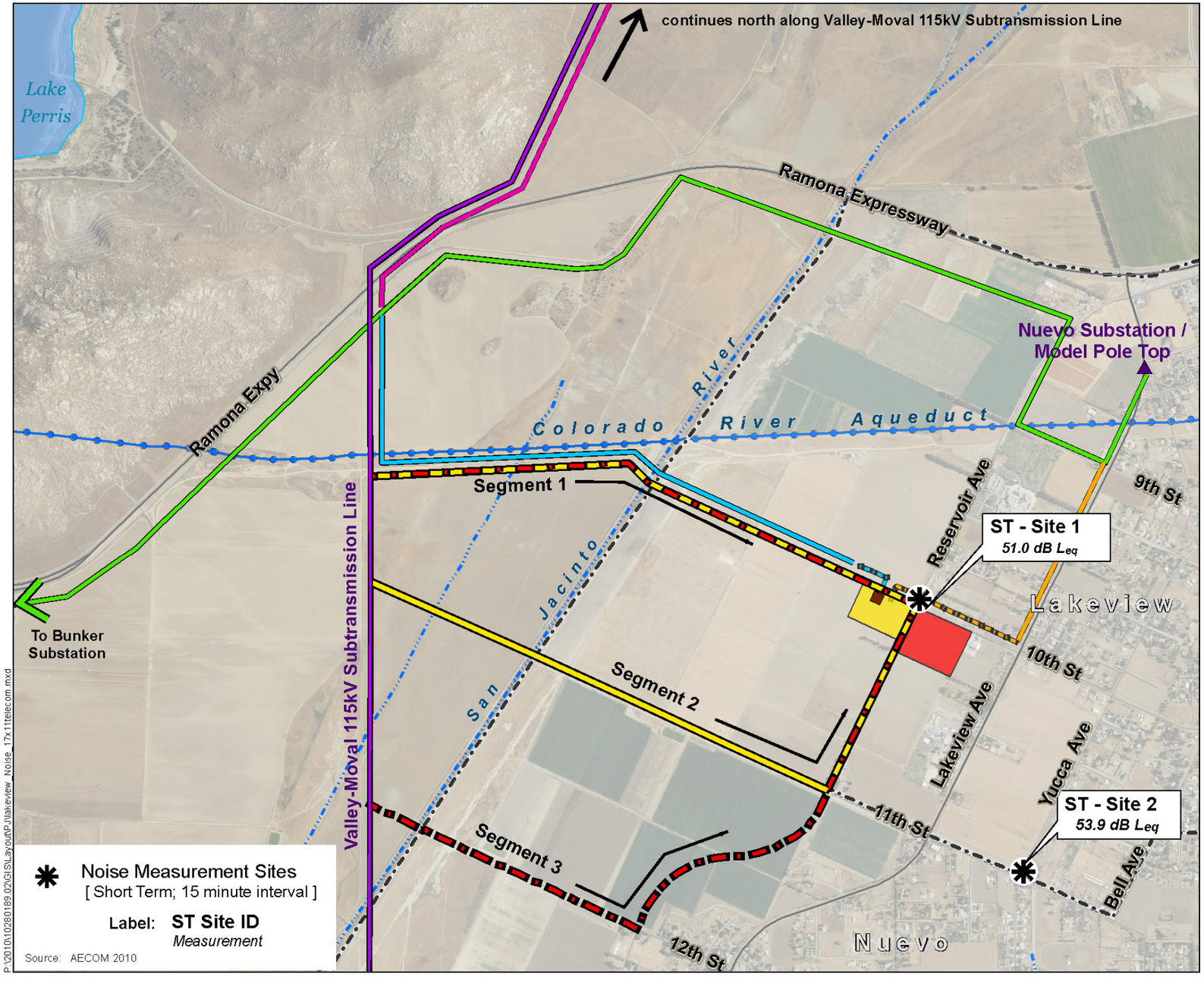
The Proposed Project would be located in the in the communities of Lakeview and Nuevo which are located in unincorporated areas of Riverside County and in the City of Moreno Valley. Noise levels in these areas are those typical of rural residential communities. The primary source of noise is vehicular traffic on the major roads and streets of the area. Riverside County's General Plan, for example, shows noise contouring that includes traffic on Reservoir Avenue and Ramona Expressway. Similarly, the primary source of noise in the project area of Moreno Valley is vehicular traffic on the major roads and streets. Measurements of noise levels at various locations in the general vicinity of the Proposed Project are available in the Riverside County General Plan Final Program Environmental Impact Report, Volume I, and the Moreno Valley General Plan Final Program, Environmental Impact Report.

Community Noise Survey

Ambient noise levels in the communities of Lakeview and Nuevo and in the City of Moreno Valley are influenced by traffic on major roads such as Lakeview Avenue, Nuevo Road, and Broadiaea Avenue. A community noise survey was conducted to document existing ambient noise within noise-sensitive communities located near the Proposed and Alternative Substation Sites. Noise-sensitive receptors were defined as residential land uses, churches, and schools.

A community noise survey was conducted on March 3, 2010, to document the existing noise environment at noise-sensitive receptors and existing noise sources within the Proposed Project Area. As part of site reconnaissance, noise-sensitive receptors located near the Proposed and Alternative Substation Sites were determined to include a school (i.e., Nuview Bridge Early College High School) and residences located along 10th Street, Reservoir Avenue, and Yucca Avenue. Noise measurements of the existing noise environment along the telecommunication routes were not conducted because telecommunication facilities would not create any long-term, operational noise (refer to discussion under Section 4.12.4, Impact Analysis, subsection Operation Impacts). The closest distance between any sensitive receptor and the Proposed or Alternative Substation Sites and the Proposed Subtransmission Source Lines is 100 feet. The dominant noise source identified during the ambient noise survey was traffic from the local area roadway network. Short-term, 15-minute monitoring of noise levels was conducted in accordance with the American National Standards Institute (ANSI) standards at two locations using a Larson Davis Laboratories (LDL) Model 820 sound-level meter. The sound-level meter was calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure that the meters were measuring accurately. The equipment used meets all pertinent specifications of the ANSI for Type 1 sound-level meters (ANSI S1.4-1983[R2006]).

Community noise survey locations are shown in Figure 4.12-1, Noise Measurement Sites. The equivalent noise level (L_{eq}), maximum noise level (L_{max}), and noise level exceeded 10, 50 and 90 percent of a specific time period (L_{10}, L_{50}, and L_{90}) were taken at each short-term ambient noise measurement location and are presented in Table 4.12-1, Summary of Monitored Short Term Daytime Ambient Noise Levels. During the survey, average daytime ambient noise levels ranged from 51.0 dBA to 53.9 dBA L_{eq}, with maximum noise levels that ranged from 67.1 dBA to 71.6 dBA L_{max}. Maximum noise levels were attributable to vehicle traffic and a garbage truck picking up garbage at approximately 180 feet distance.



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Lakeview Substation Project

Figure 4.12-1
Noise Measurement Sites

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

- Pull box

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities

Source: NAIP, 2009; NavTeq, SCE, AECOM 2010

0 1,000 2,000 3,000 Feet

N



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Table 4.12-1 Summary of Monitored Short Term Daytime Ambient Noise Levels

Site	Location	Date/Time[1]	Noise Source	A-Weighted Sound Level (dBA)				
				L_{eq}	L_{max}	L_{10}	L_{50}	L_{90}
1	Intersection of Reservoir Avenue and 10th Street	March 3, 2010 9:21–9:36 a.m.	Traffic, birds, tractor	51.0	67.1	54.9	42.7	39.1
2	Intersection of Yucca Avenue and 11th Street	March 3, 2010 10:10–10:25 a.m.	Traffic, birds	53.9	71.6	56.4	49.2	43.6

Notes: dBA = A-weighted decibels; L_{eq} = equivalent noise level; L_{max} = maximum noise level; L_n = noise level exceeded n percent of a specific period of time.
Source: Data collected by AECOM, 2010

4.12.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

The U.S. Environmental Protection Agency (EPA), Office of Noise Abatement and Control, was originally established to coordinate federal noise control activities. After inception, EPA's Office of Noise Abatement and Control issued the federal Noise Control Act of 1972 which established programs and guidelines to identify and address the effects of noise on public health and welfare and the environment. Administrators of EPA determined in 1981 that subjective issues such as noise would be better addressed at lower levels of government. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to state and local governments. However, noise control guidelines and regulations contained in the rulings by EPA in prior years remain upheld by designated federal agencies, thereby allowing more individualized control for specific issues by designated federal, state, and local government agencies.

State Plans, Policies, Regulations, and Laws

The State of California adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation.

Vibration and Groundborne Noise Impact Regulations

The California Environmental Quality Act (CEQA) states that the potential for excessive groundborne noise and vibration levels must be analyzed; however, CEQA does not define the term "excessive" vibration. Numerous public and private organizations and governing bodies have provided guidelines to assist in the analysis of groundborne noise and vibration; however, federal, state, and local governments have yet to establish

[1] Riverside County General Plan Noise Element Policy 8.7 states, "Require that field noise monitoring be performed prior to siting any sensitive land uses along arterial roadways. Noise level measurements should be of at least ten minutes in duration and should include simultaneous vehicle counts so that more accurate vehicle ratios may be used in modeling ambient noise levels.

specific groundborne noise and vibration requirements. Additionally, there are no federal, state, or local vibration regulations or guidelines directly applicable to the Proposed Project.

Publications by the Federal Transit Administration (FTA) and the California Department of Transportation (Caltrans) are two of the seminal works for the analysis of groundborne noise and vibration relating to transportation and construction-induced vibration. The Proposed Project is not subject to FTA or Caltrans regulations; however, these guidelines serve as a useful tool to evaluate vibration impacts. Therefore, FTA and Caltrans guidance are used to establish significance criteria for assessing the impacts of the Proposed Project, as presented in Section 4.12.3, Significance Criteria. Caltrans guidelines recommend that a standard of 0.2 inches per second (in/sec) peak particle velocity (PPV) not be exceeded for the protection of normal residential buildings and that 0.08 in/sec PPV not be exceeded for the protection of old or historically significant structures (Caltrans, 2004). With respect to human response within residential uses (i.e., annoyance, sleep disruption), FTA recommends a maximum acceptable vibration standard of 80 vibration decibels (VdB) (FTA, 2006).

Local Plans, Policies, Regulations, and Ordinances

Riverside County General Plan

The Noise Element in the 2003 County of Riverside General Plan (County General Plan) contains specific goals and policies for evaluating a proposed project's compatibility with surrounding land uses (Riverside County, 2003). The following goals and policies related to noise are applicable to the Proposed Project:

- Policy N 4.1 Prohibit facility-related noise, received by any sensitive use, from exceeding the following worst-case noise levels:
  - 45 dBA-10-minute Leq between 10:00 p.m. and 7:00 a.m.
  - 65 dBA-10-minute Leq between 7:00 a.m. and 10:00 p.m.
- Policy N 4.2 Develop measures to control non-transportation noise impacts.
- Policy N 4.3 Ensure any use determined to be a potential generator of significant stationary noise impacts be properly analyzed, and ensure that the recommended mitigation measures are implemented.
- Policy N 4.4 Require that detailed and independent acoustical studies be conducted for any new or renovated land uses or structures determined to be potential major stationary noise sources.
- Policy N 4.5 Encourage major stationary noise-generating sources throughout the County of Riverside to install additional noise buffering or reduction mechanisms within their facilities to reduce noise generation levels to the lowest extent practicable prior to the renewal of Conditional Use Permits or business licenses or prior to the approval and/or issuance of new Conditional Use Permits for said facilities.

- Policy N 12.1 Minimize the impacts of construction noise on adjacent uses within acceptable practices.

- Policy N 12.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas.

- Policy N 12.4 Require that all construction equipment utilizes noise reduction features (e.g. mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

Riverside County Municipal Code

Riverside County regulates noise in the municipal code Chapter 9.52, Noise Regulations. The Riverside County Municipal Code defines a sensitive receptor as a land use that is sensitive to noise including, but not limited to, residences, schools, hospitals, churches, rest homes, cemeteries or public libraries (Section 9.52.030). Maximum noise levels for stationary noise sources created by a person to the property line of a sensitive receptor (medium density residential and low density residential in the Proposed Project Area) are to remain below 45 dBA during nighttime hours (10:00 p.m. to 7:00 a.m.) and are not to exceed 55 dBA during daytime hours (7:00 a.m. to 10:00 p.m.) (Section 9.52.040).

The code also restricts the creation of special sound sources (e.g., power tools and equipment). The operation of power tools and equipment is restricted from occurring between the hours of 10:00 p.m. and 8:00 a.m. when the power tools or equipment are audible to the human ear inside an inhabited dwelling other than a dwelling the power tools or equipment are located in. In addition, operation of power tools or equipment is restricted from occurring at any other time when they are audible to the human ear at a distance greater than 100 feet from the power tools or equipment (Section 9.52.060(B)).

Noise from private construction is exempt from the provisions of Chapter 9.52 if the construction activities occur one quarter-mile or more from an inhabited dwelling or the activities occur between 6:00 a.m. and 6:00 p.m. during the months of June through September and between 7:00 a.m. and 6:00 p.m. during the months of October through May (Section 9.52.02(I)).

City of Moreno Valley General Plan

The Noise Element in the 2006 Moreno Valley General Plan contains a specific objective and policy related to compatibility of surrounding land uses with project construction activity noise (Moreno Valley, 2006). The following objective and policy related to construction noise are applicable to the Proposed Project:

> Objective 6.5: Minimize noise impacts from significant noise generators such as, but not limited to, motor vehicles, trains, aircraft, commercial, industrial, construction, and other activities.
>
> Policy 6.5.2: Construction activities shall be operated in a manner that limits noise impacts on surrounding uses.

City of Moreno Valley Municipal Code

The City of Moreno Valley regulates noise in the municipal code Chapter 11.80, Noise Regulations. The code restricts noise generated by construction activities (e.g., operation of tools or equipment, drilling, repair) to occur between the hours of 7:00 a.m. and 8:00 p.m. (Section 11.80.030(D)(7)). In addition, the code restricts operation of any mechanically, electrically or gasoline motor-driven tool during nighttime hours that causes a noise disturbance across a residential real property boundary (Section 11.80.030(D)(9).

4.12.3 Significance Criteria

The significance criteria for assessing the impacts from noise levels and groundborne vibration come from the CEQA Environmental Checklist. According to the CEQA Checklist, a project causes a potentially significant impact if it would cause:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project
- 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, would the project expose people residing or working in the project area to excessive noise levels
- For a project within the vicinity of a private airstrip, where the project would expose people residing or working in the project area to excessive noise levels

The California Public Utilizes Commission (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.” Consequently, public utilities are directed to consider local regulations and consult with local agencies, but the county and city regulations are not applicable as the county and cities do not have jurisdiction over the Proposed Project.

4.12.4 Impact Analysis

No Impact

Construction, operation and decommissioning of the Proposed Project would not result in impacts for the following CEQA criteria:

Would the project cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction of the Proposed Project would take approximately 12 months. Because construction would be short-term and temporary, a permanent increase in noise levels would not occur as a result of constructing the Proposed Project. As a result, no impact related to a substantial, permanent increase in ambient noise levels would result. See Operation Impacts, for an analysis of this criterion during operation of the Proposed Project.

Decommissioning of the existing Nuevo Substation and Model Pole Top would take approximately one and one-half months and be conducted once the proposed Lakeview Substation becomes operational. As with construction of the proposed Lakeview Substation, decommissioning of the existing Nuevo Substation and Model Pole Top would be short term and temporary; no impact related to a substantial, permanent increase in ambient noise levels would result.

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, would the project expose people residing or working in the project area to excessive noise levels?

The closest Airport Land Use Compatibility Plan area is located approximately 6 miles from the Proposed Project and is for both the March Air Reserve Base and Perris Valley Airport. Therefore, the Proposed Project would not expose people working in the Proposed Project Area during construction, operation, or decommissioning to excessive noise levels attributable to an airport or private airstrip. There is no impact.

For a project within the vicinity of a private airstrip, where the project would expose people residing or working in the project area to excessive noise levels?

There are no private airstrips located within the vicinity of the Proposed Project. Therefore, the Proposed Project would not expose people working in the Proposed Project Area during construction, operation, or decommissioning to excessive noise levels attributable to an airport or private airstrip. There is no impact.

Construction and Decommissioning Impacts

Construction and decommissioning of the Proposed Project has the potential to result in impacts for the following CEQA criteria:

Would the project cause exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Noise from private construction is exempt from provisions of the noise regulations in the Riverside County municipal code if the construction activities occur one quarter-mile or more from an inhabited dwelling or the activities occur between 6:00 a.m. and 6:00 p.m. during the months of June through September and between 7:00 a.m. and 6:00 p.m. during the months of October through May. Construction and demolition activities for the Proposed Project that occur within one quarter-mile of an inhabited residence would be restricted to the hours specified in the Riverside County municipal code. The City of Moreno Valley Municipal Code restricts noise generated by construction activities to occur between the hours of 7:00 a.m. and 8:00 p.m. Because noise associated with construction and decommissioning activities would occur in accordance with restrictions and standards established by the Riverside County and City of Moreno Valley municipal codes, the impact would be less than significant.

Would the project cause exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Construction activities, such as the tamping of ground surfaces, drilling, and the passing of heavy trucks on uneven surfaces, may produce minor groundborne vibration in the immediate vicinity of the construction activity. Impacts from construction-related groundborne vibration, should they occur, would be intermittent and confined to the immediate area surrounding the activity. According to the FTA, large bulldozers can create vibration levels of 0.089 in/sec PPV and 87 VdB referenced to 1 microinch per second (µin/sec) and based on the root mean square (RMS) velocity amplitude at 25 feet, as shown in Table 4.12-2, Typical Construction-Equipment Vibration Levels.

Table 4.12-2 Typical Construction-Equipment Vibration Levels

Equipment	PPV at 25 feet (in/sec)	Approximate L_V at 25 feet
Haul Trucks	0.076	86
Large Bulldozer	0.089	87

Notes:
in/sec = inches per second; L_V = velocity level in decibels (VdB) referenced to 1 microinch/second and based on the root mean square velocity amplitude; PPV = peak particle velocity
Source: FTA, 2006

The nearest sensitive receptors to proposed construction and demolition activities would be residences located approximately 30 feet from the proposed underground telecommunications facilities that would be installed south of the Moval Substation on the east side of Moreno Beach Drive. Installation of these underground facilities would require the use of a backhoe to excavate and backfill a trench for installing the cable, a cement mixer for preparing concrete for cable trenches, and trucks for hauling equipment and cable (see Table 3.5, Construction Equipment and Workforce Estimates). Operation of this equipment would not be anticipated to generate substantial groundborne vibration or groundborne noise levels, Therefore, construction of these underground telecommunication facilities would result in a less than significant impact related to the generation of groundborne vibration and groundborne noise levels.

The nearest sensitive receptor that may be subjected to groundborne vibration or groundborne noise levels would be a residence located northeast of the Reservoir

Ave/10th Street intersection, approximately 70 feet from the Proposed Substation Site. The use of equipment such as a bulldozer during grading for the Proposed Substation Site has the potential to generate groundborne vibrations. Using FTA's recommended procedure for applying propagation adjustments to the reference levels in Table 4.12-2, Typical Construction Equipment Vibration Levels, which accounts for the decrease in vibration levels with an increase in distance from the source to receptor, predicted worst-case vibration levels of approximately 0.019 in/sec PPV and 74 VdB at the nearest sensitive receptor could occur from the use of bulldozers. These vibration levels would not exceed Caltrans' recommended standards with respect to the prevention of structural building damage (0.2 in/sec PPV for normal buildings) or exceed FTA's maximum-acceptable-vibration standard with respect to human response (80 VdB for residences and buildings where people normally sleep) at nearby existing vibration-sensitive land uses (Caltrans, 2004: 24; FTA, 2006; 7-5 through 7-8). Therefore, construction of the Proposed Project would result in a less than significant impact related to the generation of groundborne vibration and noise levels.

Would the project cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction and decommissioning of the Proposed Project would require a variety of equipment. Typical noise levels for construction equipment at 50 feet from the source are shown in Table 4.12-3, Typical Noise Levels Generated by Construction Equipment.

Table 4.12-3 Typical Noise Levels Generated by Construction Equipment

Equipment	Noise Level (dBA) at 50 feet
Backhoe	80
Concrete mixer	85
Pump truck	82
Crane, Mobile	83
Dozer	85
Excavator	85
Generator	81
Grader	85
Man lift	85
Loader	85
Paver	89
Roller	85
Scraper	89
Trucks	74-88

Source: FTA, 2006

As shown in Table 4.12-3, Typical Noise Levels Generated by Construction Equipment, the maximum intermittent noise levels are expected to range between 74 and 89 dBA at approximately 50 feet. The highest combined predicted noise level for construction equipment associated with the Proposed Project at 50 feet would be 85.8 dBA during construction of the Proposed Substation (see Appendix G Noise Measurements). Noise levels would be further attenuated by distance to the receptor and the presence of structures and vegetation.

Noise impacts associated with construction and decommissioning would primarily affect those persons located closest to the Proposed Substation Site, Proposed Subtransmission Source Line Route and existing Nuevo Substation and Model Pole Top facilities. Existing homes near the Proposed Project elements would experience a temporary increase in noise levels above those existing without the Proposed Project. However, the distance from those persons to the construction and decommissioning areas would attenuate noise. In addition, noise associated with construction and decommissioning would be exempt from noise regulations of Riverside County and the City of Moreno Valley and would occur in accordance with restrictions on construction hours and standards established by the respective municipal code. Therefore, a less than significant impact would occur.

Operation Impacts

Operation of the Proposed Project has the potential to result in impacts for the following CEQA criteria:

Would the project cause exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

During a community noise survey (see Table 4.12-1, Summary of Monitored Short Term Daytime Ambient Noise Levels), average daytime ambient noise levels ranged from 51.0 dB to 53.9 dB L_{eq}, with maximum noise levels that ranged from 67.1 dB to 71.6 dB L_{max}. Operation of the Proposed Project would consist of routine maintenance activities and occasional emergency repairs. These activities would not occur on a continuous basis and would likely not involve the creation of substantial noise.

Because of the Proposed Project's rural location and distance to sensitive receptors (minimum of 100 feet) in the communities of Nuevo and Lakeview, the perception of operational noise associated with the Lakeview Substation would be negligible. All activities associated with operation of the substation would comply with noise standards and regulations established by Riverside County and would not result in exposure of persons to excessive noise levels. Impacts would be less than significant.

Would the project cause exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Operation of the Proposed Project would consist of routine maintenance activities and emergency repairs. These activities would be unlikely to produce groundborne vibration. Operation of transformers at the Lakeview Substation could produce groundborne vibration; however, groundborne vibrations would be perceptible only in the immediate vicinity of the transformer pad, if at all. See the analysis provided below for a discussion

of potential impacts relating to an increase in ambient noise levels. For these reasons, impacts resulting from the generation of excessive groundborne vibration during operation of the Proposed Project would be less than significant.

Would the project cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

The permanent noise sources that would occur with the Proposed Project are limited to the two 115 kV Subtransmission Source Line segments and transformer operation at the Lakeview Substation.

Subtransmission Source Line Segments

When a transmission line or subtransmission line is in operation, an electric field is generated in the air surrounding the conductors forming a "corona". Corona results from the partial breakdown of the electrical insulating properties of the air surrounding the conductors. When the intensity of the electric field at the surface of the conductor exceeds the insulating strength of the surrounding air, a corona discharge occurs at the conductor surface, representing a small dissipation of heat and energy. Some of the energy may dissipate in the form of small local pressure changes that result in audible noise or in radio or television interference. Audible noise generated by corona discharge is characterized as a hissing or crackling sound that may be accompanied by a 120 hertz hum.

Slight irregularities or water droplets on the conductor and/or insulator surface accentuate the electric field strength near the conductor surface, thereby making corona discharge and the associated audible noise more likely. Therefore, audible noise from transmission lines is generally a foul weather (wet conductor) phenomenon. However, during fair weather, insects and dust on the conductors can also serve as sources of corona discharge.

The Electric Power Research Institute (EPRI) conducted several studies of corona effects (CPUC 2009). The typical noise levels for transmission lines with wet conductors are shown in Table 4.12-4, Transmission Line Voltage and Audible Noise Level.

Table 4.12-4 Transmission Line Voltage and Audible Noise Level

Line Voltage (kV)	Audible Noise Level Directly Below the Conductor (dBA)
138	33.5
240	40.4
356	51.0

Source: CPUC, 2009

Because the Proposed Subtransmission Source Lines for the Proposed Project would be 115 kV, operation of the Proposed Subtransmission Source Lines can be predicted to generate less than 33.5 dBA audible noise based on studies conducted by EPRI (see Table 4.12-4, Transmission Line Voltage and Audible Noise Level) (CPUC 2009).

Therefore, operation of the Proposed Subtransmission Source Lines would have a negligible effect to existing noise in the area. The impact would be less than significant.

Transformer Operation at the Proposed Substation Site

As described in Section 3.0, Project Description, Figure 3.1, Proposed Project Substation Layout, the two transformer banks would be located near the center of the substation footprint, between 90 and 190 feet from an 8-foot high block wall surrounding the Proposed Substation Site. Substations typically generate steady noise from operation of transformers, along with cooling fans and oil pumps needed to cool the transformer during periods of high electrical demand. With all auxiliary cooling fans operating, the worst-case noise level from the transformers at full load is predicted to be no more than 66 dBA at three feet away from the equipment (CPUC 2009).

To further substantiate noise levels generated by transformers, a short-term (5-minute) noise measurement was conducted at the existing Nuevo Substation (located at intersection of Palm Avenue and Lakeview Avenue) to document existing operational noise levels attributable to a similar use. During the measurement, the minimum noise level (L_{min}) measured at 18 feet from the transformer was 48.1 dBA. An additional observation was that noise from the transformer could not be isolated at a distance greater than 30 feet because of ambient noise (e.g., vehicle traffic). It should be noted that the Nuevo Substation Site only includes a chain-link fence encompassing the substation, as opposed to the Proposed Substation Site which would include an 8-foot high block wall.

Based on the design of the Proposed Substation, the distance between the nearest property line of sensitive receptors (greater than 150 feet) and transformers, construction of an 8-foot high block wall which would provide additional noise attenuation, and measurements of a similar transformer, noise levels generated by the transformers at the Proposed Substation Site would result in noise levels that would comply with Riverside County regulations for maximum noise levels for stationary noise sources created by a person to the property line of a sensitive receptor (Municipal Code Section 9.52.040). Noise levels would be below 45 dBA during nighttime hours (10:00 p.m. to 7:00 a.m.) and below 55 dBA during daytime hours (7:00 a.m. to 10:00 p.m.).

As a result, the Proposed Project would not cause a substantial permanent increase in ambient noise levels in the vicinity of the Proposed Project above levels existing without the project. Impacts would be less than significant.

Would the project cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Operation of the Proposed Project would consist of routine, short-term inspection and maintenance of the facilities. Although the Lakeview Substation would be unmanned and remotely monitored, routine maintenance activities would occur three to four times per month and would consist of testing, monitoring, and repairing equipment. Maintenance of substransmission lines would occur on as-needed basis and activities would include repairing conductors, replacing insulators, replacing poles, and access road maintenance. Because operations would involve limited amounts of activities, the Proposed Project would not contribute to a temporary increase in ambient noise in the area. Impacts would be less than significant.

4.12.5 Alternative Substation Site

The Alternative Substation Site would be located at a similar distance to sensitive receptors as the Proposed Substation Site. Specifically, the Alternative Substation Site would also be located at a similar distance to sensitive receptors (residence at northeast corner of 10th Street and Reservoir Avenue), but would be located near an additional sensitive receptor, which is located on the north side of 10th Street across from the fire station. Therefore, the Alternative Substation Site would be located within 100 feet of two noise-sensitive receptors (i.e., residences) as compared to the Proposed Project Site.

Construction and operation of the Alternative Substation Site would result in noise impacts at one additional noise-sensitive receptor as compared to the Proposed Project. However, overall noise impacts would not substantially increase with construction and operation of the Alternative Substation Site as compared to the Proposed Substation Site because construction and operation activities would be similar. The impact would be less than significant.

4.12.6 Alternative Subtransmission Source Line Route

The Alternative Subtransmission Source Line Route (Segment One and Segment Three) would pass through similarly populated areas (rural residential, agricultural) compared to the Proposed Subtransmission Source Line Route. Segment One would extend through an existing agricultural area which is void of any noise-sensitive receptors. However, Segment Three would pass within 100 feet of two residences at the intersection of 12th Street and Reservoir Avenue. Although impacts under this alternative would be less than significant, the closer proximity of the Alternative Subtransmission Source Line Route to two additional residences would cause a greater impact from noise compared to the Proposed Project. However, noise impacts would remain less than significant because operation of the subtransmission lines can be predicted to generate less than 33.5 dBA audible noise based on studies conducted by EPRI (see Table 4.12-4, Transmission Line Voltage and Audible Noise Level) (CPUC 2009). Therefore, operation of the Alternative Subtransmission Source Line would have a negligible effect to existing noise in the area. In addition, construction activities would occur within proximity of two additional residences. Noise from construction activities would result in greater noise impacts as compared to the Proposed Subtransmission Source Line Route. However, noise impacts overall would not substantially increase with construction and operation of the Alternative Subtransmission Source Line Route as compared to the Proposed Project because construction and operation activities would be similar. The impact would be less than significant.

4.12.7 References

California Public Utilities Commission (CPUC). 2009 (November 25). Proponent's Environmental Assessment, Mascot Substation Project, Application A.09.11.020. San Francisco, CA.

CPUC. 2009 (September 30). Proponent's Environmental Assessment, Alberhill System Project, Application A.09-09-022. San Francisco, CA. [4-197]

California Department of Transportation (Caltrans). 2004 (June). Transportation- and Construction-Induced Vibration Guidance Manual. Sacramento, CA. [24]

Federal Transit Administration (FTA). 2006 (May). Transit Noise and Vibration Impact Assessment. Washington, D.C. [7-5 – 7-8]

Riverside County. 2003. *2003 County of Riverside General Plan.* Available at <http://www.rctlma.org/genplan/content/gp.aspx> [cited April 19, 2010].

City of Moreno Valley. 2006 (July). Moreno Valley General Plan. Moreno Valley, CA.

4.13 Population and Housing

This section describes the population and housing in the vicinity of the Proposed Project. The potential impacts of the Proposed Project and alternatives are also discussed.

4.13.1 Environmental Setting

The Proposed Project would be located in unincorporated Riverside County in the communities of Lakeview and Nuevo. The historic and future population growth data for Riverside County, the unincorporated areas of Riverside County, and the communities of Lakeview and Nuevo are presented in Table 4.13-1, Historic and Estimated Population. The population in Riverside County increased approximately 32% between 1990 and 2000, and it is estimated to double by 2025. Population in unincorporated Riverside County increased approximately 9% between 1990 and 2000 and is expected to more than double from 2005 to 2020. The Census Designated Places (CDPs) of Lakeview and Nuevo grew by approximately 12% and 37% respectively between 1990 and 2000.

Table 4.13-1 Historic and Estimated Population

Year	Riverside County	Unincorporated Riverside County[1]	Lakeview CDP	Nuevo CDP
1990	1,170,413	385,384	1,448	3,010
2000	1,545,387	420,721	1,619	4,135
2005	1,931,332	75,335	*	*
2010	2,242,745	90,725	*	*
2015	2,509,330	117,734	*	*
2020	2,809,003	189,937	*	*
2025	3,089,999	259,768	*	*
2030	3,343,777	320,950	*	*

Source: SCAG, 2008; CDF, 2007; U.S. Census Bureau 2000, 1990

* Population projection information unavailable.

[1] Decrease in population of Unincorporated Riverside County between 2000 to 2005 can be attributed to the incorporation of areas that were previously unincorporated.

4.13.2 Regulatory Setting

There are no population or housing laws, rules, or regulations that apply directly to the Proposed Project.

4.13.3 Significance Criteria

The significance criteria for assessing the impacts to population and housing come from the California Environmental Quality Act (CEQA) Environmental Checklist. According to the checklist, a project would cause a potentially significant impact if it would:

- Induce substantial population growth in the area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through the extension of roads or other infrastructure)

- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere

- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere

4.13.4 Impact Analysis

No Impact

Construction and operation of the Proposed Project would not result in impacts for the following CEQA criteria:

Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Construction and operation of the Proposed Project would include the Proposed Substation Site and the Proposed Subtransmission Source Line Route and would occur on privately owned vacant parcels in active agricultural production. The substation site consists of a 5.4-acre portion of a 36.2-acre vacant parcel that was previously used for potato cultivation. Segment One would connect to the existing Valley-Moval 115 kV subtransmission line south of the Colorado River Aqueduct. The new 115 kV subtransmission facilities would then extend east, paralleling the Colorado River Aqueduct until it spans the San Jacinto River and intersects and follows the future planned 10th Street. Segment Two would connect to the existing Valley-Moval 115 kV subtransmission line south of Segment One, following 11th Street to the intersection with Reservoir Avenue. Existing housing does not exist on the substation site or along the subtransmission routes; however a single family residence is located in the immediate area on 10th Street. Construction and operation of the Proposed Project would not displace any existing housing. Therefore, there would be no impact.

Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

The Proposed Project would not displace any existing residences, businesses, or people as a result of construction or operation. Therefore, there would be no impact.

Construction Impacts

Construction of the Proposed Project would result in less than significant impacts for the following CEQA criterion:

Would the project induce substantial population growth in the area, either directly (by proposing new homes and businesses) or indirectly (through the extension of new roads or other infrastructure)?

Construction activities are anticipated to occur for approximately 12 months and during peak times, SCE expects to employ approximately 40 construction personnel per day. Construction would be performed by either SCE construction crews based out of one of the SCE local facilities such as the Menifee Service Center, or by local contractors. In general, workers are expected to be drawn from the local labor pool. The project may require a limited amount of accommodations for construction workers during construction. If a need for temporary accommodations arises during construction, there are typically hotel and motel accommodations available in the adjacent cities of Perris, Hemet, Sun City, and San Jacinto. No new housing would need to be built for temporary construction workers.

Operation Impacts

Operation of the Proposed Project would result in less than significant impacts for the following CEQA criterion:

Would the project induce substantial population growth in the area, either directly (by proposing new homes and businesses) or indirectly (through the extension of new roads or other infrastructure)?

The Proposed Project would not include any new homes, so there would be no direct impact on population growth in the area. The Proposed Substation would be unstaffed and remotely operated, and visits to the Proposed Substation Site would likely occur approximately three to four times per month, and would not require dedicated, full-time personnel.

The Proposed Project is being built to meet the electrical needs in the area; therefore, it would not induce substantial population growth in the area (see Chapter 6.2, Growth-Inducing Impacts, for more information). Operation of the Proposed Project would not create new opportunities for local industry or commerce or impact population growth in the area beyond what is already planned by Riverside County.

Portions of the Proposed Subtransmission Source Line Route would require approximately 3.5 miles of new access roads in order to accommodate construction and maintenance activities. After construction, the access roads would only be used for occasional maintenance operations and would not provide new roadside development or access opportunities for local industry or commerce in the area. Therefore, the new access roads would not directly or indirectly induce population growth. As a result, operation impacts on population growth in the area would be less than significant.

4.13.5 Alternative Substation Site

The Alternative Substation Site has a similar setting as the Proposed Project and is similar in scope. As a result, impacts to population and housing would be the same as those of the Proposed Project, less than significant.

4.13.6 Alternative Subtransmission Source Line Route

The Alternative Subtransmission Source Line Route has a similar setting as the Proposed Project and is similar in scope. As a result, impacts to population and housing would be the same as those of the Proposed Project, less than significant.

4.13.7 References

Southern California Association of Governments (SCAG). 2008. *Adopted Growth Forecast*. [online] http://www.scag.ca.gov/forecast/index.htm [cited March 2010].

State of California, Department of Finance (CDF). 2007. *E-4 Historical Population Estimates for City, County and the State, 1991-2000, with 1990 and 2000 Census Counts.* Sacramento, California.

U.S. Census Bureau. 2000, 1990. Decennial Census. [online] http://factfinder.census.gov [cited March 2010].

4.14 Public Services

This section describes public services in the vicinity of the Proposed Project. The potential impacts of the Proposed Project and alternatives are also discussed.

4.14.1 Environmental Setting

Fire protection throughout the areas surrounding the Proposed Project is provided by the Riverside County Fire Department (RCFD). RCFD operates 85 fire stations within the county. Fifty-one of these stations, as well as three stations operated by the California Department of Forestry and Fire Protection (CAL FIRE), are located in the unincorporated portion of the county. The fire station closest to the Proposed Substation Site is Nuview Fire Station, which is located at 30515 10th Street in Nuevo, as shown in Figure 4.14-1. Most Riverside County fire stations have a minimum of two career firefighters (typically, a captain and a firefighter) on duty at all times. Volunteer firefighters typically augment the career firefighters on the first responding engine. Additional volunteer firefighters may respond on a rescue squad or subsequently arriving fire engine, which is exclusively staffed by volunteer firefighters. RCFD provides the following services: structural and wildland fire response; weed abatement; ambulance response; swift water rescue; and Level 1 hazardous material response. In the case of a fire response, the county is part of a mutual aid program with all of the cities in the county. Upon receiving a call for mutual aid through the Emergency Command Center, the county's mutual aid coordinator determines whether a city or the county will respond (Riverside County, 2008).

The Riverside County Sheriff's Department provides both community policing and the operation and maintenance of correctional facilities. The Riverside County Sheriff's Department has 2,720 total employees, including 1,330 sworn personnel to provide community policing services. Nine sheriff substations are located throughout the county to provide area-level community service. The Riverside County Sheriff's Department has established the following criteria for its staffing requirements in unincorporated areas of the county:

- One sworn officer per 1,000 population
- One supervisor and one support staff employee per seven officers
- One patrol vehicle per three sworn officers
- One school resource officer per school

Riverside County has 23 school districts and several community college districts. The Nuview Union School District is the one closest to the Proposed Project site. The following schools are located in the surrounding neighborhood: Mountain Shadows Middle School (30401 Reservoir Avenue, Nuevo), Nuview Bridge Early College High School (30401 Reservoir Avenue, Nuevo), and Nuview Elementary School (29680 Lakeview Avenue, Nuevo). These and several others in the area are shown on Figure 4.14-2. As shown in the Figure, the closest school, Nuview Elementary School, would be set back approximately 2,000 feet away from the Subtransmission Source Line under both the Proposed and Alternative Route scenarios.

Riverside County operates a system of 35 libraries and two bookmobiles to serve unincorporated populations. Nuview Branch Library is located at 29990 Lakeview Avenue in Nuevo, approximately 0.3-mile southeast of the Proposed Substation Site.

Riverside County operates one hospital and nine clinics. Additional medical facilities and services, such as private/for-profit and municipal facilities, also exist within Riverside County. The closest hospital facility to the Proposed Project is Kaiser Moreno Valley Community Hospital at 27300 Iris Avenue, Moreno Valley, located northwest of the Proposed Project (please see Figure 4.14-3). Kaiser Moreno Valley Community Hospital provides emergency and obstetrics/gynecology services.

4.14.2 Regulatory Setting

Fire policies and regulations governing unincorporated areas of Riverside County include County Ordinance No. 787, Riverside County Master Fire Protection Plan, California Public Resources Code Section 4290, the Uniform Fire Code, and the Uniform Building Code (UBC). The County of Riverside General Plan Policies refer to the UBC with respect to various aspects of building code requirements. The County of Riverside has adopted the California Building Code and the International Building Code with respect to overall and/or specific building code issues.

There are no other public service laws, rules, or regulations that apply to the Proposed Project or its alternatives.

4.14.3 Significance Criteria

The significance criteria for assessing the impacts to public services are derived from the California Environmental Quality Act (CEQA) Environmental Checklist. According to the checklist, a project would cause a potentially significant impact if it would:

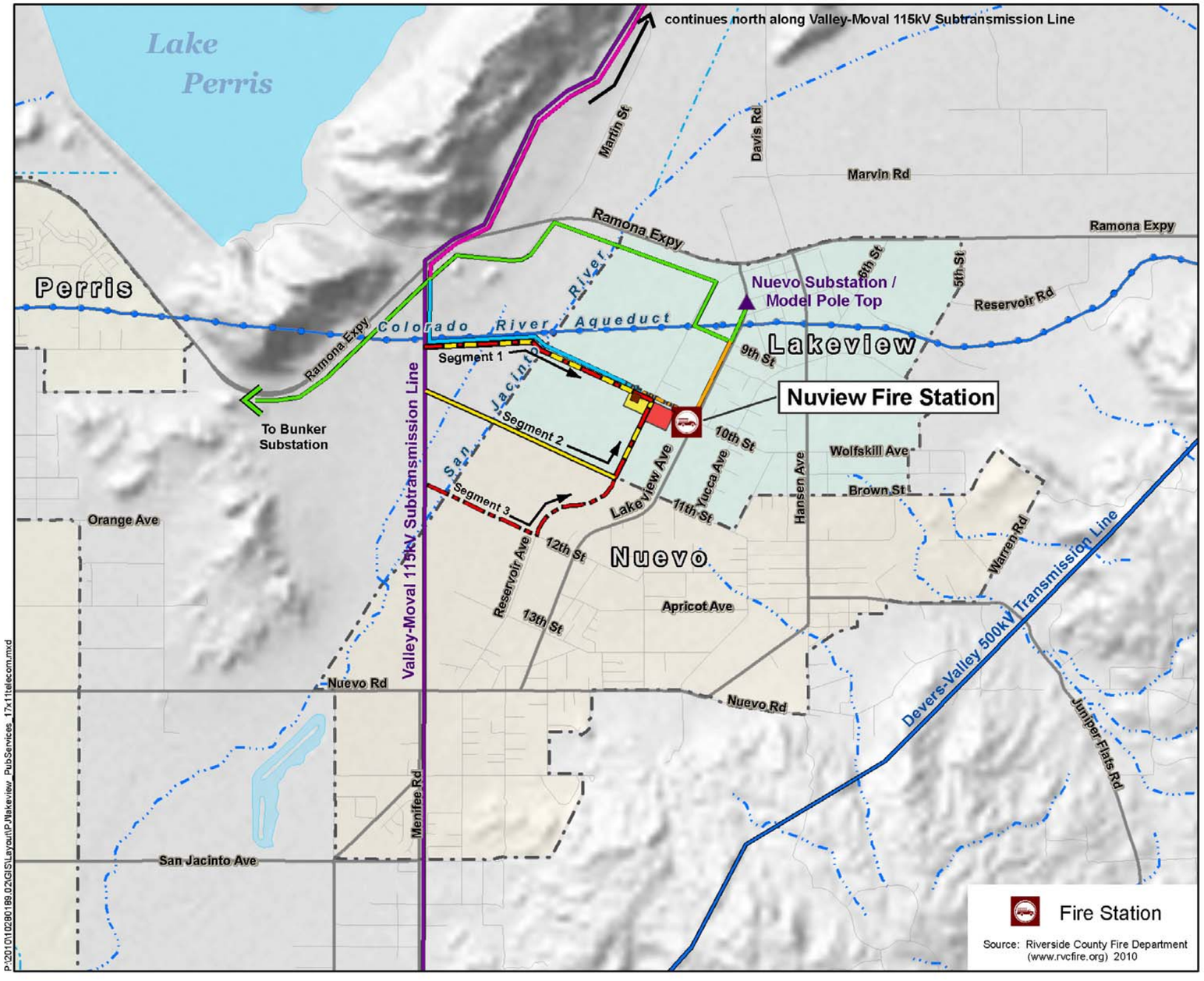
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities create the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, schools, parks, or other public facilities.

4.14.4 Impact Analysis

Construction Impact

Construction of the Proposed Project has the potential to result in impacts for the following CEQA criterion:

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, schools, parks, or other public facilities?



Lakeview Substation Project

Figure 4.14-1
Fire Stations within 1 mile of Proposed Substation Site

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

- Pull box

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities
- Intermittent Stream

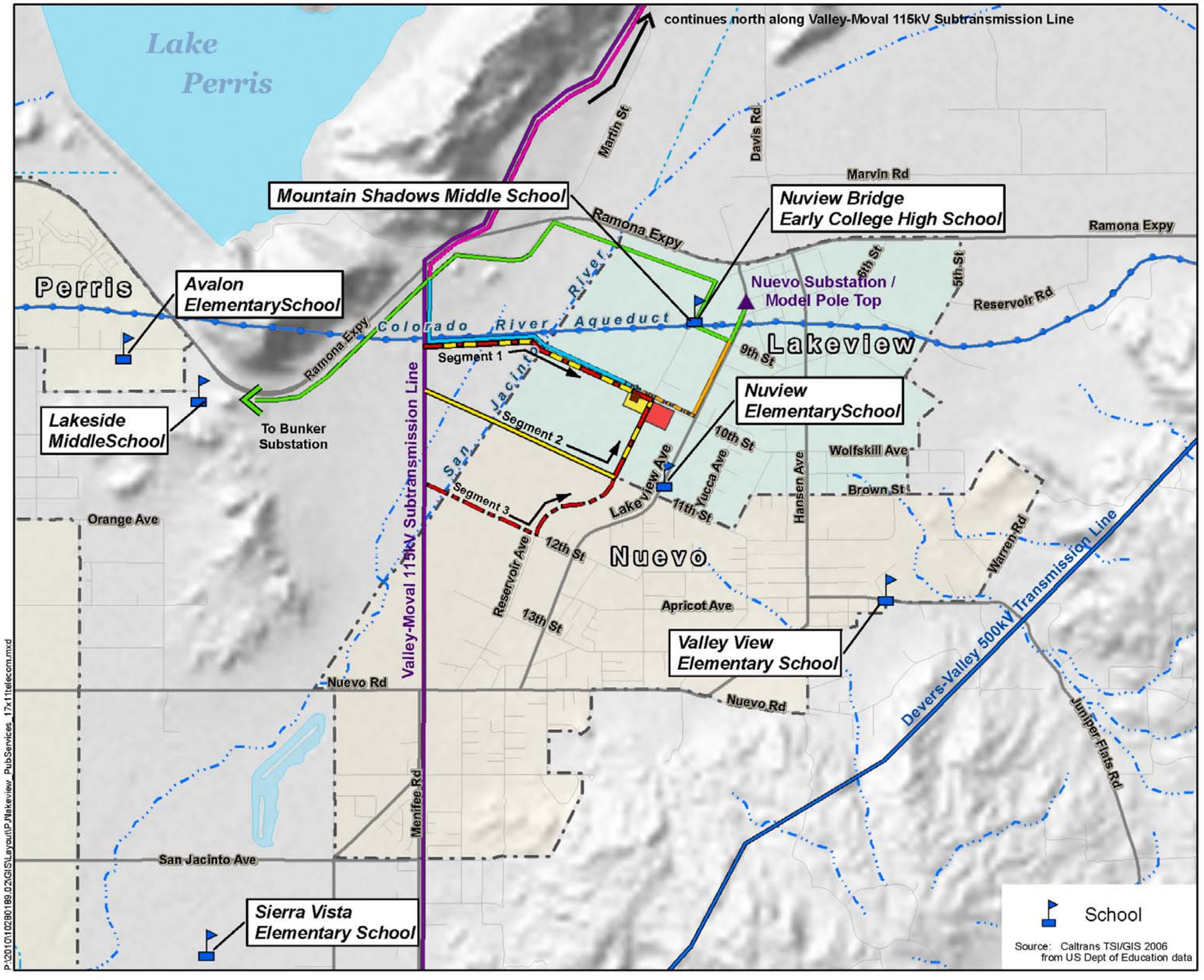
Sources: NavTeq, SCE, AECOM 2010

0 2,000 4,000 6,000 8,000
Feet



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Lakeview Substation Project

Figure 4.14-2
Schools in the Vicinity of Proposed Substation Site

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

- Pull box

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities
- Intermittent Stream

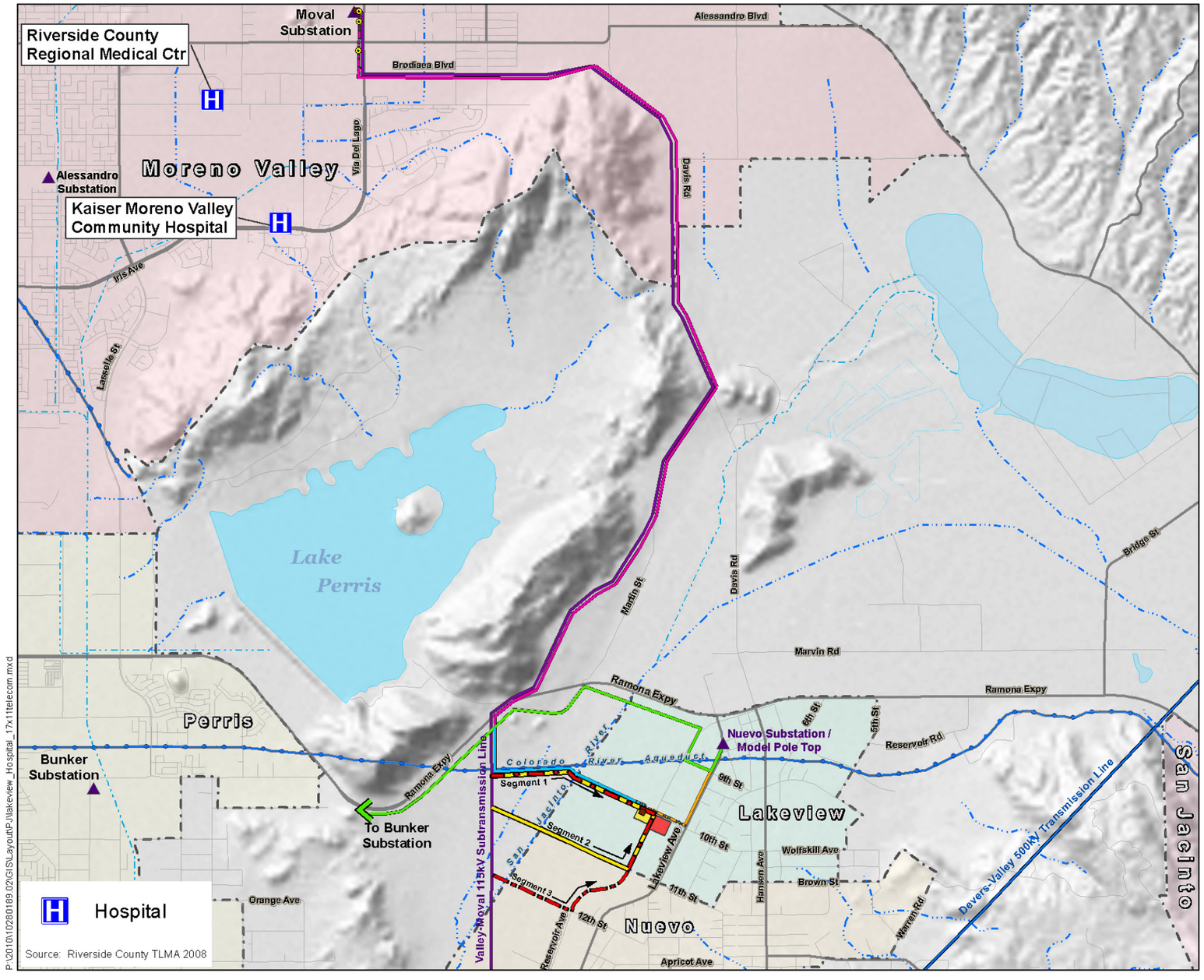
Sources: NavTeq, SCE, AECOM 2010

0 2,000 4,000 6,000 8,000 Feet



SOUTHERN CALIFORNIA EDISON

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Lakeview Substation Project

Figure 4.14-3
Closest Hospital Facilites to Proposed Project

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

- Pull box
- Manhole

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities
- Intermittent Stream

Sources: NavTeq, SCE, AECOM 2010

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Short-term construction activities would not require the expansion of fire protection services in Riverside County. SCE would clear vegetation from the work areas prior to staging construction equipment, minimizing the probability of fire.

Construction of the Proposed Project is unlikely to require the use of local law enforcement agencies. If necessary, SCE would hire a local security company to provide 24-hour attendance at the marshalling yards, material staging yards, and laydown yards during construction, minimizing the involvement of local law enforcement. A construction trailer would also be situated at the Proposed Substation Site.

Due to the temporary nature of the construction period, construction work is not anticipated to result in the need for new or physically altered emergency services. The potential for interference with emergency service providers is further discussed in Section 4.8, Hazards and Hazardous Materials.

Therefore, construction of the Proposed Project would have a less-than-significant impact on government facilities such as fire protection, police protection, schools, or other public facilities. Construction of the Proposed Project would not significantly affect school enrollment or impact the performance objectives of any local public schools. Construction-related impacts to parks in the Proposed Project Area are evaluated in Section 4.15, Recreation.

Operation Impacts

Operation of the Proposed Project has the potential to result in impacts for the following CEQA criterion:

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, schools, parks, or other public facilities?

A portion of the Proposed Subtransmission Source Line Route would be located within a moderate fire hazard area. SCE has standard protocols that are followed when the National Weather Service issues a Red Flag Warning. SCE participates in the Red Flag Fire Prevention Program with CAL FIRE, the California Office of Emergency Services, the U.S. Forest Service, and various city and county fire agencies. SCE complies with California Public Resources Code Sections 4292 and 4293 related to vegetation management in transmission line corridors.

The proposed Lakeview Substation would be an unmanned, automated, low-profile substation. Operation would consist of annual inspections, routine maintenance and emergency repair of facilities and roads, which are unlikely to require the use of public services. The proposed substation would be unmanned, and its operation would not significantly affect police and fire protection response times or create higher demand for these public services. The Proposed Project is designed to improve existing and projected electrical capacity in the area, and would not directly induce growth or create need for additional public services. Because operation of the Proposed Project would have no growth-inducing impacts (please see Section 6.2 for additional discussion), it would not create a need for new schools, hospitals, or other public services. As a result,

operation of the Proposed Project would have a less-than-significant-impact to public services. Long-term impacts to parks in the Proposed Project area are evaluated in Section 4.15, Recreation.

4.14.5 Alternative Substation Site

The Alternative Substation Site has a similar setting to that of the Proposed Project and is similar in scope. As a result, impact to public services would be similar to those of the Proposed Project. Impacts to public services would be less than significant.

4.14.6 Alternative Subtransmission Source Line Route

The Alternative Subtransmission Source Line Route has a similar setting to that of the Proposed Project, and is similar in scope. As a result, impact to public services would be similar to those of the Proposed Project. Impacts to public services would be less than significant.

4.14.7 References

Kaiser Permanente. 2010. Kaiser Permanente webpage. [online] http://www.kaiserpermanente.org [cited March 2010].

Riverside County. 2000. Riverside County Integrated Project. Existing Setting Report. Revised, March 2000.

Riverside County. 2008. Riverside County General Plan Final Program Environmental Impact Report, Volume I. [online] http://www.rctlma.org/genplan/content/eir/volume1.html [cited February 2010].

Riverside County Office of Education. 2010. Riverside County Office of Education Districts webpage. [online] http://www.rcoe.k12.ca.us/ [cited March 2010].

4.15 Recreation

This section describes recreation facilities and uses in the Proposed Project area. Potential impacts of the Proposed Project, the Alternative Substation Site, and the Alternative Subtransmission Source Line Route are also discussed.

4.15.1 Environmental Setting

Overview Recreation Areas

Currently, the County of Riverside maintains 35 regional parks and four park and recreation districts. County recreational facilities include ball fields, equestrian facilities, trails and cultural facilities. Additionally, cities within Riverside County currently maintain approximately 215 parks. Private recreational facilities, such as tennis/basketball courts, pools/spas, and/or playgrounds, can be found primarily in planned communities and apartment complexes. There are also several existing and proposed commercial recreational facilities, including golf courses, polo and equestrian centers, and water/amusement parks (County of Riverside, 2008). Recreation within the Proposed Project area is under the jurisdiction of the Riverside County Economic Development Agency, Community Services Division.

As described in the *Lakeview Nuevo Design Guidelines*, there is a need for neighborhood parks[1] within the existing rural community, as the only existing park within the area is a temporary ball field located along Nuevo Road. The Design Guidelines further state that there should be at least four, 5-acre neighborhood parks within the Rural Area boundary and that two of those parks should be located between or adjacent to Lakeview Avenue and Hansen Avenue between Ramona Expressway and Nuevo Road (County of Riverside, 2006).

State Recreation Areas

Lake Perris State Recreation Area offers recreational opportunities to the northwest of the Proposed Project area. The Lake Perris State Recreation Area features Lake Perris, a 2,000-acre reservoir created by Perris Dam, and the Bernasconi Hills serve as the mountainous border around the lake and its recreational facilities. Lake Perris includes facilities available for camping, fishing, hiking, boating, hunting, rock climbing, swimming, and horseback riding. Due to seismic concerns, the water level of Lake Perris has been temporarily lowered, but lake levels are expected to be returned back to the normal design capacity following the completion of seismic remediation efforts, which are expected to be conducted in 2010. The park's current daily capacity includes 2,500 people and 250 water craft. Peak usage is during the summer months, from Memorial Day to Labor Day. The average attendance to the park is 1.1 million visitors per year (County of Riverside, undated).

San Jacinto Wildlife Area (SJWA), located at the base of the Bernasconi Hills and east of Lake Perris State Recreation Area, is owned, operated and managed by the California

[1] Neighborhood parks include land intended to serve the recreation needs of people living or working within a 1-mile area and serve as the neighborhood's recreational and social focus.

Department of Fish and Game (DFG) and provides recreational opportunities such as wildlife viewing, nature walks, an auto tour road, and hunting. SJWA is a California Type "A" Wildlife Area, representing the highest level of recreational use designated for DFG lands. Type "A" Wildlife Areas also have a heightened commitment on the part of DFG to increase the quantity and quality of public recreational opportunities found there (DFG, 2010a). SJWA is also the first State Wildlife Area to utilize reclaimed water to enhance its wetlands. Mystic Lake, a large crescent-shaped water body within the reserve area, serves as a significant wetland habitat for numerous birds and plants. Approximately 55,000 people visit the SJWA each year to hunt and 4,000 birders annually visit the SJWA[2]. Mystic Lake Duck Club and Ramona Duck Club, in addition to the general public, utilize the SJWA and Mystic Lake for hunting purposes. SJWA allows hunting with shotguns, including pheasant hunting, quail hunting, and waterfowl hunting. Depending on the season, different activities such as bird watching and mammal hunting are offered to the visitors (DFG, 2010c). The Potrero Creek Conservation Unit includes 9,000 acres and is located southeast of the SJWA in "The Badlands," bordered by State Highway 79 and Gilman Springs Road (County of Riverside, undated).

County Regional Parks and City of Perris Parks

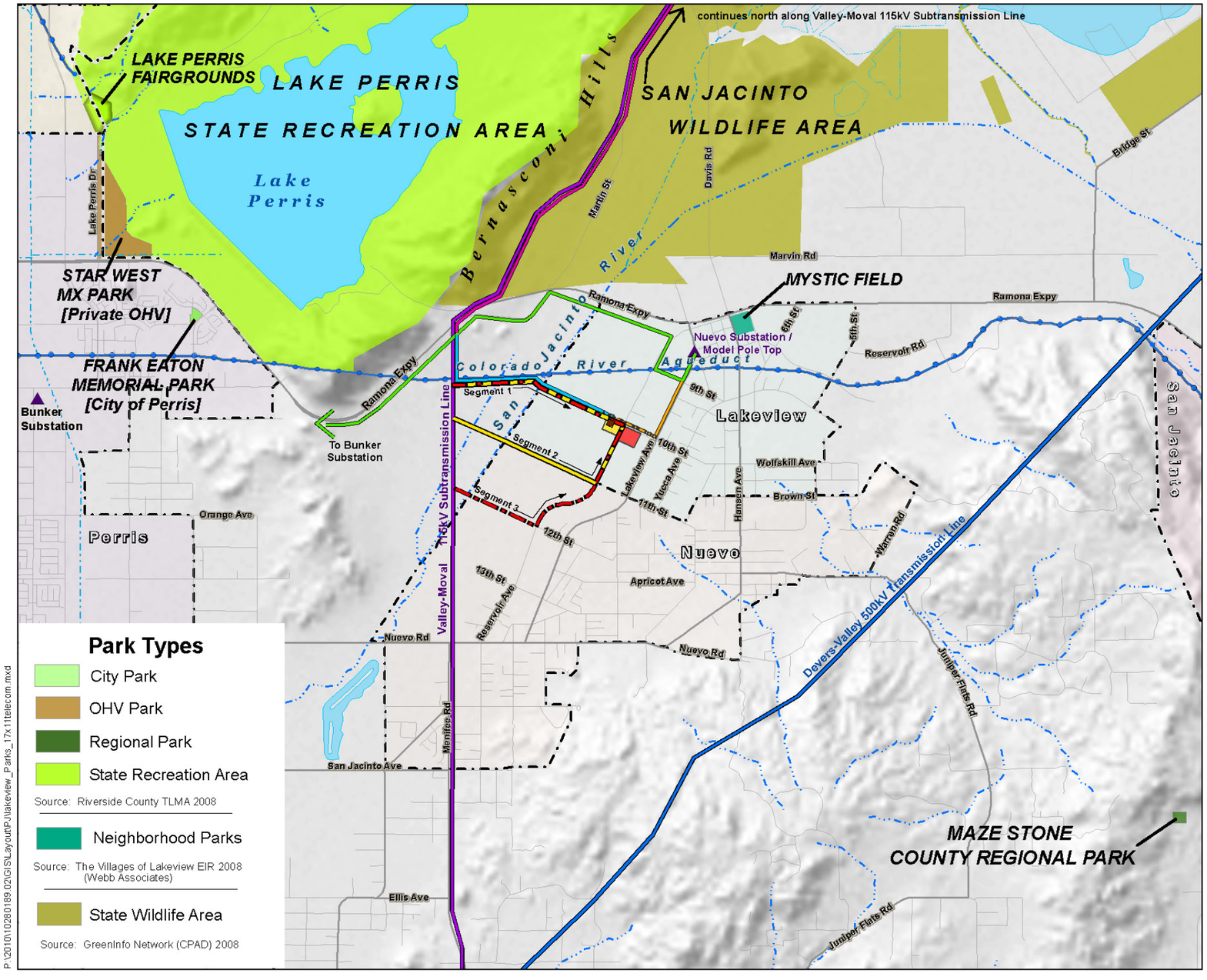
Frank Eaton Memorial Park is located to the northwest in the City of Perris and Maze Stone County Regional Park is located to the southeast of the Proposed Project area. Located just south of Frank Eaton Memorial Park is Paragon Park at 264 Spectacular Bid Street in Perris.

Lakeview/Nuevo Neighborhood Parks

Parks and recreation facilities in the vicinity of the Proposed Project are shown on Figure 4.15-1, Parks and Recreational Areas. Located northeast of the Proposed Project area on the north side of the Colorado River Aqueduct at 19619 Orange Street, Mystic Field is a neighborhood sports park that provides services for groups on an operating lease, including American Youth Soccer, Pony Baseball, and Nuview School District. Mystic Field encompasses 17 acres, which include a professional size baseball diamond, an intermediate size diamond, two softball diamonds, and a remaining open area that is being developed for soccer and open play fields (County of Riverside, undated).

Another neighborhood park, the 8-acre Mauel Family Park, is proposed to be constructed on the corner of Lakeview Avenue and 10th Street and will include a skate park, playground area, amphitheatre, open turf area, restroom building, multiple picnic areas, basketball court, horseshoe pits, and a decomposed granite walking trail. Mauel Family Park is proposed to be located on a site that currently houses the Nuview Branch Library and the new Nuview Fire Station (County of Riverside Economic Development Agency, 2010). Based on communication with the County, the park is fully entitled and has been designated "shovel ready". The County is waiting for the May 2011 Local Agency Formation Commission (LAFCO) voting cycle and if the project is approved, the County will begin the bidding process (Frost, 2010).

[2] Per telephone conversation with San Jacinto Wildlife Area (DFG, 2010b), SJWA does not keep official visitor frequency data.



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Lakeview Substation Project

Figure 4.15-1
Parks and Recreational Areas

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

- Pull box (not to scale)

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities
- Intermittent Stream

Sources: NavTeq, SCE, AECOM 2010

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Private Recreational Areas

The Lake Perris Fairgrounds is located northwest of the Proposed Project area and it houses privately run facilities, including the Perris Auto Speedway, Lake Perris BMX track, Star West MX Park (private off-highway vehicle (OHV) park), motocross track, Real Ride Skate Park, APEX Go Kart Track, and the El Toro Huaco Rodeo Arena (County of Riverside, Undated). Other recreational opportunities located in the vicinity of the Proposed Project include public golf courses in the Cities of Moreno Valley and San Jacinto. Parks and recreation facilities in the vicinity of the Proposed Project are shown on Figure 4.15-1, Parks and Recreational Areas.

Trails

An existing informal trail runs along the San Jacinto River, which would be crossed by the Proposed and Alternative Subtransmission Source Line Routes. Current recreational use of the river corridor is informal, as legal access points and easements have not yet been secured by the County (Straite, 2010). Although the existing trail is not considered a County facility, a Class I Bike Path/Regional Multi-Use River Trail is being proposed along the same corridor on each side of the San Jacinto River (County of Riverside, 2006). During site visits in October 2009 and March 2010, no visitors were observed along the river corridor or in the general area, suggesting only infrequent use of this trail. Nearby State recreational areas, such as Lake Perris State Recreational Area and the SJWA, may currently serve the recreation needs of most residents, given their close proximity.

The *Lakeview Nuevo Design Guidelines* also identifies a planned Regional Equestrian Trail that would form a loop around Lakeview/Nuevo following the east and south side of the San Jacinto River and various road and property line alignments. According to the *Lakeview Nuevo Design Guidelines*, trails and equestrian crosswalks are proposed on or near the Proposed Project area. A “double-sided multi-purpose” trail is proposed for 10th Street, between the San Jacinto River on the west and Hansen Avenue on the east. This trail would be located on the north side of the Proposed Substation Site and run parallel to Segment 1 of the Proposed and Alternative Subtransmission Source Line Routes (see Figure 4.15-2, Trail Location Map [Proposed Facilities]). This trail would be a part of the streetscape of important roads in the community. It would be placed on both sides of designated streets and serve in lieu of sidewalks for pedestrians, provide bike paths for mountain bikes, and provide a safe equestrian trail, allowing horse-owners in the rural area to ride their horses from their homes to other community trails. An equestrian crosswalk is planned at the intersection of 10th Street and Reservoir Avenue, adjacent to the Proposed Substation Site.

The California Aqueduct Greenbelt Trail is proposed to the north of the Proposed Project Area. The California Aqueduct, which flows underground in a pipe through Lakeview Nuevo, is conceptually planned as a regional greenbelt that will include pedestrian and bike trails, along with recreation facilities such as picnic areas, rest stops, a tot lot playground, etc. (County of Riverside, 2006). In addition, an equestrian crosswalk is proposed at Reservoir Avenue and 10th Street. Proposed trail locations are shown on Figure 4.15-2, Trails Location Map [Proposed Facilities]. Proposed trails described above and displayed in Figure 4.15-2 have not yet been constructed; however, in a few cases, rights-of-way (ROW) have been secured on local roads for future trail development (County of Riverside, 2006).

4.15.2 Regulatory Setting

There are no recreation-related laws, rules, or regulations that apply to the Proposed Project or its alternatives.

4.15.3 Significance Criteria

The significance criteria for assessing the impacts to recreational resources come from the California Environmental Quality Act (CEQA) Environmental Checklist. According to the CEQA Checklist, a project would cause a potentially significant impact if it would:

- 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

- Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment

4.15.4 Impact Analysis

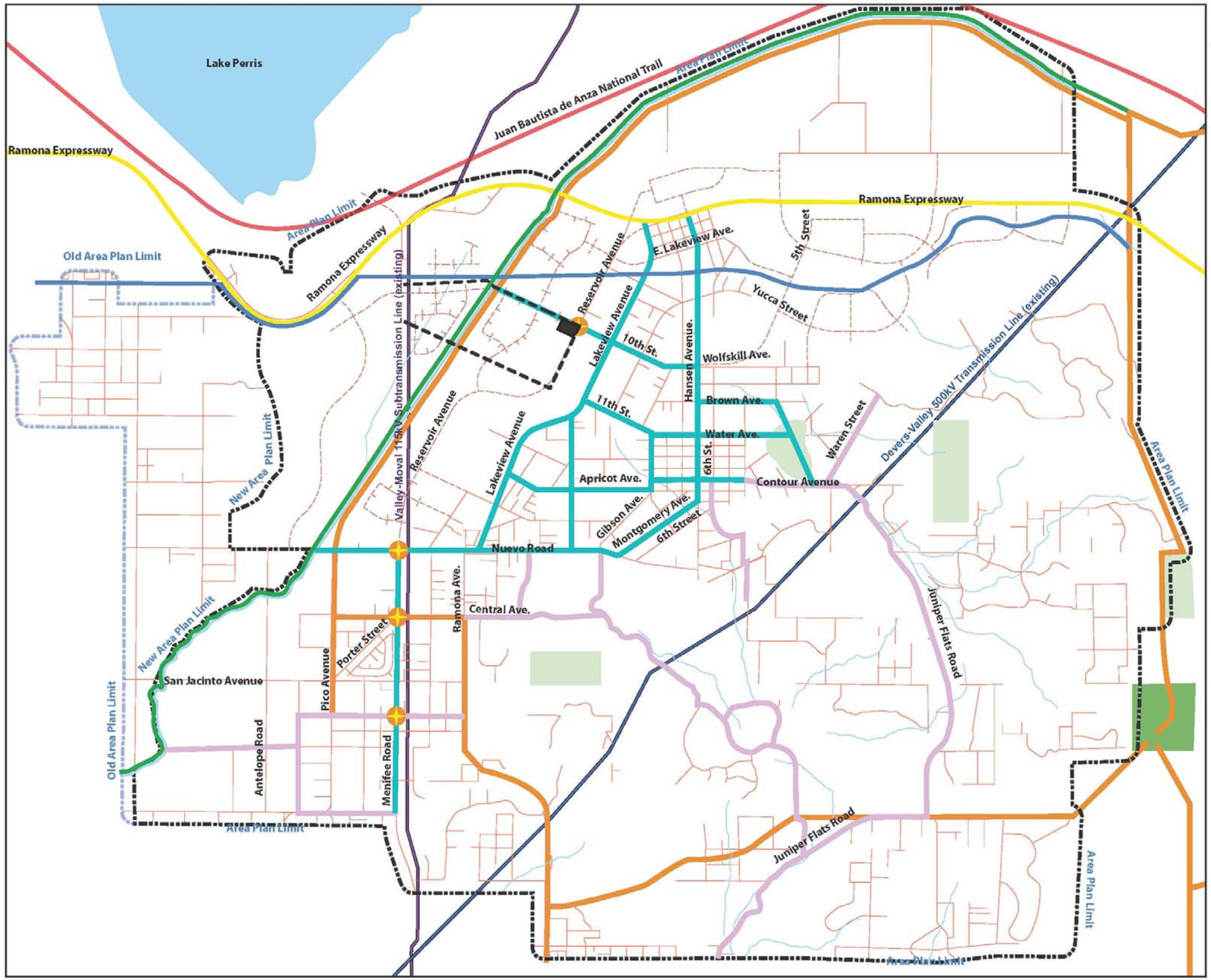
The figure and following analysis focuses mainly on the Proposed Substation, Subtransmission Source Line Route, and their alternatives, as these would involve entirely new facilities in the landscape. The Proposed Telecommunications Facilities are not expected to impact recreation, as they would be co-located on existing poles and/or placed underground.

No Impact

Construction and operation of the Proposed Project would not result in impacts for the following CEQA criteria:

Would the project 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?

Construction and operation of the Proposed Project would not cause population growth that would result in increased use of recreational facilities (see Section 6.2, Growth Inducing Impacts, for further discussion.) The Proposed Substation Site would be unattended and automated, requiring only occasional visits for routine maintenance and emergency repair. It is conceivable that these workers may occasionally want to sit in a park to eat lunch, but that is likely to be rare and infrequent in the case of maintenance workers, and temporary in the case of construction workers. Thus, there would be no impacts related to increased use that would cause substantial deterioration of local recreational facilities during construction or operation of the Proposed Project.



Lakeview Substation Project

Figure 4.15-2
Trails Location Map
(Proposed Facilites)

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Proposed Substation Site
- Historic Trail
- Class I Bike Path/ Regional River Trail on Both sides of River
- Regional EquestrianTrail
- California Aquaduct
  Greenbelt Trail
  Community Trail Head
- Class I Bike Path
- Double-sided Multi-purpose Trail
- Single-sided Multi-purpose Trail
- San Jacinto River
- Regional Parks
- Public/Quasi-Public Lands
- Equestrian Crosswalk

Source: Lakeview Nuevo Design Guidelines (Exhibit 46) -- PDS West 2006

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Would the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

Construction and operation of the Proposed Project would not include recreational facilities or require the construction of expansion of recreational facilities, as it would not induce population growth (please see Section 6.2, Growth Inducing Impacts, for additional discussion). As a result, there would be no impact to the environment from new or expanded recreational facilities.

Impacts on Trails

The Proposed Project would be located adjacent to a future proposed "double-sided multi-purpose" trail along 10th Street, between the San Jacinto River on the west and Hansen Avenue on the east. This trail would be located on the north side of the Proposed Substation Site and run parallel to Segment 1 of the Proposed and Alternative Subtransmission Source Line Routes (see Figure 4.15-2, Trail Location Map [Proposed Facilities]). This trail would serve pedestrians, provide bike paths for mountain bikes, and provide a safe equestrian trail, allowing horse owners in the rural area to ride their horses from their homes to other community trails. An equestrian crosswalk is planned at the intersection of 10th Street and Reservoir Avenue, adjacent to the Proposed Substation Site. The Proposed Project would be adjacent to this future trail and equestrian crosswalk, but would not block the multiple uses envisioned or hinder the flow of traffic along the trail. Transmission lines are generally compatible with trails.

Likewise, the existing informal trail along the San Jacinto River would be crossed by the Proposed and Alternative Subtransmission Source Line Routes. Current recreational use of the river corridor is informal and unconstrained, as legal access points and easements have not yet been secured by the County (Straite, 2010). A Class I Bike Path/Regional Multi-Use River Trail is being proposed along the same corridor on each side of the San Jacinto River (County of Riverside, 2006). The Proposed and Alternative Subtransmission Source Lines would not hinder the current use of the San Jacinto River corridor as a recreational trail, as hikers and off-road vehicles would be able to pass between the poles and under the circuits. Physical impacts to access and movement along the river corridor trail would be less than significant. Impacts on this recreational trail would be mainly visual. Visual impacts are discussed in Section 4.1 Aesthetics. Please see Figures 4.1-9a and 4.1-9b in this section for existing and simulated views from the San Jacinto River.

The California Aqueduct Greenbelt Trail is proposed to the north of the Proposed Project area and would not be crossed or impacted.

4.15.5 Alternative Substation Site

The Alternative Substation Site has a similar setting to that of the Proposed Substation Site, and is similar in scope. As a result, impacts to recreation would be similar to those of the Proposed Project. There would be no impact to recreation or associated physical effects on the environment.

4.15.6 Alternative Subtransmission Source Line Route

The Alternative Subtransmission Source Line Route has a similar setting to that of the Proposed Subtransmission Source Line Route, and is similar in scope. As a result, impacts to recreation would be similar to those of the Proposed Project. There would be no impact from increased use of recreation facilities or associated physical effects on the environment.

4.15.7 References

California Department of Fish and Game (DFG). 2010a. San Jacinto Wildlife Area – Riverside County Website [online] http://www.dfg.ca.gov/lands/wa/region6/sanjacinto.html [cited April 12, 2010].

DFG. 2010b. San Jacinto Wildlife Area. Telephone conversation with Tim on April 12, 2010.

DFG. 2010c. Southern Enforcement District. Telephone conversation with Jennifer on April 12, 2010.

County of Riverside Economic Development Agency. 2010. District 5 – Projects: Future. [online] http://www.rivcoeda.org/Redevelopment/ProjectsbyDistrict/DistrictFiveProjects/tabid/1227/Default.aspx [cited March 31, 2010].

County of Riverside. 2008. Riverside County General Plan. [online] http://www.rctlma.org/genplan/default.aspx [cited February 26, 2010].

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County of Riverside. Undated. The Villages of Lakeview Draft EIR No. 471. Prepared by Albert A. Webb Associates. [online] http://www.tlma.co.riverside.ca.us/planning/content/temp/villages_of_lakeview/vol_2_ann_deir.pdf [cited March 31, 2010].

Frost, A. 2010. Personal communication with Andy Frost, Riverside County Economic Development Agency, regarding Mauel Park. April 2010.

Straite, M. 2010. Personal communication with Matthew Straite, Riverside County, regarding the San Jacinto River trails. April 2010.

4.16 Transportation and Traffic

This chapter describes traffic and transportation in the Proposed Project Area. The potential impacts of the Proposed Project and alternatives are also discussed.

4.16.1 Environmental Setting

The Lakeview/Nuevo community is a small bedroom/agricultural community located off heavily traveled regional roadways. Aside from residents and locally generated traffic needs, there is no direct "through-route basis" for traffic through Lakeview/Nuevo that results from travel between two other destinations. Traffic does not generally traverse Lakeview/Nuevo on the way to another destination, as more direct regional routes are available on all sides of the community.

The local transportation system consists primarily of semi-rural roadways bordered by large-lot residential/equestrian-type properties and some newer tract-type homes. The main throughways are Lakeview Avenue and Hansen Avenue/Montgomery Avenue, connecting Ramona Expressway (State Route (SR)-79) in the north with Nuevo Road in the south, as shown in Figure 3.1, Alternative Substation Site and Subtransmission Source Line Route. Commuters travelling from Lakeview/Nuevo to work centers in Riverside, San Bernardino, Los Angeles, and San Diego counties would generally use Nuevo Road to access Interstate (I-) 215 or I-15 freeways to the west. Travelers from the Lakeview/Nuevo area going to the San Jacinto region to the east would use Ramona Expressway.

Traffic counts conducted by the County of Riverside Transportation Department for the intersection of Ramona Expressway and Lakeview Avenue are available from May and June 2009. The average daily trips[1] (ADT) on those dates (eastbound Tuesday, May 12 and westbound Wednesday, June 3) were 20,668 and 19,912, respectively, up from ADTs of 17,525 (eastbound) and 17, 932 (westbound) recorded for Thursday, December 9, 2004.

Lakeview Avenue is one of the principal through roads in the Lakeview/Nuevo community, extending from Ramona Expressway in the northeast to Nuevo Road in the southwest, a distance of approximately 3 miles. Aside from stop signs at 9th Street, located 0.5 miles to the northeast of 10th Street, and at 10th Street, there are no other stops on Lakeview Avenue along its length. The intersection of Lakeview Avenue and 10th Street is currently a four-way 'stop' intersection, located approximately 1,500 feet southeast of the Proposed Substation Site on 10th Street. At that point, both streets are two-lane, undivided paved roads. This intersection would be the primary access point for construction traffic accessing the Proposed Substation Site. Road uses along the south side of 10th Street include the Nuview Community Library and a fire station. Uses along the north side of the street are large-lot residential/equestrian type properties. West of

[1] Average daily traffic, or ADT, is the average number of vehicles two-way passing a specific point in a 24-hour period. ADT is the standard measurement for vehicle traffic load on a section of road, and the basis for most decision-making regarding transport planning. Road authorities have established norms based on ADT, with evaluations to expand road capacity at given capacity thresholds.

the Proposed Substation Site, the uses along 10th Street are strictly agricultural all the way to the river channel.

The intersection of Lakeview Avenue and 10th Street is also one of two primary access points for students traveling to Mountain Shadows Middle School and the adjacent Nuview Bridge Early College High School, located at the corner of 9th Street and Reservoir Avenue (see Figure 4.14-2, Schools in the Vicinity of the Proposed Project). The other access point is from the intersection of Lakeview Avenue and 9th Street, which is immediately behind the school.

Traffic counts by the County of Riverside Transportation Department for the intersection of Lakeview Avenue and 10th Street are available from May 2009. The ADT for Tuesday, May 19, 2009 was 3,754, which is down from an ADT of 4,475 recorded for Thursday, December 9, 2004.

The proposed project and alternative will travel along future roadways which are not currently in place. There are several plans for road expansions in the vicinity of the Proposed Project Area, including a future planned extension of 10th Street. Future plans for the streets in the project area, described for the Riverside County General Plan's Lakeview/Nuevo Planning Area, include 10th Street as an east-west roadway that connects B Street in the west, with Wolfskill Avenue in the east (Riverside County, 2010). The future expanded 10th Street is classified by the Lakeview/Nuevo Area Plan Circulation Element as a Major Highway (four-lane divided road) with an ultimate 118-foot right-of-way. The future expanded 9th Street, the other existing access route to the project area, is also classified by the Lakeview/Nuevo Area Plan Circulation Element as a Major Highway (four-lane divided road) with an ultimate 118-foot right-of-way. Other numbered streets in the Proposed Project Area are not designated for expansion. Reservoir Avenue, running south-north through the Proposed Project Area, is projected by the Lakeview/Nuevo Area Plan Circulation Element to expand to an Urban Arterial (ultimate 152-foot right-of-way), as the extension of Menifee Avenue (as designated south of Nuevo Road) paralleling Lakeview Avenue until intersecting Lakeview between 9th Street and the Ramona Expressway. These improvements would likely not be implemented until well after the Lakeview Substation is constructed and operational.

Truck Routes

There are no designated California State Highways truck routes through the Lakeview/Nuevo community (DOT, 2009). Highway 74 is the closest designated truck route.

Bikeways and Trails

No bikeway or trail signage was observed in the vicinity of the intersection of Lakeview Avenue and 10th Street for a distance of one mile on any side of that intersection. No County-designated bikeways or trails currently exist in the Proposed Project Area (see Section 4.15, Recreation, regarding the current minimal use of the nearby San Jacinto River Trail.

Lakeview Avenue is planned as a Design Guidelines Trail along its entire length between Ramona Expressway and Nuevo Road in the current proposed Update to the Circulation Element of the County of Riverside General Plan, as is 10th Street extending

west from Lakeview Avenue to beyond the Proposed Substation Site (County of Riverside, 2008). Reservoir Street, from its intersection with 10th Street to its intersection with the California Aqueduct 0.5 miles northeast of the Proposed Substation Site, is planned as a future Community Trail in this update (Proposed Lakeview/Nuevo Area Plan Trails and Bikeway System – DRAFT 2010).

Fixed-route Bus Systems

No bus station or bus stop signs were observed in the vicinity of the intersection of Lakeview Avenue and 10th Street for a distance of one mile on each side of that intersection. The nearest Riverside Transit Agency (RTA) bus route is located at Nuevo Road and Redlands Avenue, approximately four miles west of the Lakeview/Nuevo community (RTA, 2009).

Freight/Passenger Rail Service

No railroads traverse the Lakeview/Nuevo community. However, passenger rail service is planned for the area running south along the I-215 corridor to the City of Perris (near the intersection of I-215 and SR-74), approximately four miles west of the Lakeview/Nuevo community (Riverside County Transportation Commission (RCTC), Undated).

Nearest Airport Land Use Compatibility Plan

The nearest Airport Land Use Compatibility Plans in effect for operating facilities include Hemet-Ryan Airport, 8.4 miles to the southeast of the Proposed Substation Site; French Valley Airport, 17 miles to the south of the Proposed Substation Site; and March Global Port, 8.8 miles northwest of the Proposed Substation Site (Riverside County Airport Land Use Commission, 2004). None of these facilities has regular passenger service associated with its operations.

A heavily used flight corridor for passenger aircraft approaching Orange County Airport is located four miles to the north of the Proposed Substation Site.

Commercial Airstrips

Perris Valley Airport is located 6.5 miles southwest of the Proposed Substation Site. Also, small air fields are located further away in Winchester, Murrieta, Lake Elsinore, and Lake Mathews.

4.16.2 Regulatory Setting

Traffic in unincorporated areas of Riverside County is under the jurisdiction of the Riverside County Transportation Commission (RCTC), which also has jurisdiction over passenger buses.

The passage of Proposition 111 in June 1990 established a process for each metropolitan county in California, including Riverside, to prepare a Congestion Management Plan (CMP). The CMP, which was prepared by the RCTC in consultation with the County and the cities in Riverside County, is an effort to more directly align land use, transportation, and air quality management efforts, to promote reasonable growth

management programs that effectively use statewide transportation funds, while ensuring that new development pays its fair share of needed transportation improvements.

The focus of the CMP is the development of an Enhanced Traffic Monitoring System in which real-time traffic count data can be accessed by RCTC to evaluate the condition of the Congestion Management System (CMS) as well as meet other monitoring requirements at the State and federal levels. Per the adopted Level of Service (LOS) standard of "E," when a CMS segment falls to "F," a deficiency plan must be required. Preparation of a deficiency plan will be the responsibility of the local agency where the deficiency is located. Other agencies identified as contributors to the deficiency will also be required to coordinate with the development of the plan. The plan must contain mitigation measures, including Transportation Demand Management (TDM) strategies and transit alternatives, and a schedule of mitigating the deficiency. To ensure that the CMS is appropriately monitored to reduce the occurrence of CMP deficiencies, it is the responsibility of local agencies, when reviewing and approving development proposals, to consider the traffic impacts on the CMS.

California Public Utilities Commission (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.” Consequently, public utilities are directed to consider local regulations and consult with local agencies, but county and city regulations are not applicable, because counties or cities do not have jurisdiction over the Proposed Project.

4.16.3 Significance Criteria

The significance criteria for assessing the impacts to transportation and traffic come from the California Environmental Quality Act (CEQA) Environmental Checklist, California Code of Regulations and Title 14. According to the checklist, a project would cause a potentially significant impact if it would:

- 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

- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)

- Result in inadequate emergency access

- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities

4.16.4 Impact Analysis

No Impact

Construction and operation of the Proposed Project would not result in impacts for the following CEQA significance criteria:

Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

No designated Congestion Management Program roads or highways are located in the Lakeview/Nuevo community. Therefore, no impacts would occur.

Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?

The Proposed Project area is located a substantial distance from major airports and airfields and is not located near main passenger flight corridors in Southern California. The maximum height of the proposed subtransmission facilities is approximately 85 feet and construction cranes may reach heights up to 100 feet temporarily for short durations during construction. The height of the facilities associated with the Proposed Project would not have the potential to change air traffic patterns. No impacts would occur.

Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

There are no design features of the Proposed Project that would increase hazards or create an incompatible use with transportation or traffic. No impacts would occur.

Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

The Proposed Project is not in conflict with any local or regional policies, plans, or programs supporting alternative transportation, including public transit, bicycle, or pedestrian facilities. No impacts would occur.

Construction Impacts

Construction of the Proposed Project has the potential to result in impacts for the following CEQA significance criteria:

Would the project 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?

Construction traffic would be added to normal use of roads in the Lakeview/Nuevo community. With an anticipated maximum of 40 workers on-site on any given day during construction (see Section 3.10, Construction Equipment and Personnel), construction traffic is estimated at approximately 100 ADT, representing an increase of approximately 2.7 percent when added to the observed ADT value of 3,754 in May 2009 (County of Riverside Transportation Department, 2009). Construction traffic would be confined primarily to early morning and late afternoon periods, with some materials deliveries during the day. This increase does not represent a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on the affected roads, or congestion at the intersections most affected by project implementation.

During installation of the duct banks for the telecommunications element (fiber optic communications cable) in 10th Street from the Proposed Substation Site to Lakeview Avenue, travel corridors would be restricted during trenching, installation, and backfilling. Since the installation will involve trenching and backfilling of the duct bank, travel in this area may be subject to short delays during use of flagging or other control methods to conduct traffic safely through the area. Installation should only take a few days during the overall construction period. As a result, minor impacts related to increased traffic congestion during construction would be less than significant.

Occasionally during deliveries of large equipment or materials, temporary traffic controls would be used. Generally, materials associated with construction efforts would be delivered by truck to the established marshalling yard(s). However, wood poles and other materials, may be delivered directly to the job site. Delivery activities requiring major street use would be scheduled to occur during off-peak traffic hours whenever possible. Some deliveries, such as concrete, would occur during peak hours when footing work is being performed. SCE would employ commonly used traffic control measures consistent with those published in the California Joint Utility Traffic Control Manual (CJUTCM) by the California Joint Utility Traffic Control Committee (CJUCTCC, 2010).

Construction of the Proposed Subtransmission Source Line Route segments would take place in lightly used areas on new access roads or along existing roads not commonly used for commuter travel. Localized travel disruptions are possible during these construction activities; however, these disruptions would be minor.

No bus station or bus stop signs were observed in the vicinity of the intersection of Lakeview Avenue and 10th Street for a distance of one mile on each side of that intersection. No bikeway or trail signage was observed in the vicinity of the intersection of Lakeview Avenue and 10th Street for a distance of one mile on any side of that intersection.

Construction of the Proposed Project would not result in a substantial increase in traffic in relation to existing traffic load and capacity of the street system. Additionally, it would

not affect pedestrian or bicycle paths or mass transit. As a result, impacts related to increased traffic during construction would be less than significant.

Would the project result in inadequate emergency access?

The 10th Street access serves as an access route from Lakeview Avenue to the Mountain Shadows Middle School and an estimated 12 residences in that vicinity. The 9th Street access is the alternative route from Lakeview Avenue to these areas, and the access distance from Lakeview Avenue to the middle school is shorter using 9th Street. The 9th Street route would be the preferred access route for emergency vehicles.

Also, as discussed in Section 4.8, Hazards and Hazardous Materials, in places where the components of the Proposed Project span a road or may require a lane closure, construction activities would be coordinated with the local jurisdiction to avoid the closure of any emergency access route.

Therefore, construction of the Proposed Project would not result in inadequate emergency access to the area affected by the Proposed Project. As a result, impacts to emergency access would be less than significant.

Operation Impacts

Operation of the Proposed Project has the potential to result in impacts for the following CEQA significance criterion:

Would the project 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?

The Proposed Substation Site would be unattended during operation, with only occasional maintenance and monitoring visits. Operation of the Proposed Project would not result in a substantial increase in traffic in relation to existing traffic load and capacity of the street system. As a result, impacts to an increase in traffic would be less than significant.

4.16.5 Alternative Substation Site

The Alternative Substation Site has similar physical and geographic characteristics to the Proposed Substation Site. Construction and operation impacts of the Alternative Substation Site would be similar to those identified for the Proposed Substation Site.

4.16.6 Alternative Subtransmission Source Line Route

The Alternative Subtransmission Source Line Route has similar physical and locational characteristics to the Proposed Subtransmission Source Line Route. Construction and operation impacts of the alternative route would be similar to those identified for the Proposed Subtransmission Source Line Route.

4.16.7 References

California Department of Transportation (DOT). 2009. Truck Networks on California State Highways, District 8 [online] http://www.dot.ca.gov/hq/traffops/trucks/truckmap/truckmap-d08.pdf, September 2009 [cited March 2010].

California Joint Utility Traffic Control Committee (CJUTCC). 2010. California Joint Utility Traffic Control Manual. April 2010.

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Riverside County. 2010. Land Information System GIS. Circulation Element Roads. [online] http://www3.tlma.co.riverside.ca.us/pa/rclis/index.html [cited May 2010].

4.17 Utilities and Service Systems

This section describes utilities and service systems in the vicinity of the Proposed Project. The potential impacts of the Proposed Project and alternatives are also discussed.

4.17.1 Environmental Setting

Water Resources

The principal water agencies in northwestern Riverside County are Western Municipal Water District (WMWD), Eastern Municipal Water District (EMWD), and West San Bernardino County Water District. EMWD is the primary provider for drinking water, sewage collection, treatment, and disposal services for portions of Northwest Riverside County. Nuevo Water Company would be the water provider for the Proposed Substation Site.

Waste Management

Waste Management of the Inland Empire is the local division of Waste Management Inc. that provides waste and recycling services to Riverside County and operates the three landfills located in the vicinity of the Proposed Project. It operates the El Sobrante Landfill in Corona, with an annual capacity of approximately 2,170,227 disposal tonnages (tons) and a life expectancy of an additional 35 years. The Badlands Sanitary Landfill is located in Moreno Valley and receives approximately 645,965 tons of refuse per year and is expected to reach capacity in 6 years. The Lamb Canyon Sanitary Landfill in Beaumont receives an average of 620,823 tons of refuse per year, with a life expectancy of an additional 13 years (CalRecycle, 2010).

Electricity and Natural Gas

The County of Riverside is served by several major utilities that provide electricity and natural gas. Southern California Edison (SCE) is the principal provider of electricity in the vicinity of the Proposed Project. The Southern California Gas Company is the principal provider of natural gas, with three major natural gas pipelines traversing the county.

Flood Control

Regional flood control planning is under the jurisdiction of the Riverside County Flood Control and Water Conservation District (RCFC & WCD). The RCFC & WCD is responsible for implementation of the Drainage Area Management Plan.

4.17.2 Regulatory Setting

California Integrated Waste Management Act of 1989

The California Integrated Waste Management Act of 1989 (PRC, Division 30), enacted through Assembly Bill (AB) 939 and modified by subsequent legislation, required all California cities and counties to implement programs to reduce, recycle, and compost at least 50 percent of waste by the year 2000 (PRC Section 41780). The state determines

compliance with this mandate to "divert" 50 percent of generated waste, which includes both disposed and diverted waste (PRC Section 41780.2).

Riverside Countywide Integrated Waste Management Plan

The Riverside Countywide Integrated Waste Management Plan (CIWMP) outlines the goals, policies, and programs that the county and its cities will implement to create an integrated and cost effective waste management system that complies with the provisions of AB 939 and its diversion mandates. The Riverside County Waste Management Department (RCWMD) is specifically charged with the responsibilities of (Riverside County, 2008):

1) Implementing programs that adhere to the goals, policies, and objectives outlined in the County's Source Reduction and Recycling Element that enable the unincorporated portion of Riverside County to achieve 50 percent diversion of solid waste from landfill disposal

2) Implementing programs that adhere to the goals, policies and objectives outlined in the County's Household Hazardous Waste Element to reduce the amount of household hazardous waste that is disposed within landfills

3) Meeting the solid waste disposal needs of all Riverside County residents

4) Maintaining and updating the CIWMP and reporting to the California Integrated Waste Management Board (CIWMB) on the County's progress in complying with AB 939

4.17.3 Significance Criteria

The significance criteria for assessing impacts to utilities and service systems comes from the California Environmental Quality Act (CEQA) Environmental Checklist. According to the checklist, a project would cause a potentially significant impact if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board

- 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

- 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

- Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed

- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments

- Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs

- Comply with federal, state, and local statutes and regulations related to solid waste

4.17.4 Impact Analysis

No Impact

Construction and operation of the Proposed Project would not result in impacts for the following CEQA criteria:

Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

The Lakeview Substation Site would be equipped with a restroom. However, there is no sewer service currently available at the site, therefore a portable chemical unit (portable restroom) would be placed within the substation perimeter and maintained by an outside service company. Construction and operation of the Proposed Project would not discharge concentrated wastewater or large volumes of wastewater to a wastewater treatment facility that would exceed treatment requirements set forth by the Santa Ana Regional Water Quality Control Board (RWQCB). As a result, construction and operation of the Proposed Project would have no impact to the treatment requirements of wastewater treatment plants serving the area.

Would the project 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?

Currently there is no sewer service available at the site. During Project construction, portable toilets would be provided for use by construction personnel (approximately 40 workers per day) and would be maintained by an outside service company for the 12-month construction period. During Project operation, a portable chemical unit (portable restroom, not connected to local sewer and wastewater treatment system) would be placed within the substation perimeter wall for use by SCE personnel and maintenance contractors, and would be regularly maintained. As the Proposed Substation would be unstaffed and remotely operated, visits to the Proposed Substation Site would likely occur approximately three to four times per month.

SCE would develop an appropriate landscaping plan consistent with Riverside County standards, including Ordinance 859: Establishing Water Efficient Landscape Requirements. The use of water during construction (for dust suppression) and operation would be minimal, and would not be in volumes or flow rates that would affect water treatment plant capacities. In addition, construction and operation of the Proposed Project would not discharge large volumes of wastewater. Construction and operation of the Proposed Project would have no impact; it would not require the expansion of water or wastewater treatment facilities serving the area.

Would the project 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?

Construction of the Proposed Project would not involve large-scale impermeable surfaces that would significantly increase the amount of storm water discharge from the site. Please see Section 4.9, Hydrology and Water Quality, for further discussion of drainage patterns, and flooding. The storm water improvement portion of the grading plan would be designed to control the discharge of storm water runoff from the site and may include construction of a detention basin within the enclosed substation to control the rate of off-site discharge of storm water. As a result, construction and operation of the Proposed Project would not require the construction of new storm water drainage facilities or expansion of existing facilities in the area. There would be no impact.

Would the project result in the 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 and operation of the Proposed Project would not discharge large volumes of wastewater to a wastewater treatment facility that would exceed its capacity. Approximately 40 construction personnel would work onsite per day during construction and during operation of the Proposed Project. Personnel would generally only be onsite three to four times per month, as the Proposed Substation would be unstaffed and remotely operated. A portable chemical unit (portable restroom) would be placed within the substation perimeter wall for use during operation of the Proposed Project, and maintained by an outside service company. Construction and operation of the Proposed Project would have no impact to wastewater treatment providers in the area.

Construction Impacts

Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

The use of water for dust suppression, clean up, drinking and hand washing during construction would be minimal, most likely brought to the site by water trucks, and would not be in volumes that would affect water supplies. Restroom facilities for the Proposed Project would be portable and would not require connection to local water supply system. Construction of the Proposed Project would have a less-than-significant impact to the water supply in the area.

Would the project be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs?

Construction of the Proposed Project would result in the generation of various waste materials, many of which can likely be recycled and salvaged. Waste items and materials would be collected by construction crews and separated into roll-off boxes at the materials staging area. All waste materials that are not recyclable would be categorized by SCE in order to assure appropriate final disposal. Non-hazardous waste would be transported to local waste management facilities and if any hazardous waste is identified for disposal (e.g., potentially the removed wood poles), it would be disposed of in a Class I hazardous waste landfill or in the lined-portion of a RWQCB-certified municipal landfill, as appropriate. Soil excavated for the Proposed Project would either

be used as fill or disposed of off-site at an appropriately licensed facility. Although there would be waste from construction activities that would be sent to one or more landfills in the area, the amount is not anticipated to be enough to affect the permitted capacity of a landfill. Construction of the Proposed Project would not be served by a landfill with insufficient capacity to accommodate the project's solid waste disposal needs. Currently, all three serving landfills possess over 60 percent of available remaining capacities. Impacts would be less than significant.

Would the project comply with federal, state, and local statutes and regulations related to solid waste?

The construction of the Proposed Project would comply with federal, state, and local statutes and regulations related to solid waste. The Proposed Project includes the removal and disposal of treated wood poles, and these wood poles would be returned to the marshalling yard for the project, and depending on the condition of each pole, would be reused, disposed of in a Class I hazardous waste landfill, or disposed of in the lined portion of a RWQCB-certified municipal landfill. As a result, construction of the Proposed Project would have a less than significant impact to the applicable federal, state, and local statutes and regulations related to solid waste.

Operation Impacts

Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

The use of water for landscape irrigation during operation would be minimal, as drought tolerant plants would be used; thus, irrigation water use would not be in volumes that would affect water supplies. At this time, it is anticipated that restroom facilities for the Proposed Project, both during construction and operation, would be portable and would not require connection to the local water supply system. Operation of the Proposed Project would have a less-than-significant impact to the water supply in the area.

Would the project be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs?

Operation of the Proposed Project would consist of routine maintenance and emergency repair of the facilities, and these activities would not generate waste in an amount that would affect the permitted capacity of landfills in the area. Operation of the Proposed Project would not be served by a landfill with insufficient capacity to accommodate the project's solid waste disposal needs. There would be a less-than-significant impact.

Would the project comply with federal, state, and local statutes and regulations related to solid waste?

The operation of the Proposed Project would consist of routine maintenance and emergency repair. These activities are not expected to generate solid waste subject to federal, state, or local statutes or regulations related to solid waste. Operation of the Proposed Project would have a less-than-significant impact to the applicable federal, state, and local statutes and regulations related to solid waste.

4.17.5 Alternative Substation Site

The Alternative Substation Site has a similar setting to that of the Proposed Project, and is similar in scope. As a result, impacts to utilities and service systems would be similar to those of the Proposed Project. Impacts would be less than significant.

4.17.6 Alternative Subtransmission Source Line Route

The Alternative Subtransmission Source Line Route has a similar setting as the Proposed Project, and is similar in scope. As a result, impacts to utilities and service systems would be similar to those of the Proposed Project. Impacts would be less than significant.

4.17.7 References

CalRecycle. 2010. California Waste Stream Profiles: Facilities Website. [online] http://www.calrecycle.ca.gov/Profiles/Facility/Landfill/Default.asp [cited April 2010].

Riverside County. 2008. Riverside County General Plan Final Program Environmental Impact Report, Volume I. [online] http://www.rctlma.org/genplan/content/eir/volume1.html [cited February 2010].

5.0 COMPARISON OF ALTERNATIVES

This section compares the environmental impacts of the alternatives to the Proposed Project. CEQA Guidelines (Section 15126.6(d)) require that an environmental impact analysis include sufficient information about each alternative to allow meaningful evaluation and comparison with the Proposed Project. The alternatives must also be capable of satisfying the project objectives.

The project objectives, developed in Section 1.3, are as follows:

- Serve existing and long-term projected electrical demand requirements in the Electrical Needs Area beginning in mid-2013
- Improve the reliability and system operational flexibility within the Electrical Needs Area; and
- Accomplish the above objectives while minimizing environmental impacts.

These objectives were considered in developing a reasonable range of alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives.

5.1 Substation Site Evaluation Methodology

In order to meet the project objectives as defined in Chapter 1 (refer to Section 1.3), a Substation Study Area (shown in Chapter 1, Figure 1.1, Electrical Needs Area) was determined. The placement of a substation within this Substation Study Area allows SCE to increase transformer capacity in the Electrical Needs Area, and to transfer electrical demand between distribution circuits and the existing substations located near the Electrical Needs Area. The Substation Study Area provides the geographic framework for identifying potential substation sites. A new substation operating within the Substation Study Area would maximize electrical benefits and satisfy the purpose and need for the project. The substation site was selected using the following basic factors:

- The substation should be in an area where existing and future electrical demand could be efficiently and effectively served within the Electrical Needs Area;
- The substation should be located in an area where it would maximize system reliability and operational flexibility with adjacent substations and circuits; and
- The substation should be located in proximity to existing subtransmission source lines that have sufficient capacity to serve the substation.

After a review of potential sites located within the Substation Study Area, SCE selected two potential substation location alternatives and potential subtransmission source line segments that would connect the substation to the existing Valley-Moval 115 kV subtransmission line. These alternatives are shown on Figure 2.1, Alternative Substation Sites and Subtransmission Source Line Routes.

For more information about how the project alternatives are developed, evaluated and selected, please refer to Section 2.1 Project Alternatives.

General Order No. 131-D requires that an Application for a Permit to Construct include the "[r]easons for adoption of the power line route or substation location selected, including comparison with alternative routes or locations, including the advantages and disadvantages of each."

5.2 Alternatives Comparison Summary

The Alternative Substation Site and Alternative Subtransmission Source Line Route have similar physical and locational characteristics with the Proposed Project. In most cases, construction and operation impacts of the alternative option would be identical or similar to those identified for the Proposed Project in Chapter 4 of this PEA. The Proposed Telecommunications Facilities are the same for both the proposed and alternative options and would be co-located on existing poles, proposed poles and/or placed underground.

The main differences between the Proposed Project and the Alternative are related to the larger footprint of the Alternative Substation Site and Subtransmission Source Line Route, resulting in greater impacts to agriculture and forestry resources and aesthetics. The Alternative Substation Site (6.0-acres) is slightly larger than the Proposed Substation Site (5.4-acres) and would therefore convert additional farmland to non-agricultural use as compared to the Proposed Project. Approximately 0.6-acre of additional land designated as prime farmland would be permanently converted to non-agricultural use under this alternative. Another difference is that the Alternative Subtransmission Source Line Route is approximately 0.1-mile longer than the Proposed Subtransmission Source Line Route and would include more source line poles which would disturb an additional, but still negligible amount of land compared with the Proposed Subtransmission Source Line Route. By comparison, Segments One and Two of the Proposed Project provide a more direct route to the substation site and the facilities would be more narrowly dispersed, resulting in a smaller "visual footprint".

With the implementation of Applicant Proposed Measures (APMs), the majority of the significant environmental effects associated with the Proposed Project would be reduced to less than significant levels. However, impacts to agriculture and forestry resources and air quality would remain significant and unavoidable. The use of the Alternative Substation Site and the Alternative Subtransmission Source Line Route would not avoid the significant environmental impacts related to agriculture and forestry resources and air quality associated with the Proposed Project.

Alternative to the Proposed Project

Alternative Substation Site

The Alternative Substation Site is located adjacent to the Proposed Substation Site, at the southeast corner of Reservoir Avenue and 10th Street. The Alternative Substation Sites is currently being used for agricultural activities. The visual character of the Alternative Substation Site is very similar to that of the Proposed Project Area.

The 6.0-acre site is bounded on all sides by privately owned parcels with agricultural activities to the south, east and west and with single family residential usage to the east. Although the Alternative Site could accommodate the substation, the owner of the property is not interested in selling at this time.

Both the Proposed and Alternative Substation locations would be constructed on Prime Farmland and require the construction of entirely new facilities on agricultural lands. However, the Alternative Substation Site (6.0-acres) is slightly larger than the Proposed Substation Site (5.4-acres) and would therefore convert additional farmland to non-agricultural use as compared to the Proposed Project. About 0.6-acre of additional land designated as Prime Farmland would be permanently converted to non-agricultural use under this alternative. This loss of state-designated farmlands would remain a significant and unavoidable impact, as indicated in Section 4.2 Agriculture and Forestry Resources. New urban land uses and the associated loss of farmland have been approved as part of the Riverside County General Plan Update of 2003, which included a certified EIR.

Construction and operation of the Alternative Substation Site would result in noise impacts at one additional noise-sensitive receptor (i.e., residence) as compared to the Proposed Project. However, overall noise impacts would not substantially increase with construction and operation of the Alternative Substation Site as compared to the Proposed Substation Site because construction and operation activities would be similar. The impact would still be less than significant.

The Proposed and Alternative Substation Sites (as well as the proposed and alternative Subtransmission Source Line Route and Fiber Optic Cable Routes) are underlain by Pleistocene alluvial sediments with high potential to contain paleontological resources. Thus, ground disturbing activities throughout almost the entire project have the potential to impact paleontological resources. Monitoring of excavation into rock units having high potential to contain significant nonrenewable paleontological resources would be recommended as a mitigation measure and first step to avoid or reduce impacts to less than significant levels. Thus the Alternatives are similar to the Proposed Project relative to potential paleontological resource impacts.

Alternative Subtransmission Source Line Route (Segment One and Segment Three)

The Alternative Substransmission Source Line Route would consist of two segments (Segment One and Segment Three), the first of which would follow the same route as Segment One of the Proposed Subtransmission Source Line Route. Segment Three would connect to the Valley-Moval 115 kV subtransmission line 0.5-mile south and parallel to Segment Two of the Proposed Subtransmission Source Line Route. The Alternative Subtransmission Source Line Route would travel through the same land uses and would traverse portions of the San Jacinto River, analogous to the Proposed Project.

The primary difference between the two options is that the Alternative Subtransmission Source Line Route is approximately 0.1-mile longer than the Proposed Subtransmission Source Line Route and would include more source line poles which would disturb an additional, but still negligible amount of land compared with the Proposed Subtransmission Source Line Route. From a visual perspective, the Alternative Subtransmission Source Line Route would result in an overall larger area crossed by the project's facilities. By comparison, Segments One and Two of the Proposed Project

provide a more direct route to the substation site and the facilities would be more narrowly dispersed, resulting in a smaller "visual footprint". Therefore, the Alternative Subtransmission Source Line Route is not preferable to the Proposed Project's Segment One and Segment Two Subtransmission Source Line Route alignments.

A few other differences are the proximity of noise-sensitive receptors and fire hazard areas. Segment One would extend through an existing agricultural area which is void of any noise-sensitive receptors. However, Segment Three would pass within 100 feet of two residences at the intersection of 12th Street and Reservoir Avenue. Although impacts under this alternative would be less than significant, the closer proximity of the Alternative Subtransmission Source Line Route to two additional residences would cause a greater impact from noise compared to the Proposed Project. However, noise impacts would remain less than significant because operation of the subtransmission lines can be predicted to generate less than 33.5 dBA audible noise based on studies conducted by EPRI (see Table 4.12-4, Transmission Line Voltage and Audible Noise Level) (CPUC 2009).

When compared to the Proposed Project, the Alternative Subtransmission Source Line Route crosses fewer moderate fire hazard areas than the Proposed Subtransmission Source Line Route. The impacts with respect to hazards and hazardous materials would be less than those for the Proposed Subtransmission Source Line Route.

Environmental Impacts

As described in Chapter 4, Environmental Impact Assessment, with implementation of Applicant-Proposed Measures (APMs), the Proposed Project would have a significant impact to agriculture and forestry resources and air quality. All other impacts can be reduced to less than significant levels. The use of the Alternative Substation Site and the Alternative Subtransmission Source Line Route would not avoid the significant environmental impacts related to agriculture and forestry resources and air quality associated with the Proposed Project.

The Alternative Substation Site like the Proposed Substation Site consists entirely of Prime Farmland, however the Alternative Substation Site is currently being used for agricultural activities. The Alternative Substation Site would not affect any Williamson Act lands, as the Alternative Substation Site is located on land that has inactive status. However, the Alternative Substation Site (6.0-acres) is slightly larger than the Proposed Substation Site (5.4-acres) and would therefore convert additional farmland to non-agricultural use as compared to the Proposed Project. About 0.6-acre of additional land designated as Prime Farmland would be permanently converted to non-agricultural use under this alternative. As a result, the impacts with respect to agriculture would be greater than those for the Proposed Substation Site. Impacts would remain significant and unavoidable.

The Alternative Subtransmission Source Line Route would also cross Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland, but would not cross any Williamson Act lands. The Alternative Route is approximately 0.1 miles longer than the Proposed Route and would likely include more source line poles, which would disturb a small amount of additional farmland as compared to the Proposed Project. Impacts would remain significant and unavoidable.

Air Quality impacts would be similar to the Proposed Project because the Alternative Substation Site and Alternative Subtransmission Source Line Route are located nearby, in an area under the jurisdiction of the South Coast Air Quality Management District (SCAQMD) and would be subject to the same regulations. Construction and operation activities and associated air pollutant emissions are expected to similar in scope to that of the Proposed Project. The route difference between the Proposed Subtransmission Source Line Route and the Alternative Subtransmission Source Line Route would not result in any significant impacts to sensitive receptors along the route for either the construction or operation phases of the project.

Table 5.1 Comparison of Alternatives

Resource Area	Proposed Project	Alternative Substation Site	Alternative Subtransmission Source Line Route
	Impact Level		
Aesthetics	Less than significant impact after mitigation (from close range view of substation)	Similar to the Proposed Project	Route is longer than the Proposed Project (resulting in an overall larger area crossed by the project's facilities and thus larger visual footprint), but still less than significant.
Agriculture and Forestry Resources	Significant and Unavoidable	More than the Proposed Project, (slightly more agricultural land lost), remains significant and unavoidable.	More than the Proposed Project, (slightly more agricultural land lost), remains significant and unavoidable.
Air Quality	Significant air quality impact during construction	Similar to the Proposed Project	Similar to the Proposed Project
Biological Resources	Less than significant impact to special status species after mitigation	Similar to the Proposed Project	Similar to the Proposed Project
Cultural Resources	Less than significant	Similar to the Proposed Project	Similar to the Proposed Project
Geology and Soils	Less than significant	Similar to the Proposed Project	Similar to the Proposed Project
Greenhouse Gas Emissions	Less than significant	Similar to the Proposed Project	Similar to the Proposed Project
Hazards and Hazardous Materials	Less than significant	Same as Proposed Project	Less than the Proposed Project (crosses fewer moderate fire

Resource Area	Proposed Project	Alternative Substation Site	Alternative Subtransmission Source Line Route
	Impact Level		
			hazard areas), but still less than significant.
Hydrology and Water Quality	Less than significant	Same as Proposed Project	Same as Proposed Project
Land Use and Planning	No impact	Same as Proposed Project	Same as Proposed Project
Mineral Resources	Less than Significant	Similar to the Proposed Project	Similar to the Proposed Project
Noise	Less than Significant	More than the Proposed Project (located within 100 feet of an additional noise-sensitive receptor) but still less than significant.	More than the Proposed Project (located within 100 feet of two additional residences), but still less than significant.
Population and Housing	Less than Significant	Same as Proposed Project	Same as Proposed Project
Public Services	Less than Significant	Similar to the Proposed Project	Similar to the Proposed Project
Recreation	No Impact	Similar to the Proposed Project	Similar to the Proposed Project
Transportation and Traffic	Less than Significant	Similar to the Proposed Project	Similar to the Proposed Project
Utilities and Service Systems	Less than Significant	Similar to the Proposed Project	Similar to the Proposed Project

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6.0 OTHER CEQA CONSIDERATIONS

6.1 Cumulative Impacts

The California Environmental Quality Act (CEQA) requires lead agencies to consider the cumulative impacts of proposals under their review. Section 15355 of the CEQA Guidelines defines cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." A cumulative impact "consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts" (Section 15130(a)(1)). The cumulative impacts analysis "would examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects" (Section 15130(b)(3)).

Section 15130(a)(3) also states that an environmental document may determine that a Proposed Project's contribution to a significant cumulative impact would be rendered less than cumulatively considerable, and thus not significant, if a project is required to implement or fund its fair share of mitigation measure(s) designed to alleviate the cumulative impact.

In conducting a cumulative impacts analysis, impacts are referenced to the temporal span and spatial areas in which the Proposed Project would cause impacts. Additionally, a discussion of cumulative impacts must include either: (1) a list of past, present, and reasonably foreseeable future projects, including, if necessary, those outside the lead agency's control; or (2) a summary of projections contained in an adopted general plan or related planning document, or in a prior certified EIR, which described or evaluated regional or area-wide conditions contributing to the cumulative impact, provided that such documents are referenced and made available for public inspection at a specified location (Section 15130(b)(1)). "Probable future project" includes approved projects that have not yet been constructed; projects that are currently under construction; projects requiring an agency approval for an application that has been received at the time a Notice of Preparation is released; and projects that have been budgeted, planned, or included as a later phase of a previously approved project (Section 15130(b)(1)(B)(2)).

The cumulative impact analysis for the Proposed Project included a review of past, present, and reasonably foreseeable future projects within the project vicinity[1]. A polygon feature was generated that encompasses the Proposed Substation, Subtransmission Source Line Route, and their alternatives, as these would involve entirely new facilities in the landscape. A one-mile buffer zone from these project features was used to compile a list of related projects. The Proposed Telecommunications Facilities are not expected to contribute significantly to the project's cumulative impact analysis, as they would be co-located on existing and proposed subtransmission line poles and a small portion would be placed underground near the substation (see Figure 3.4 Proposed Telecommunications Route). Therefore, the new telecommunications facilities to be placed on the existing subtransmission line poles were not included in the polygon zone and study area that were used to generate the related projects list. The Projects that fall within the study area are shown on Figure 6.1,

[1] There are no other SCE projects over 50-kV planned within the above-referenced study area.

Cumulative Projects in the Vicinity of the Proposed Project[2], and are listed in Table 6.1, Cumulative Projects in the Vicinity of the Proposed Project.

Table 6.1 Cumulative Projects in the Vicinity of the Proposed Project

Project Number	Type of Project	Status	Year
TR32764	SUBDIVIDE 6.74 AC LOT INTO 12 SF RES LOTS	APPROVED	2006
TR33020	SUBDIVIDE 5 GROSS ACRES INTO 8-1/2 ACRES SFR LOTS	APPROVED	2005
TR33180	SUBDIVIDE 5.11 AC INTO 8 1/2 ACRE MIN LOT + ACCESS	APPROVED	2007
TR33427	SCHEDULE A SUBDIVISION: 291 SFR LOTS; 24 OS LOTS AND ESTABLISH A 3 PHASE MAP WHERE PHASE 1 HAS 131 RESIDENTIAL LOTS, PHASE 2 HAS 95 RESIDENTIAL LOTS AND THE FINAL PHASE HAS 65 RESIDENTIAL LOTS (WHICH REQUIRED AN OFF-SITE SECONDARY ACCESS ROAD.)	APPROVED	2005
TR35496	SUBDIVIDE 19.54 ACRES INTO 25 LOTS .5 ACRE MIN	APPROVED	2009
TR34910	SUBDIVIDE 18.8ACRES INTO 28 RES LOTS	IN PROCESS	2008
TR33376	104 SF LOTS/2 BASIN ON 64.73+/- ACRES	IN PROCESS	2005
TR333727	SCHEDULE B SUBDIVISION 3.82 ACRES INTO 7 SF LOTS	IN PROCESS	2005
PM31939	SUBDIVIDE 4.18 ACRES INTO 4 PARCELS; LAKEVIEW AVE & NORTH DRIVE	APPROVED	2005
PM32438	SUBDIVIDE 942 ACRES INTO 28 LOTS (SCHEDULE "I"); N/NUEVO RD @ FOOTHILL AVE	APPROVED	2005
PM32872	SUBDIVISION OF A 4.41 AC PARCEL INTO 4 1 AC LOTS; LAKEVIEW AVE / 9TH ST	APPROVED	2006
PM36127	SUBDIVIDE PARCEL INTO 2 ONE ACRE LOTS; N/YUCCA AVE S/LAKEVIEW AVE E/HANSEN AVE W/6TH ST	APPROVED	2009
PM33690	SUBDIVIDE 2.6 LOT INTO 4 PARCELS	DEVELOPMENT REVIEW TEAM	2006

[2] Please note that three of these projects are actually outside of the 1-mile buffer zone (PM 32438, SP00367, and SP00366), but they were included because of their close proximity, substantial size and usefulness in understanding the overall development pattern being proposed in the area.

Project Number	Type of Project	Status	Year
PM35734	DIVIDE 18AC INTO 2 COMMERCIAL PARCELS	PLANNING COMMISSION	2008
PM36031	COMM/INDUS 6 LOTS IN 242 ACRES	APPLIED	2008
PP16922S2	CO-LOCATE ADD 6 PANEL ANTENNA,1 PARABOLIC,4 EQUIP	APPROVED	2009
PP19535	CLASS I KENNEL ON 4.26 ACRES IN R-A ZONE	APPROVED	2007
PP22757	MINOR DEVIATION FROM TEN TR32438: CHANGE EMWD ACCESS ROAD LOCATION ON LOT 15 TO NEW MEANDER BACK ANDFORTH ACROSS LOTS 15 AND 16, TO DELETE THE 10' RETAINING WALL, TO DELETE TWO WATER TANKS ON LOT 15 AND REPLACE WITH ONE 4 MILLION GALLON RESERVOIRAND RELO	APPROVED	2007
PP22958	CLASS 1 KENNEL FOR NINE FAMILY DOGS	APPROVED	2007
PP23096	DISGUISED UNMANNED CELL SITE FACILITY	APPROVED	2009
PP23744	70' DISGUISED MONOPALM ANTENNA W/EQUP 20X40LEASED	APPROVED	2009
SP00342	LAKEVIEW SP/GENERAL PLAN AMENDMENT FOR 11,350 RESIDENTIAL, 60 ACRES MIXED-USE, 15 ACRES RETAIL, 110 ACRES LIGHT INDUSTRIAL, 35 ACRES SCHOOL, 45 ACRES PUBLIC FACILITY, 90 ACRES PARK, 1100 ACRE OPEN SPACE, 275 ACRES ROW	APPLIED	2004
SP00367	MDR/MHDR/HDR/OS-R/OS-C	APPLIED	2006
SP00366	SP FOR 636.9 AC/MDR/MHDR/GARDEN COUTS/ HDR-TRIPLEX/	APPLIED	2006
SP00348	RIVERPARK SP TOTALING 1447.69 AC	APPLIED	2005

Sources:
County of Riverside. 2010. *Major Projects In Process*. [online] http://www.tlma.co.riverside.ca.us /planning/ County of Riverside, Planning Department GIS Database Search, March 2010.
"Development Review Team" indicates the project is currently under review by the applicable county agencies

The following sections discuss the cumulative impacts of each environmental resource category.

Aesthetics. The effect to aesthetic resources resulting from construction and operation of the Proposed Project would represent an incremental change to the area's visual character. However, when considered in conjunction with other potential development projects that are slated for the area in the immediate vicinity of the Proposed Project, it is

evident that the visual character of the project area would change over time if the Proposed Project and all other potential development projects are implemented. The Proposed Project area's existing visual character, typified by features associated with rural residential and agricultural land uses, would be transformed into large scale residential communities following design guidelines that promote a different aesthetic character than what exists today.

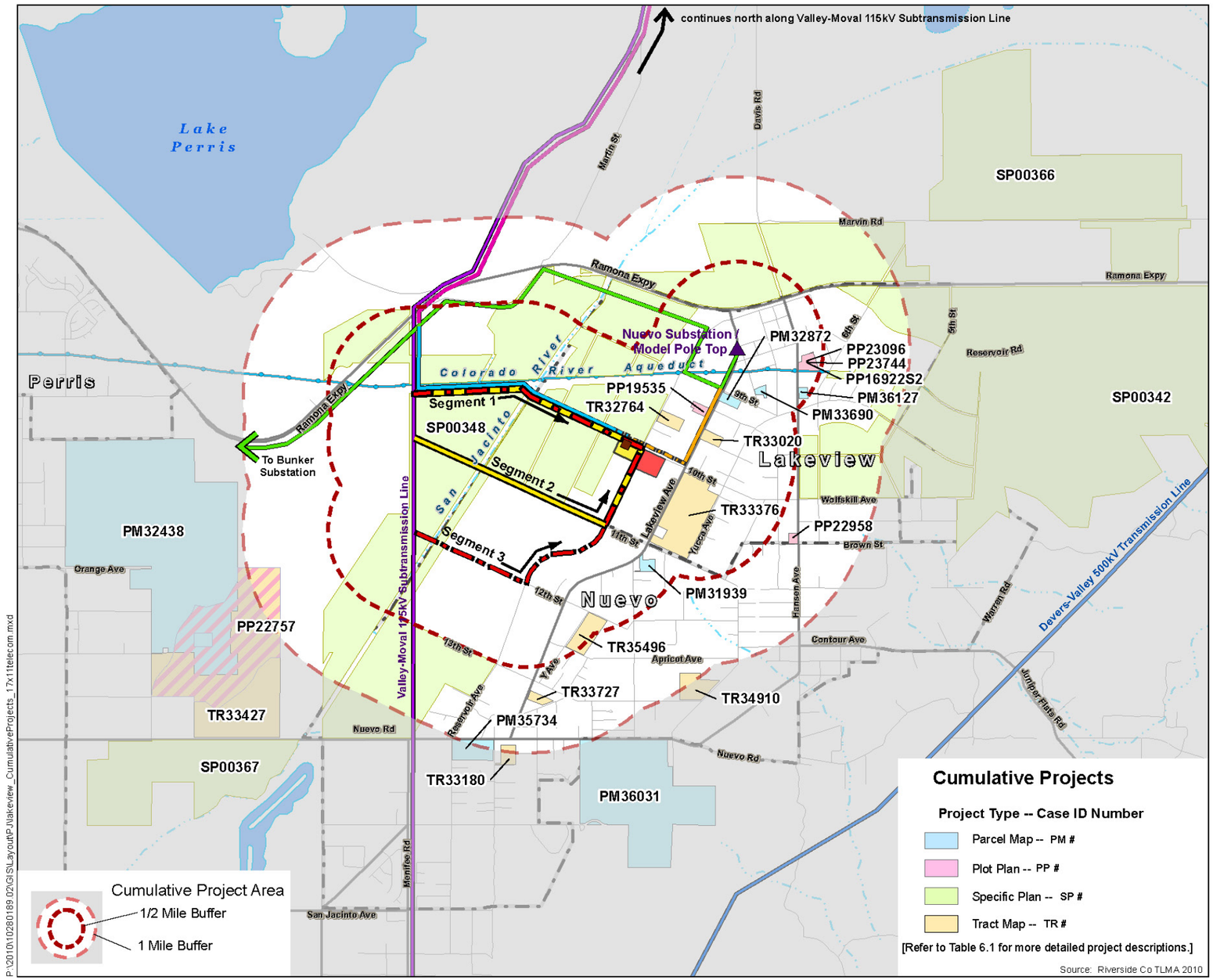
In this future scenario, the Proposed Project would not be a dominant visual feature in this landscape, rather it would blend into the new urban development pattern being planned by the County of Riverside for this area. It would be subjective to say that transformation of this agricultural area into a master planned residential community would create an "adverse" visual impact. The degree of change to the existing visual environment would be dramatic, but the overall effect of a well designed residential neighborhood following Lakeview/Nuevo Area Plan Design Guidelines could be visually pleasing to some viewers. Therefore, the cumulative visual impact associated with the Proposed Project and related cumulative projects is considered less than significant.

Agriculture and Forestry Resources. The Proposed Project would cross lands designated as Prime Farmland, Unique Farmland, Farmland of Statewide Importance, and Farmland of Local Importance. There is currently no forest land located within the Proposed Project Area. The Proposed Project would permanently convert approximately 13.5 acres of these types of farmland to nonagricultural use for the construction of the substation, access roads, subtransmission source line poles, and other project features.[3] As described in Section 4.2.4, Agriculture and Forestry Resources Impact Analysis, the conversion of 10-acres of state-designated farmland to non-agricultural use would be a significant and unavoidable impact. The farmland that would be converted to non-agricultural use as a result of the Proposed Project has already been designated for urban development by the County of Riverside General Plan, the impacts of which have been analyzed in the Environmental Impact Report (EIR) prepared for the Riverside County General Plan Update of 2003.

At build-out, implementation of the Riverside County General Plan (2003) would result in a loss or conversion of 86,748 acres of agricultural land within the County; of which 10 acres would be converted as a result of the Proposed Project (Riverside County, 2003b). The County's EIR found that conversion of this agricultural land would result in a significant and unavoidable impact. No mitigation measures were available because the EIR was revised in 2003 acknowledging a contemporary court ruling on another project that found that an agricultural mitigation bank is not a feasible mitigation measure.[4] As a result, the County adopted a Statement of Overriding Considerations for the loss of this agricultural land. The County notes that they have other planning policies in place to support and encourage the conservation of agricultural land and the continuation of agriculture-related uses. However, even with implementation of General Plan policies, the loss of 86,748 acres of farmland remains a significant, unavoidable impact.

[3] Other project features include facilities related to telecommunication including duct banks, pull boxes, and manholes.

[4] Riverside County does not currently have an agricultural mitigation bank. In light of the *Friends of the Kangaroo Rat* decision, Riverside County decided to remove the EIR's proposal of an Agricultural Land Mitigation Bank because a mitigation measure of this nature does not actually avoid or reduce the loss of farmland subject to development. An Agricultural Land Mitigation Bank is not a valid form of mitigation for farmland conversion impacts. Riverside County 2003. Agricultural Mitigation Bank Memo. Available: http://www.rcip.org/Documents/Agricultural_Mitigation_Bank_Memo.pdf.



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Lakeview Substation Project

Figure 6.1
Cumulative Projects in the Vicinity of the Proposed Project

Project Features

- Proposed Subtransmission Source Line Route (Segments 1 and 2)
- Alternative Subtransmission Source Line Route (Segments 1 and 3)
- Shared Proposed and Alternative Subtransmission Alignments
- Proposed Substation Site
- Alternative Substation Site

Proposed Fiber Optic Cable Routes

Overhead	Underground
	Proposed Segment 1
	Proposed Segment 2
	Proposed Segment 3

- Pull box

Existing Features

- Fiber Optic Cable
- Substation
- Subtransmission Line
- Transmission Line
- Cities/Communities

Sources: NavTeq, SCE, AECOM 2010

0 0.5 1 1.5 Miles



5/27/2010

Air Quality. Operation of the Proposed Project would have a less-than-significant impact to air quality. During operation of the Proposed Project, emissions would be limited to those produced from vehicles during site visits that would occur approximately three to four times per month. These intermittent visits would not contribute significantly to cumulative air quality impacts during operation of the Proposed Project. Construction of the Proposed Project by itself may cause significant net increases in NOx, and PM_{10} emissions. Therefore, construction of the Proposed Project along with other projects included in the cumulative impact analysis (refer to Table 6.1) that would be under construction or in operation at the same time as the Proposed Project is under construction may result in cumulatively considerable net increases in NOx, and PM_{10} emissions. Compliance with California Code of Regulations, Title 13, Section 2423 and Rule 403 which would reduce impacts, but the cumulative impact from these emissions is expected to remain significant.

Biological Resources. Construction and operation of the proposed project would result in less than significant impacts to biological resources within the project impact area. Several federally and state listed species occur in or near the proposed project; in addition, the majority of the proposed project occurs within criteria cells established by the Western Riverside Multi-Species Habitat Conservation Plan. Criteria cells are areas identified as having significant biological importance. Biological surveys identified the presence of two federally listed plant species within the project boundaries. The proposed project would not impact any listed species or native habitat found in the region; the project area is dominated by agriculture that is currently being cultivated. By implementation of avoidance measures and the presence of biological monitors during construction, results to federal and state listed species the cumulative impacts would be less than significant.

Cultural Resources. Construction and operation of the Proposed Project would result in less than significant impacts to cultural resources within the project impact area. The Proposed Substation Site (as well as the proposed Subtransmission Source Line Route and Fiber Optic Cable Routes) are underlain by Pleistocene alluvial sediments with high potential to contain paleontological resources. Thus, ground disturbing activities throughout almost the entire project have the potential to impact paleontological resources. Monitoring of excavation into rock units having high potential to contain significant nonrenewable paleontological resources would be recommended as a mitigation measure and first step to avoid or reduce impacts to less than significant levels. The cumulative impacts to Cultural Resources would be less than significant.

Geology and Soils. Most of the impacts to geology and soils associated with the Proposed Project are site-specific geological hazards. When considering the effects that could be cumulatively considerable, such as the loss of topsoil, the potential impacts would be minimized by existing laws, regulations, and ordinances that require projects to obtain grading permits and implementation of Storm Water Pollution Prevention Plans (SWPPPs). The cumulative impacts to geology and soils would be less than significant.

Greenhouse Gas Emissions. Construction and operation of the Proposed Project would not result in significant impacts from greenhouse gas (GHG) emissions. As discussed in Section 4.7, Greenhouse Gas Emissions, the total of amortized construction emissions and annual operational GHG emissions associated with the Proposed Project would be 77 metric tons carbon dioxide-equivalent (CO_2e) per year. This estimate is less than one percent of the 10,000 metric ton per year threshold that has been adopted by the South

Coast Air Quality Management District (SCAQMD) and only about one percent of the California Air Resources Board's 7,000 metric ton per year draft threshold. Although operation of the other projects in the cumulative impact analysis may result in an increase in GHG emissions, the Proposed Project's contribution to cumulative impacts would not be considerable, since the Proposed Project's GHG emissions would be much less than the SCAQMD's significance threshold. Cumulative impacts from GHG emissions would be less than significant.

Hazards and Hazardous Waste. Construction and operation of the Proposed Project would not result in significant impacts to hazards or hazardous materials. In the long term, the developments evaluated in the cumulative impact analysis would decrease wildfire hazards by removing high fire fuel. None of the developments in the cumulative impact analysis would contribute to the cumulative impacts of hazardous materials. Impacts would be less than significant.

Hydrology and Water Quality. Construction and operation of the Proposed Project would not result in significant impacts to hydrology and water quality. Evaluation of the Proposed Project components in a cumulative impact analysis found that the Proposed Project would not substantially interfere with existing drainage patterns, nor create additional runoff stormwater. Additionally, implementation of project-specific grading permit(s) and SWPPP would protect water quality. The cumulative impacts to hydrology and water quality would be less than significant.

Land Use and Planning. Construction and operation of the Proposed Project would not result in significant impacts to land use and planning. Projects listed in the cumulative impact analysis would be permitted through local agencies and any cumulative impacts to land use and planning would be evaluated and addressed by the local agencies during each project's CEQA process. Cumulative impacts to land use and planning would be less than significant.

Mineral Resources. Construction and operation of the Proposed Project would not result in significant impacts to mineral resources. Other developments planned in the area are occurring on previously disturbed land and are not anticipated to significantly affect the exploration or extraction of mineral resources. Cumulative impacts to mineral resources would be less than significant.

Noise. Construction and operation of the Proposed Project would not result in significant impacts to noise. Other planned developments that are part of the cumulative impact analysis may also generate noise during construction; however, the noise generated by the Proposed Project would occur intermittently over 12 months. The Proposed Project's contribution to the cumulative construction noise impact would not be significant. Operation of the other projects in the cumulative impact analysis may result in an increase in ambient noise due to the increased traffic from the developments. However, the noise due to the operation of the Proposed Project is less than significant, and the Proposed Project's contribution to cumulative noise during operation would be less than significant.

Population and Housing. Construction and operation of the Proposed Project would not result in significant impacts to population and housing. Any significant impacts to population and housing due to the construction and operation of the other projects in the cumulative impact analysis would be addressed by the local agencies during each

project's CEQA process. The Proposed Project would not have a cumulatively considerable effect to population and housing.

Public Services. Construction and operation of the Proposed Project would not result in significant impacts to public services. Any significant impact to public services due to the construction and operation of the other projects in the cumulative impact analysis would be addressed by the local agencies during each project's CEQA process. The Proposed Project would not have a cumulatively considerable effect to public services.

Recreation. Construction and operation of the Proposed Project would not result in significant impacts to recreation. Any significant impacts to recreation due to the construction and operation of the other projects in the cumulative impact analysis would be addressed by the local agencies during each project's CEQA process. The Proposed Project would not have a cumulatively considerable effect to recreation.

Transportation. Construction and operation of the Proposed Project would not result in significant impacts to transportation. The other developments that are part of the cumulative impact analysis would generate traffic during construction (or road/lane closures) similar to the Proposed Project, but the traffic generated during construction activities would occur for a short period of time (approximately 12 months), and would not be cumulatively considerable. Operation of the other projects in the cumulative impact analysis may result in an increase in traffic from the developments, but the traffic associated with the operation of the Proposed Project would be less than significant; therefore, the Proposed Project's contribution to cumulative impacts during operation would not be considerable. Cumulative impacts to transportation would be less than significant.

Utilities and Service Systems. Construction and operation of the Proposed Project would not result in significant impacts to utilities and service systems. Any significant impacts to utilities and service systems due to the construction and operation of the other projects in the cumulative impact analysis would be addressed by the local agencies during each project's CEQA process. The Proposed Project would not have a cumulatively considerable effect to utilities and service systems.

6.2 Growth Inducing Impacts

Section 15126.2(d) of the CEQA Guidelines states that environmental documents should "...discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly in the surrounding environment..."

A project could be considered to have growth inducing effects if it:

- Either directly or indirectly fosters economic or population growth or the construction of additional housing in the surrounding area
- Removes obstacles to population growth
- Requires the construction of new community facilities that could cause significant environmental effects; or

- Encourages and facilitates other activities that could significantly affect the environment, either individually or cumulatively

Would the project either directly or indirectly foster economic or population growth or the construction of additional housing in the surrounding area?

The Proposed Project could be considered growth-inducing if growth resulted from direct and indirect employment needed to construct, operate, and maintain the Proposed Project, and/or if growth resulted from the additional electrical power that would be transmitted by the Proposed Project. As discussed in Chapter 3, Project Description, the construction and operation of the Proposed Project would not substantially affect employment in the area. SCE anticipates that SCE personnel or contract workers would construct the Proposed Project and, in general, would be drawn from the local labor pool. If contract workers were employed, they would not cause growth in the area due to the short-term and temporary nature of their employment. The Proposed Project would be unattended; while it would require occasional routine maintenance and emergency repair, it would not require dedicated, full-time personnel.

The Proposed Project has been developed based upon a demonstrated need for electrical system reliability and serves projected electrical demand in the developing areas of Nuevo, Lakeview, and adjacent areas in unincorporated western Riverside County. The Proposed Project is not designed to facilitate growth in the community, either directly or indirectly. It would accommodate growth in the area that is planned or approved by local land use authorities, but it would not by itself induce growth.

Would the project remove obstacles to population growth?

Obstacles to population growth in the region served by the Proposed Project are primarily due to feasibility of development, economic constraints, permitting, and other development restrictions and regulations administered by local agencies. The Proposed Project would not affect the feasibility of developing in the area, remove an obstacle to growth, or affect development restrictions administered by local agencies.

Would the project require the construction of new community facilities that could cause significant environmental effects?

The Proposed Project does not require the creation of any community facilities. However, the Proposed Project involves the construction of new access roads along 10th Street and 11th Street for the construction and maintenance of the subtransmission facilities. The new access roads would not extend public services to an area presently not served by electricity. The Proposed Project is designed to respond to existing growth and demand trends.

Would the project encourage or facilitate other activities that could significantly affect the environment, either individually or cumulatively?

The demand for electricity is a result of, not a precursor to, development in the region. Although the Proposed Project would increase the reliability with which electricity is made available, the objective of the Proposed Project is not to provide a new source of electricity.

6.3 Significant Environmental Effects of the Proposed Project

The CEQA Guidelines (Section 15126.2) requires a discussion of the overall significance of the environmental effects of the project. This discussion is to distinguish between the direct and indirect effects of a project, and the short-term/long-term effects of a project. These potential significant environmental effects are summarized in Table 6.2, Potential Significant Environmental Effects. With the implementation of Applicant-Proposed Measures (APMs), the majority of the potential significant environmental effects associated with the Proposed Project would be reduced less than significant levels. However, impacts to Agriculture and Forest Resources and Air Quality would remain significant and unavoidable.

Table 6.2 Potential Significant Environmental Effects

Resource	Description	Direct/Indirect	Short term/Long term
Aesthetic Resources			
Significant change to visual landscape, as seen from 10th Street and Reservoir Avenues	Significant adverse visual impact on viewers close to Proposed Substation Site (i.e., viewers traveling along 10th Street and Reservoir Avenue).	Direct	Short term: impact would be less than significant with implementation of APM Aesthetics 1. Long term: Localized visual impact of substation facilities may be further reduced if planned residential developments are built around the substation (e.g., Riverside Park Specific Plan).
Agriculture and Forestry Resources			
State-Designated Farmland	SCE would convert 10-acres of State-Designated Farmland to non-agricultural use.	Direct	Long term: Riverside County adopted a Statement of Overriding Considerations for the loss of this agricultural land.[5]
Air Quality			
Regional Air Quality	During construction, NOx, and PM_{10}, would exceed corresponding SCAQMD mass daily significance thresholds.	Direct	Short term: SCE would comply with California Code of Regulations, Title 13, Section 2423 and Rule 403 during construction to help reduce emissions.

[5] County of Riverside. 2003. Transportation and Land Management Agency. Agricultural Mitigation Bank Memo. Available: http://www.rcip.org/Documents/Agricultural_Mitigation_Bank_Memo.pdf Accessed March 2010.

Resource	Description	Direct/Indirect	Short term/Long term
SCAB nonattainment for ozone, PM_{10} and $PM_{2.5}$	Construction activities would result in a cumulatively considerable net increase in NOx and PM_{10} emissions.	Direct	Short term: SCE would implement comply with California Code of Regulations, Title 13, Section 2423 and Rule 403during construction to help reduce emissions.
Biological Resources			
Nesting Birds/Raptors	The Proposed Project site provides potentially suitable habitat for nesting birds/raptors. Construction-related impacts could result in disruption of nesting activity or destruction of active nests.	Direct	Short-term: SCE would implement APM Bio 1 during construction to avoid active nesting sites.
Special Status Wildlife	Construction activities would impact special status wildlife known to occur in the project vicinity.	Direct	Short-term: SCE would implement avoidance measures described in APM Bio 2 to minimize impacts on special status wildlife.
Stephen's Kangaroo Rat	The Proposed Project provides suitable habitat for Stephen's Kangaroo Rat, a federally endangered and state threatened species.	Direct	Short-term: SCE would conduct a habitat assessment as described in APM Bio 3.
Riverside Fairy Shrimp	Populations of Fairy Shrimp are known to occur in the project area.	Direct	Short-term: SCE would implement avoidance measures in the final project design as described in APM Bio 4 to minimize impacts on Riverside Fairy Shrimp.
Burrowing Owl	Construction activities would impact active burrows.	Direct	Short-term: To protect an active burrow, SCE would implement construction restrictions described in APM Bio 5.
Native or Special Status Vegetation and Special Status Plant Populations	The Proposed project contains suitable habitat for native vegetation types, those that may support special status species, and known populations of Special Status Plants.	Direct	Short-term: SCE would avoid populations of Special Status Plants to the extent feasible, as described in APM Bio 6.

Resource	Description	Direct/Indirect	Short term/Long term
San Jacinto Crownscale Populations	Construction activities would impact known populations of San Jacinto crownscale.	Direct	Short-Term: SCE would develop construction measures to avoid potential impacts to known populations of San Jacinto Valley crownscale populations, as described in APM Bio 7.
Cultural Resources			
Potential impact to Paleontological Resources	The Proposed Project is underlain by Pleistocene alluvial sediments with high potential to contain paleontological resources. Thus, ground disturbing activities throughout almost the entire project have the potential to impact paleontological resources.	Direct	Short-term: impact would be less than significant with implementation of APM PA-1.

6.4 Mandatory Findings of Significance

The Mandatory Findings of Significance are as follows:

Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

As presented in Chapter 4, Environmental Impact Assessment, construction and operation of the Proposed Project would not degrade the quality of the environment. The effects to biological resources are discussed in Section 4.4.5, Biological Resources Impact Analysis. Construction and operation of the Proposed Project would not substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal. The effects to cultural resources resulting from construction and operation of the Proposed Project are discussed in Section 4.5.5, Cultural Resources Impact Analysis Construction of the Proposed Project may affect paleontological resources, but would not eliminate the important examples of any major periods of California history or prehistory.

Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

As discussed in Section 6.1, Cumulative Impacts, agriculture and forestry resources and air quality resources could be affected by cumulative impacts.

Agriculture and Forestry Resources. The Proposed Project would cross lands designated as Prime Farmland, Unique Farmland, Farmland of Statewide Importance, and Farmland of Local Importance. There is currently no forest land located within the Proposed Project Area. The Proposed Project would permanently convert approximately 13.5 acres of these types of farmland to nonagricultural use for the construction of the substation, access roads, subtransmission source line poles, and other project features.[6] As described in Section 4.2.4, Agriculture and Forestry Resources Impact Analysis, the conversion of 10-acres of state-designated farmland to non-agricultural use would be a significant and unavoidable impact. The farmland that would be converted to non-agricultural use as a result of the Proposed Project has already been designated for urban development by the County of Riverside General Plan, the impacts of which have been analyzed in the Environmental Impact Report (EIR) prepared for the Riverside County General Plan Update of 2003.

At build-out, implementation of the Riverside County General Plan (2003) would result in a loss or conversion of 86,748 acres of agricultural land within the County; of which 10 acres would be converted as a result of the Proposed Project. The County's EIR found that conversion of this agricultural land would result in a significant and unavoidable impact. The EIR General Plan was revised in 2003 acknowledging a contemporary court ruling on another project that found that an agricultural mitigation bank is not a feasible mitigation measure. As a result, the County adopted a Statement of Overriding Considerations for the loss of this agricultural land and no feasible mitigation measures were made available. The County notes that they have other planning policies in place to support and encourage the conservation of agricultural land and the continuation of agriculture-related uses. However, even with implementation of General Plan policies, the loss of 86,748 acres of farmland remains a significant, unavoidable impact.

Air Quality. Operation of the Proposed Project would have a less-than-significant impact to air quality. During operation of the Proposed Project, emissions would be limited to those produced from vehicles during site visits that would occur approximately three to four times per month. These intermittent visits would not contribute significantly to cumulative air quality impacts during operation of the Proposed Project. Construction of the Proposed Project by itself may cause significant net increases in NOx, and PM_{10} emissions. Therefore, construction of the Proposed Project along with other projects included in the cumulative impact analysis (refer to Table 6.1) that would be under construction or in operation at the same time as the Proposed Project is under construction may result in cumulatively considerable net increases in NOx, and PM_{10} emissions. Compliance with California Code of Regulations, Title 13, Section 2423 and Rule 403 would reduce VOC, NOx, PM_{10} and $PM_{2.5}$ construction emissions, but the cumulative impact from these emissions is expected to remain significant.

[6] Other project features include facilities related to telecommunication including duct banks, pull boxes, and manholes.

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

Construction and operation of the Proposed Project would not cause substantial adverse effects on human beings. On the contrary, access to a reliable source of electricity would directly enhance the lives of human beings by supporting the wide range of individual lifestyles that depend upon the predictability of electrical service, and indirectly, by providing the region with reliable electrical service to allow local decision makers flexibility as to what types of development could occur in the region.

Riverside County Integrated Project



EXISTING SETTING REPORT

by LSA Associates, Inc.

Revised March 2000

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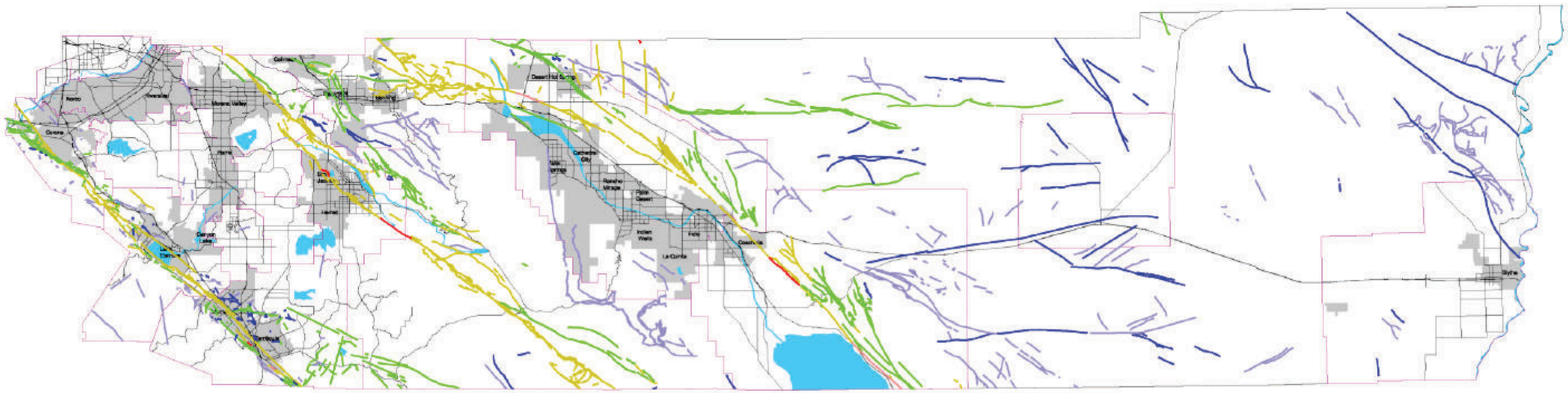
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Faults Activity

- Historic
- Historic (Creep)
- Holocene
- Late Quaternary
- Quaternary
- Pre-Quaternary

- Major Roads & Highways
- Area Plan Boundaries
- Cities

Figure5.2.1

Source: EarthConsultantsInternational.

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MAPPED FAULTING IN RIVERSIDE COUNTY

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The strength of seismic ground shaking at any given site is a function of many factors. Of primary importance are the size of the earthquake, its distance, the paths the waves take as they travel through the earth, the rock or soils underlying the site, and topography (particularly whether a site sits in a valley, or atop a hill). The amount of damage also depends on the size, shape, age, and engineering characteristics of the affected structures.

Table 5.2.A - Abridged Modified Mercalli Intensity Scale And Relation to Other Parameters

Intensity Value and Description		Average peak Velocity (centimeters per second)	Average peak acceleration (g is gravity = 9.80 meters per second squared)
I.	Not felt except by a very few under especially favorable circumstances (I Rossi-Forel)		
II.	Felt only by a few persons at rest, especially on upper floors of high-rise buildings. Delicately suspended objects may swing. (I to II Rossi-Forel scale)		
III.	Felt quite noticeably indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing automobiles may rock slightly. Vibration like passing of truck. Duration estimated. (III Rossi-Forel scale)		
IV.	During the day felt indoors by many, outdoors by few. At night some awakened. Dishes, windows, doors disturbed; walls make creaking sound. Sensation like a heavy truck striking building. Standing automobiles rocked noticeably. (IV to V Rossi-Forel scale)	1-2	0.015g-0.02g
V.	Felt by nearly everyone, many awakened. Some dishes, windows, and so on broken; cracked plaster in a few places; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop. (V to VI Rossi-Forel scale)	2-5	0.03g-0.04g
VI.	Felt by all, many frightened and run outdoors. Some heavy furniture moved, a few instances of fallen plaster and damaged chimneys. Damage slight. (VI to VII Rossi-Forel scale)	5-8	0.06g-0.07g
VII.	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving cars. (VIII Rossi-Forel scale)	8-12	0.10g-0.15g
VIII.	Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, and walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving cars disturbed. (VIII+ to IX Rossi-Forel scale)	20-30	0.25g-0.30g
IX.	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken. (IX+ Rossi-Forel scale	45-55	0.50g-0.55g
X.	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed, slopped over banks (X Rossi-Forel scale)	More than 60	More than 0.60g
XI.	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.		
XII.	Damage total. Waves seen on ground surface. Lines of sight and level distorted. Objects thrown into air.		

Primary Source: Bolt (1993)

The interaction of ground motion and human-made structures is complex. Governing factors include a structure's height, construction, and stiffness, a soil's strength and resonant period, and the period of high-amplitude seismic waves. Waves come in different lengths and thus repeat their motions with varying frequency. Long waves are called long period or low frequency. Short waves are called short period or high frequency. In general, long period seismic waves, which are characteristic of large earthquakes, are most likely to damage long period structures such as high-rise buildings and bridges. Shorter period seismic waves, which tend to die out quickly, will most often cause damage in nearby earthquakes, and they will damage shorter period structures such as one- and two-story buildings. Very short period waves are most likely to cause non-structural damage, such as to equipment. In different situations, ground displacement, velocity, and acceleration can cause damage.

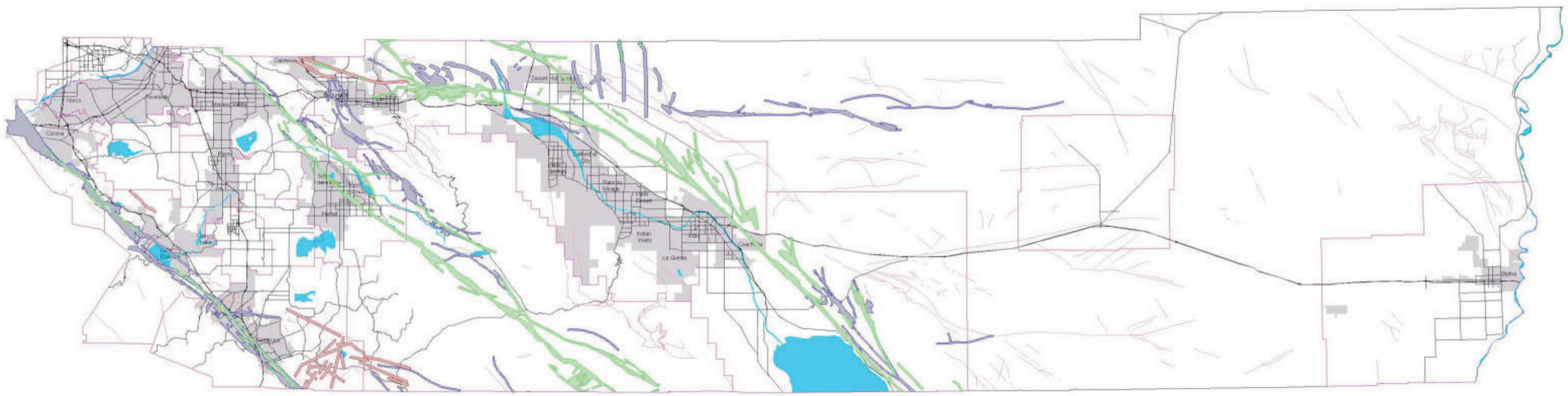
Planning and Design Earthquakes: The largest earthquake expected in an area under the current tectonic environment is termed the ***maximum credible*** (MCE) or characteristic earthquake. A ***maximum probable earthquake*** (MPE) is the earthquake most likely to occur in a specified period of time, such as 30 to 500 years. Generally, the longer the time period (recurrence interval) between earthquakes, the larger the earthquake will be, because there has been time to store more strain energy. The recurrence interval of concern will depend on the planned use, lifetime, or importance of a facility. The more critical the structure, the longer the recurrence interval chosen and the larger the ***design earthquake.***

Geologists, seismologists, engineers, and urban planners typically use maximum credible and maximum probable earthquakes to evaluate the seismic hazard of a region. Buildings and other structures must meet seismic design parameter values. They must withstand a certain peak acceleration, a given duration of strong shaking, or a particular period of seismic waves. When these values are derived from maximum credible earthquakes (MCE), they help to establish safety margins.

Although earthquakes occur often in Southern California, hundreds or thousands of years can elapse between earthquakes on any particularly portion of a fault. Many Southern California faults have not caused earthquakes in historic times, and fewer yet have caused a MCE in historic times. Therefore, estimates of maximum credible and maximum probable earthquakes for a given fault are based on the length of the fault, style of faulting, and other characteristics. Earthquake size often depends on how many segments of a fault give way at one time. The more segments that rupture, the greater the energy release and the bigger the earthquake.

When a fault has not ruptured in historic times, data obtained from trenching excavations across the fault (paleoseismic studies) provide valuable insight into how often the fault ruptures, and how big its earthquakes get.

Fault Activity: The State of California, under the guidelines of the Alquist-Priolo Earthquake Fault Zoning Act (Hart and Bryant, 1997), classifies faults according to the following criteria:



Fault Zones

- Alquist-Priolo Zone
- Existing County Zone
- Recommended Zone
- Faults
- Major Roads & Highways
- Area Plan Boundaries
- Cities

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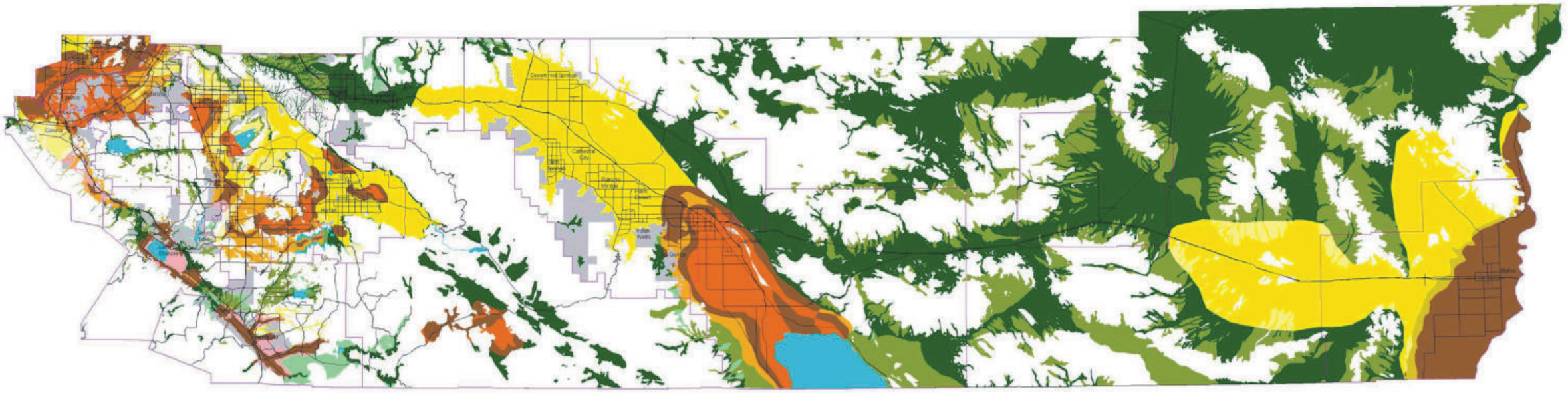
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Source Information: Earth Consultants International

ALQUIST-PRIOLO EARTHQUAKE HAZARD ZONE MAP

Figure 5.2.2

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Liquefaction Susceptibility

Shallow Groundwater
Susceptable Sediments
- Very High
- High
- Moderate
- Low
- Very Low

Deep Groundwater
Susceptable Sediments
- Moderate
- Low
- Very Low

No Groundwater Data
Susceptable Sediments
- Moderate
- Low
- Very Low

- Major Roads & Highways
- Area Plan Boundaries
- Cities

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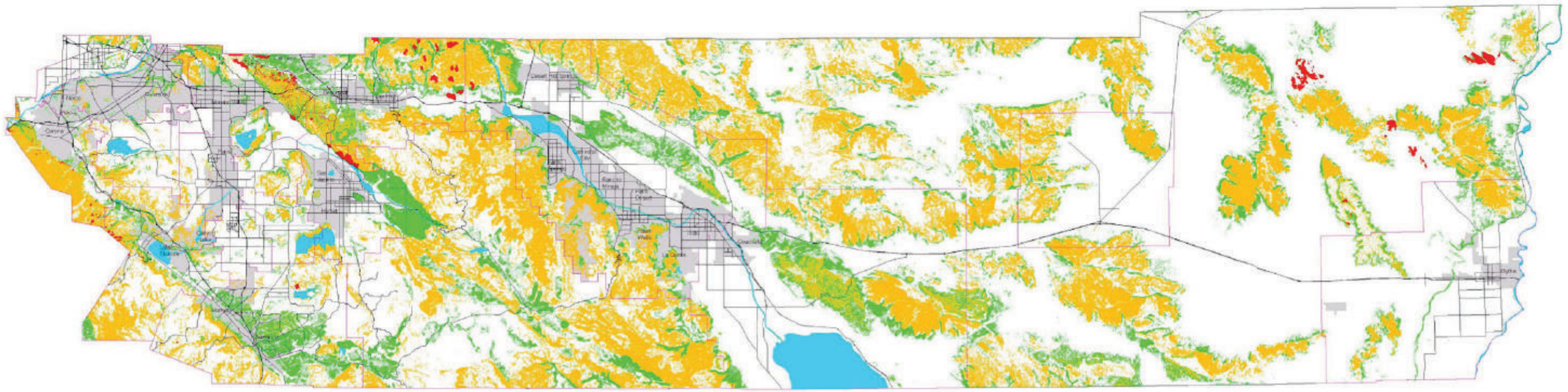
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Figure 5.2.5

Source:EarthConsultantsInternational.

AREAS SUSCEPTIBLE TO LIQUEFACTION

RIVERSIDE COUNTY RCIP INTEGRATED PROJECT



Existing Landslides

High susceptibility to seismically induced landslides and rockfalls.

Low to locally moderate susceptibility to seismically induced landslides and rockfalls.

Major Roads & Highways

Area Plan Boundaries

Cities

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Figure5.2.6

Source:EarthConsultantsInternational.

EARTHQUAKE-INDUCED SLOPE INSTABILITY MAP

2.3.2 Community Plans Adopted as Part of the Riverside County Comprehensive General Plan

The concept of "Community Plans" was developed as part of the Riverside County General Plan to look at the unique aspects of unincorporated communities, as well as to provide a traditional General Plan land use map. Community Plans present policies for preserving, enhancing or developing unincorporated areas in a manner compatible with the values, resources, and aspirations of the community. These plans are developed though citizen input, and are intended to reflect community needs and desires. Community Plan boundaries are identified in Figure 2.4.

2.3.2.1 Jurupa Community Plan

The Jurupa Community Plan area consists of approximately 63 square miles (40,320 acres) in the northeastern corner of Riverside County. The Jurupa Community Plan area, is for the most part, separated from the cities of Riverside, Norco, and Corona by the Santa Ana River located to the east and south. The predominant features of the area are the Jurupa Hills, along the northerly boundary, the Pedley Hills, and the Santa Ana River. The remainder of the Jurupa Community Plan area consists of alluvial plains. Over 80 percent of the area has a natural slope of less than 12 percent.

2.3.2.2 Northside Community Plan

The Northside Community Plan encompasses approximately 3square miles (1,904 acres) of City and County lands generally bounded by I-215 on the east, SR-60 on the south, the Santa Ana River of the west, and San Bernardino County and the City of Colton on the north. Approximately 20 percent of the community plan area lies within San Bernardino County due to that area's strong physical relationship to properties in the City and County of Riverside.

2.3.2.3 Highgrove Community Plan *(Adopted March 28, 2000)*

The Highgrove Community Plan area contains approximately 3.5 square miles (2,250 acres) of unincorporated land on the east side of I-215, located immediately south of the San Bernardino County line. The community plan stretches eastward to the Box Springs Mountains and southward to the Riverside City limits.

The major concerns of Highgrove residents relate to the changing character of the community. A rural community whose economic focus was citrus production, Highgrove is today a community split between residents who want to keep the area the way it has always been, those who have sought to promote Highgrove's potential, and others who recognize that changes will occur in Highgrove, but are concerned about the effect of these changes on their traditional lifestyle.

- Places where surface runoff of water is channeled, such as along roadways and below culverts.

Where one debris flow has occurred, others will inevitably follow. Much of the County of Riverside is underlain by alluvial fans, deposits that have been shed from streams exiting mountain ranges. These fans and stream washes are evidence of many debris flows in the recent geologic record. In the smallest, most common events, the impact to the County is from boulders transported onto roadways and improvements.

Numerous man-made controls have been constructed to reduce the impact of these events on the County. The County operates more than 40 dams, and several hundred miles of levees and storm drains (Riverside County Flood Control and Water Conservation District, 2000).

Without the presence of extensive flood control devices, including large debris catchment basins, the areas downgradient or downstream from unstable slope areas may be subject to catastrophic debris flow inundation.

5.6.6 Expansive Soils

Expansive soils have a significant amount of clay particles, which can give up water (shrink) or take on water (swell). The change in volume exerts stress on buildings and other loads placed on these soils. These soils are often associated with geologic units having marginal stability. The distribution of expansive soils can be widely dispersed, and they can occur in hillside areas as well as low-lying alluvial basins.

Expansion testing and mitigation are required by the current grading and building codes. Active enforcement, peer review and homeowners' involvement are required to maintain these standards.

Although expansive soils are now routinely alleviated through the County Building Code, problems related to past, inadequate codes constantly appear. Expansive soils are not the only cause of structural distress in existing structures. Poor compaction and construction practices, settlement and landslides can cause similar damage, but require different mediation efforts. Once expansion has been verified as the source of the problem, mitigation can be achieved through reinforcement of the existing foundation, or through the excavation and removal of the expansive soils in the affected area.

5.6.7 Collapsible Soils

Hydroconsolidation, or soil collapse, typically occurs in recently deposited, Holocene (less than 10,000 years old) soils that were deposited in an arid or semi-arid environment. Soils prone to collapse are commonly associated with man-made fill, wind-laid sands and silts, and alluvial fan and mudflow sediments deposited during flash floods.

The soils typically contain minute pores and voids. The soil particles may be partially supported by clay or silt, or chemically cemented with carbonates. When saturated, collapsible soils undergo a rearrangement of their grains and the water removes the cohesive (or cementing) material. Rapid, substantial settlement results. An increase in surface water infiltration, such as from irrigation, or a rise in the groundwater table, combined with the weight of a building or structure, can initiate settlement and cause foundations and walls to crack.

In the County of Riverside, collapsible soils occur predominantly at the base of the mountains, where Holocene-age alluvial fan and wash sediments have been deposited during rapid runoff events. In addition, some windblown sands may be vulnerable to collapse and hydroconsolidation. Typically, differential settlement of structures occurs when lawns or plantings are heavily irrigated in close proximity to the structure's foundation. Forensic indications of collapsible soils include the following:

- Tilting floors
- Cracking or separation in the structure.
- Sagging floors.
- Non-functional windows/doors.

5.6.8 Ground Subsidence

Ground subsidence is typically a gradual settling or sinking of the ground surface with little or no horizontal movement, although fissures (cracks and separations) are common. Subsidence can range from small or local collapses to broad regional lowering of the earth's surface. While subsidence typically occurs throughout a susceptible valley, additional displacement and fissures occur at or near the valley margin. Susceptible valleys are predominantly filled with unconsolidated sand, and silty sand that includes thin layers of silt and clayey silt. Fine-grained alluvium and organic matter often underlie the fissure areas (Kupferman, 1995). Two types of fissures associated with subsidence. The first are generally straight and correspond to the traces of faults, while the second are more curvilinear on the surface and appear to correspond to the alluvium-bedrock contact at valley margins.

The causes of subsidence are as diverse as the forms of failure, and include dewatering of peat or organic soils, dissolution in limestone aquifers, first-time wetting of moisture-deficient low-density soils (hydrocompaction), natural compaction, liquefaction, crustal deformation, subterranean mining, and withdrawal of fluids (groundwater, petroleum, geothermal). Most of the damaging levels of subsidence are induced by the extraction of oil, gas or groundwater from below the ground surface, or the organic decomposition of peat deposits, with a resultant loss in volume. Ground subsidence can also occur as a response to natural forces such as earthquake movements, and the evolution of a sedimentary basin as it folds and subsides. Earthquakes can cause abrupt elevation changes of several feet.

Ground subsidence can disrupt surface drainage, reduce aquifer system storage, form earth fissures (cracks and separations), and damage wells, buildings, roads and utility infrastructure. Regional subsidence generally damages structures that are sensitive to slight changes in elevations, such as canals, sewers, and drainages. In the County of Riverside, risk due to regional subsidence is greatest at valley margins.

In Riverside County, subsidence and fissuring have been caused by falling groundwater tables and by hydrocollapse when groundwater tables rise (Shlemon and Hakakian, 1992). In addition, many fissures have occurred along active faults that bound the San Jacinto Valley and Elsinore Trough.

Figure 5.6.5 shows regions of documented subsidence and regions that may be susceptible to subsidence. The latter include all alluvial valley regions. Subsidence has only been documented in three areas:

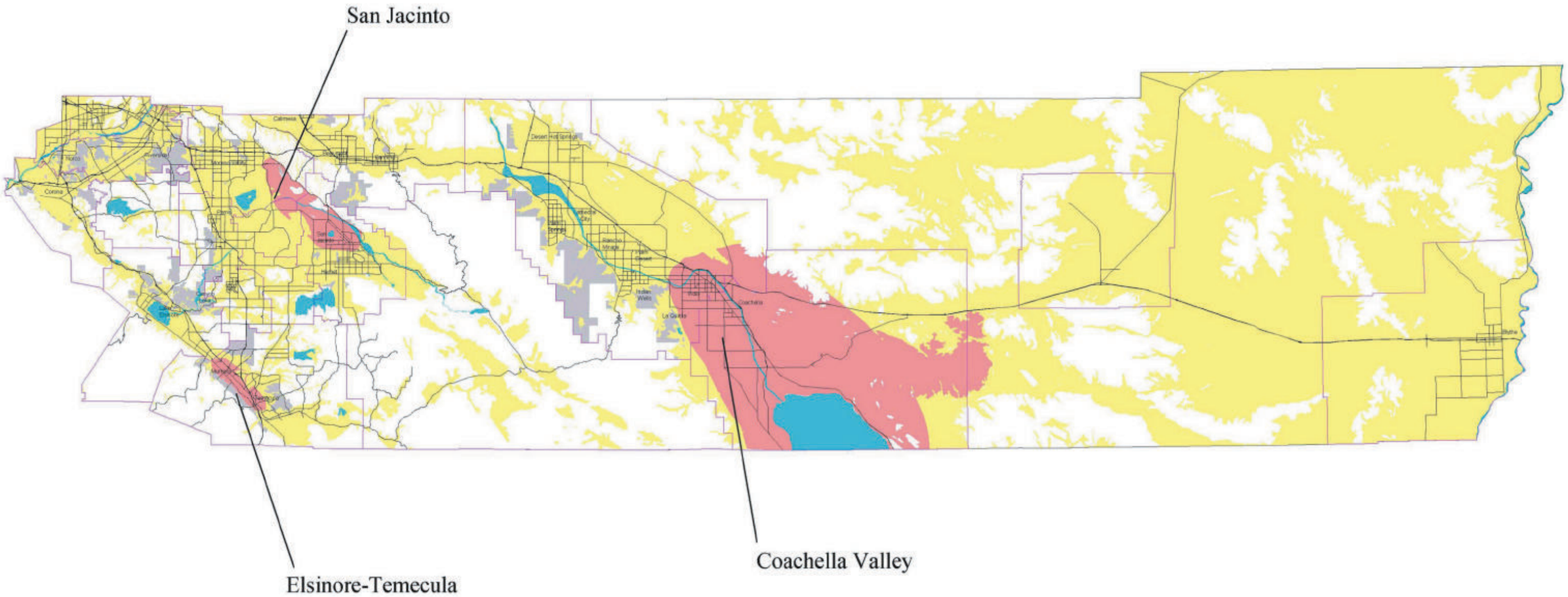
- Elsinore Trough, including Temecula and Murrieta.
- San Jacinto Valley from Hemet to Moreno Valley.
- Southern Coachella Valley.

These areas are all potentially sensitive to the withdrawal of groundwater. Depending on the depth and mechanical properties of the aquifer and the overlying sediments, they can subside if groundwater resources are not managed properly. Mitigation of ground subsidence usually requires a regional approach to groundwater conservation and recharge. Such mitigation measures are difficult to implement if the geology of the aquifer and overlying sediment are not well understood. Furthermore, conservation efforts can be quickly offset by rapid growth and attendant heavy water requirements (golf courses, for example, consume about 8 acre-feet of water per acre per year). Further, it is not uncommon for several jurisdictions to utilize a continuous groundwater aquifer, and then mitigation requires regional cooperation among all agencies.

5.6.8.1 Elsinore Trough

Two separate areas of active subsidence are known in the Elsinore Trough (Shlemon and others, 1995), a broad structural depression called a graben, which has been formed by active faulting in the Elsinore fault system. Subsidence in the two areas, near the communities of Temecula and Murrieta, was caused by different mechanisms.

Temecula: The Temecula fissures first appeared in 1987. Short, parallel ground fissures advanced across 7 miles from Wolf Valley in the south to the Temecula-Murrieta valleys in the north. By 1991, alleged damages to residential and commercial structures exceeded $50 million (Corwin and others, 1981). The Temecula-area fissures occur in northwest-trending valleys informally designated as the Murrieta, Temecula, and Wolf Valley grabens (low areas bounded by faults). In this case, the grabens are approximately one mile wide and bounded by faults of the Elsinore fault system. Studies of the Temecula fissures led to the discovery of two previously



Subsidence Zones

- Areas with Documented Subsidence
- Susceptible Areas
- Stream, River, Canal or Ditch
- Major Roads & Highways
- Area Plan Boundaries
- Cities

Figure 5.6.5

Source: EarthConsultantsInternational.

Scaleisapproximate
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AREAS OF DOCUMENTED OR SUSCEPTIBLE TO SUBSIDENCE

unrecognized active faults, the Wolf Valley and the Murrieta Creek. These two faults primarily control the distribution of the Temecula fissures (Shlemon and Hakakian, 1992). Many hypotheses have been proposed to explain the generation of the Temecula fissures. The two most often preferred are:

1. Accelerated pumping of groundwater caused deep compaction. Tensile stresses (which pull ground apart) concentrated along nearby, graben-bounding faults.

2. A seismic creep (fault movement that does not produce earthquakes) occurred along the Wolf Valley and Murrieta Creek faults.

Groundwater pumping is now the favored hypothesis (Shlemon and Davis, 1992), due to the observation that, in the days and weeks prior to subsidence, several new wells began pumping. Since the cessation of pumping, the fissures have not increased in number or size.

Murrieta: The Murrieta fissures first occurred in 1990, primarily in the "California Oaks" subdivision. About 50 discrete fissure areas have formed in and around the 10,000-home development. In litigation, damages associated with the Murrieta fissures were alleged to exceed $100 million by 1992 (Shlemon and Hakakian, 1992). These fissures are similar in appearance to the Temecula fissures, however, they occur within stream-filled channels. They occur primarily at the transition between bedrock and alluvium (stream deposits). In places, the alluvium thickness locally exceeds 75 feet, and as much as 60 feet of alluvium was left in-place after site grading. These stream sediments were then surcharged with about 10 feet of compacted fill, and residential structures were built over the fill. Subsequent geotechnical studies (Shlemon and Hakakian, 1992) indicate that groundwater levels have risen as much as 50 feet. The rise is attributed to irrigation of a golf course and residential lots.

5.6.8.2 San Jacinto Valley

In the San Jacinto Valley, the groundwater table has declined more than 120 feet (Lofgren, 1976), and has resulted in about three feet of maximum surface subsidence between 1939 and 1959 (Proctor, 1962). It is estimated that most of the subsidence (70 to 80 percent) resulted from groundwater withdrawal, with the remainder from subsidence of the sedimentary basin due to local tectonic forces associated with movement of the San Jacinto fault system (Holzer, 1984).

5.6.8.3 Coachella Valley

The Coachella Valley is filled with more than 10,000 feet of sediments, of which the upper 2,000 feet are water-bearing deposits. The most important source of groundwater recharge to the lower Coachella Valley is the Colorado River (Tyley, 1974). Minor sources of recharge include groundwater inflow from adjacent areas, infiltration of

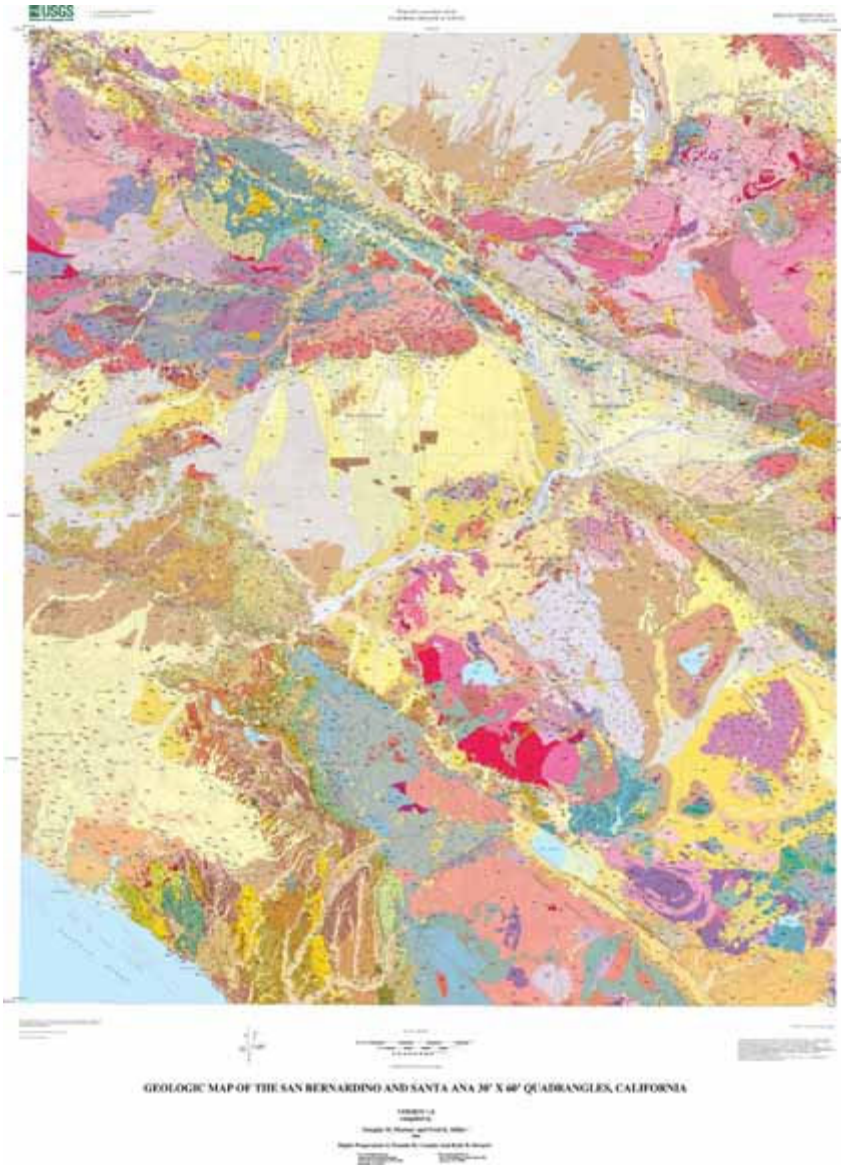
Western Earth Surface Processes

U.S. Geological Survey
Open-File Report 2006-1217
Version 1.0

Geologic Map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California

By Douglas M. Morton and Fred K. Miller
Digital preparation by Pamela M. Cossette and Kelly R. Bovard

2006



The area covered by the combined Santa Ana and San Bernardino 30' x 60' quadrangles includes highly diverse geologic, physical, and climatic features. Topographic relief ranges from subsea to rugged mountains reaching elevations of more than 3,000 m, and includes large areas of low relief that are largely urbanized. Climatic variations include moderate coastal, cool mountain, and hot desert. Having a current population exceeding five million people, much of the quadrangles are densely populated metropolitan areas and rapidly urbanizing areas, but they also encompass large tracts of undeveloped land and even remote wilderness areas.

Included in the two quadrangles is some of the most varied and complex geology in the western United States. Parts of three major physiographic provinces fall within the area, the Peninsular Ranges, Transverse Ranges, and Mojave Desert provinces, in addition to four herein informally designated basement rock assemblages, the San Gabriel Mountains, San Bernardino Mountains, Mill Creek, and Peninsular Ranges assemblages (figs. 1 and 2). Bounding and falling within these basement rock assemblages are elements of several seismically active fault zones, including the San Andreas, San Jacinto, Elsinore, Whittier, Cucamonga, and Sierra Madre Faults.

Pamphlet

This comprehensive publication pamphlet contains a detailed Description of Map Units (DMU), and a discussion of the regional geologic framework. It is provided here in two forms, one without photographs and a larger collection of files that includes links to images of many exemplary rock unit outcrops and geologic features. The first file can be using the link below. The second file must be downloaded to your hard disc, expanded, and viewed offline.

Download pamphlet without photos as a PDF file (of2006-1217_pamphlet_nophotos.pdf; 24 KB)

Download pamphlet with 588 photos as a compressed ZIP file (of2006-1217_pamphlet_photos.zip; 145.7 MB that opens into a 150.2-MB folder)

Map

Four sheets are included in this report:
Sheet 1 (of2006-1217_geol_map.pdf; 37.6 MB) is the geologic map;
Sheet 2 (of2006-1217_major_flts.pdf; 18 MB), a fault map;
Sheet 3 (of2006-1217_young_flts.pdf; 24 MB), faults that cut late Pleistocene and Holocene deposits, and
Sheet 4 (of2006-1217_cmu.pdf; 1.1 MB), correlation of map units. In addition to the four map sheets, the report includes five figures.
Figures 1 and 2 (of2006-1217_fig1_and_2.pdf; 912 KB): Figure 1 shows the location of most place names used in descriptive parts of the report. Figure 2 is a highly simplified diagram showing the location of the two quadrangles relative to physiographic provinces of southern California.
Figure 3 (of2006-1217_fig3.pdf; 538 KB) shows the location of the major physiographic features including definable structural blocks having internally consistant characteristics.
Figure 4 (of2006-1217_fig4.pdf; 592 KB) shows sources of geologic mapping used to compile the geologic map and digital database. In this figure, published and unpublished mapping by the compilation authors are distinguished from published and unpublished mapping by others, in addition to showing where work by more than one person overlaps. References for published mapping are given; information for unpublished mapping includes the year(s) the mapping was done, the scale at which it was done, and the individual(s) who did the mapping.
Figure 5 (of2006-1217_fig5.pdf; 1.6 MB) shows the historic lake levels of Mystic Lake and a projection of where the lake level (closed depression) is predicted to be in 2023.

Data

Download the Readme file for this report as a PDF file (of2006-1217_readme.pdf; 64 KB)

Download the metadata for this report as an ASCII file. This is a text file of FGDC-compliant metadata for this report (sasb_metadata.txt; 176 kB).

sasb_geodatabase.zip Geodatabase package (332.5 MB; expands to 575.7 MB).

sasb_shapefiles.zip Shapefile package (198 MB; expands to 487 MB).

sasb_interchange_files.zip Coverage data model interchange (.e00) files (98.6 MB; expands to 422.1 MB).

symbols.zip This folder is included for those who continue to use ESRI's coverage data model: that symbology is not readable by ArcGIS 9x. However, sasb1d.style is included in the symbols folder for use with ArcGIS9x. (312 KB; expands to 3.5 MB).

For questions about the content of this report, contact Doug Morton .

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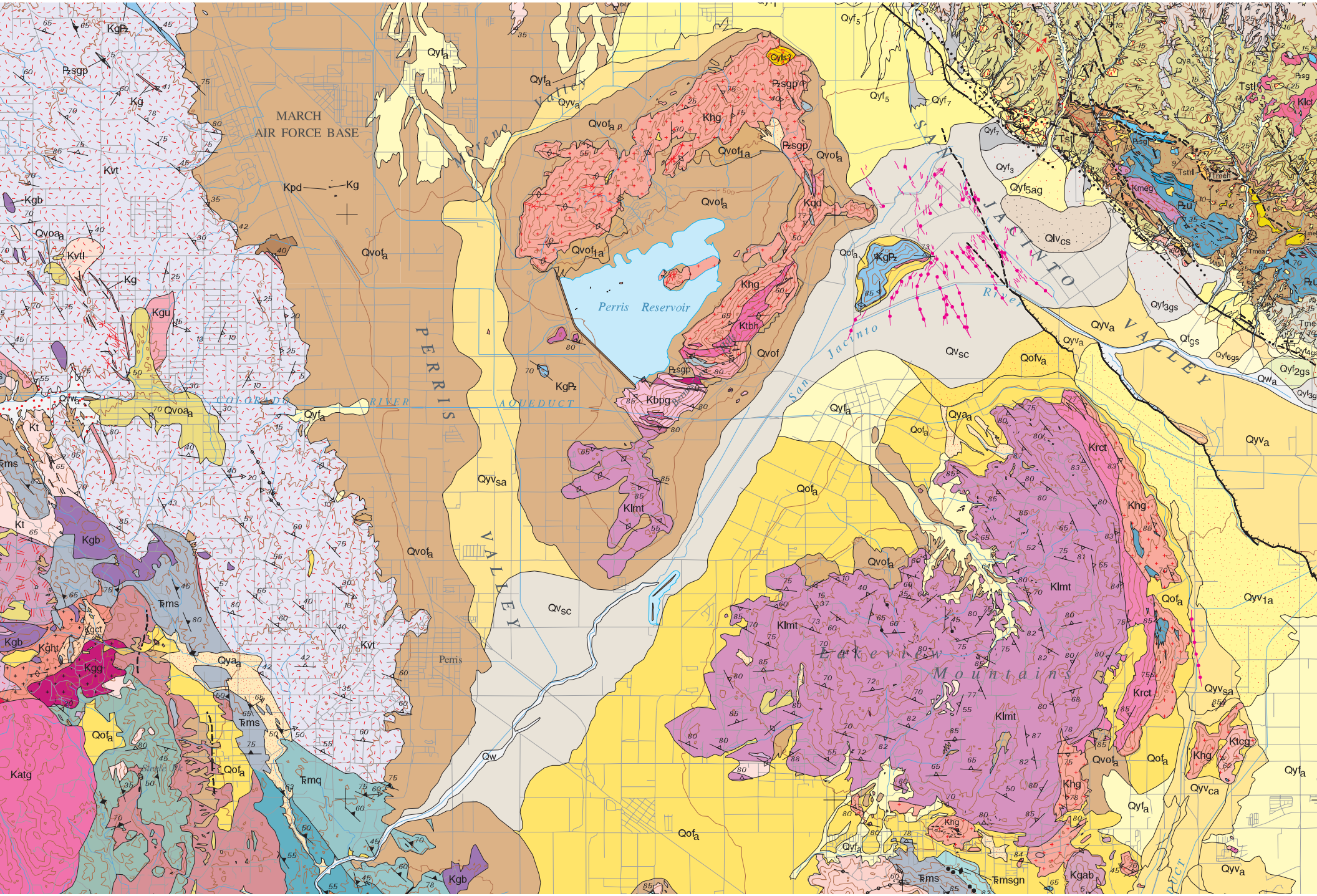
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MARCH
AIR FORCE BASE
Perris Reservoir
PERRIS VALLEY
SAN JACINTO VALLEY
Lake Perris
Perris
Lakeview Mountains
Moreno Valley
San Jacinto River
COLORADO RIVER AQUEDUCT
Stimmel Rk
Qyf5
Qyfa
Qyva
Qvofa
Qvof1a
Khg
Kgd
Kbpg
Klmt
Ktbh
Qvof
Qvsc
Qofa
Qyaa
Qyvsa
Qyv1a
Qyvca
Qyva
Qwa
Qw
Kgb
Kvt
Kg
Kpd
Kgu
Kt
Tms
Tmsgn
Kgct
Kgh
Kgg
Katg
Tmq
Krct
Ktcg
Kgab
Qvoaa
Kvtl
Qyf7
Qyf3
Qyf5ag
Qlvcs
Qyf3gs
Qfgs
Qyf6gs
Qyf2gs
Tstl
Tmeh
Kmeg
Pzu
Pzsgp
KgPz

Geologic map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California

By Douglas M. Morton[1] and Fred K. Miller[2]

Digital preparation by Pamela M. Cossette[2], and Kelly R. Bovard[1]

Geology and Description of Map Units, version 1.0

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GEOLOGIC MAP OF THE SAN BERNARDINO AND SANTA ANA 30' x 60' QUADRANGLES, CALIFORNIA

by
D.M. Morton and F.K. Miller

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Trabuco Formation (Ktr) along the west side of the Santa Ana Mountains is soil slip prone as is the Topanga Group units (Tt) in the San Joaquin Hills area. During extremely intense rainfall winters, such as 1969, devastating soil slip-debris flows can occur in basement rock units in the San Gabriel and Santa Ana Mountains (Campbell, 1975). Soil slip susceptibility maps for the area are given by Morton and others (2003). For a period of time, months to a year or more, after an El Niño winter bedrock landslides occur apparently as a result of the wet winter (photo 55).

Fire-Flood sequence

Devastating debris flows occur if summer and fall wildfires are followed by substantial winter rainfall. The sequential events of wildfire followed by heavy rainfall is commonly referred to as a fire-flood sequence. This temporal and spatial relationship appears to have been first published by Coleman (1953), who described the sequence of events that occurred during the 1933-34 rainfall season in the La Crescenta area at the base of the western San Gabriel Mountains.

Wildfires in southern California commonly result in the development of water repellant (hydrophobic) surface soils (DeBano, 1981; DeBano and others, 1998). The development of the water repellant surface soils results in subsequent rain running off slopes rather than seeping in (photo 56). Slopes on which water repellant soils have formed, generate few soil slips (e.g., Morton, 1989). The collective runoff transports large quantities of debris as hyperconcentrated flood flows and/or debris flows down channels and onto alluvial fans (photos 57, 58, 59, 60, 61, and 62). Typically debris flows generated develop by fluidizing material in the channel bottom (photo 54), and not by soil slips on the hillsides. These hyperconcentrated and debris flows in many places have caused loss of lives and have been devastating to man-made structures. A recent example occurred when two large autumn 2003 wildfires in the eastern San Gabriel and western San Bernardino Mountains were followed by a moderate storm, about a ten-year-rainfall-storm, on Christmas day, 2003. Runoff from the storm generated widespread debris flows and hyperconcentrated flows which resulted in extensive damage to structures near the mountain front and the loss of 16 lives.

SUBSIDENCE FISSURES

Within the San Bernardino and Santa Ana quadrangles, subsidence fissures are relatively common in some fault bounded basins, forming in response to withdrawal of groundwater (photos 35, 63, 64, 65, and 36). They are most numerous in the San Jacinto Valley, but are also present in the Chino basin, southwestern San Bernardino basin, and at Dunlap Acres on the south side of the Crafton Hills (Burnham, 1952). A fissure reported by Engel (1959) and purportedly attributed by local residents to the time of the 1918 San Jacinto earthquake appears more likely to be a subsidence related fissure.

Only the fissures in the San Jacinto Valley are showed on the geologic map. Most of these are located within the San Jacinto pull-apart basin, which formed between the Casa Loma and Claremont strands of the San Jacinto Fault Zone. These fissures started to develop locally about 1950 and through time have spread over a considerable area (Morton, 1977). Formation of the fissures appears to be related to subsidence resulting from groundwater withdrawal principally in the area where formerly only artesian water was used (Waring, 1919).

Both tectonic subsidence and groundwater withdrawal subsidence occurs in the pullapart basin, but the current rate of groundwater subsidence far exceeds the rate of tectonic subsidence (Fett and others, 1967; Lofgren, 1976; Lofgren and Meyer, 1975; Morton, 1977; Proctor, 1962). Rate of tectonic subsidence is estimated to be 0.3 to 0.6 cm/yr while the estimate of subsidence due to groundwater withdrawal is 3.5 to 4.0 cm/yr (e.g., Morton, 1977). Some fissures have occurred in the fine-grained alluvium on the northeast side of the Lakeview Mountains, Lakeview 7.5' quadrangle (fig. 1) and along the course of the San Jacinto River west of the pull-apart basin. The westernmost of the fissures, near the site of the former Bernasconi Hot Springs (also called Lakeview Hot Springs) (fig. 1) trenched to a depth of about 20 m revealed a cone-shaped (in cross-section), complex structure similar to liquefaction structures (photo 66; compare with photo 67 and 3).

On the northeast side of the San Jacinto Valley, adjacent to the San Timoteo Badlands, El Casco and Lakeview 7.5' quadrangles, on gently slopeing surfaces subsidence in the valley produces very slow moving, lateral-spread-like landslides. These lateral-spread-like landslides have been observed to move over a period of several years and produced an one meter high scarp (photos 68 and 69). No toe has been

observed in these landslides; the strain appears to be largely intergranular. Extension in the landslide body commonly forms sink-hole-like subsidence fissures and irregular shaped depressions (photos 70 and 71).

Parts of the San Jacinto Valley contain relatively low density sediments that are subject to hydroconsolidation and subsidence. Where hydroconsolidation occurs at a point source in relatively brittle material, circular fissures occur (photo 72). In unconsidated material a gentle cone of subsidence occurs.

GEOLOGIC SUMMARY

Peninsular Ranges assemblage

Rocks of the Peninsular Ranges assemblage range in age from Quaternary to Paleozoic; the assemblage contains no documented Precambrian rocks. Most of the Peninsular Ranges assemblage is represented by the Jurassic and Cretaceous Peninsular Ranges Batholith and the pre-batholithic metasedimentary and metavolcanic rocks into which the batholith was emplaced (e.g., Jahns, 1954a). In the Santa Ana and San Bernardino quadrangles, all granitic rocks of the batholith are Cretaceous; all Jurassic granitic rocks identified as being part of the batholith are found south of the Santa Ana quadrangle. Thick sequences of Late Cretaceous to Tertiary post-batholithic sedimentary and volcanic rocks flank the batholith on its western side.

Physiographically, onshore rocks of the Peninsular Ranges assemblage are divided into three major, fault-bounded blocks which, from west to east are, the Santa Ana Mountains block, the Perris block, and the San Jacinto Mountains block (figs. 1 and 3). The latter block is represented only by limited granitic and metamorphic rocks and the thick section of Miocene through Pleistocene nonmarine sedimentary rocks east of the San Jacinto Fault. Only the southern part of this block, which is located between the San Jacinto and San Andreas Fault Zones, is floored by the Peninsular Ranges assemblage; the northern part, including the Crafton Hills, is floored by the San Gabriel Mountains assemblage (fig. 1).

Cenozoic sedimentary rocks ranging in age from Holocene through Paleocene underlie most of the western part of the Santa Ana block; these rocks extend north of the block to include the low Puente Hills. East of, and underlying these Tertiary and Quaternary rocks in the Santa Ana Mountains, is a thick section of primarily Late Cretaceous marine rocks and Paleogene marine and nonmarine rocks that rest unconformably on Mesozoic basement consisting of metasedimentary and Cretaceous volcanic and batholithic rocks. The basement and Late Cretaceous and Paleogene rocks now constitute part of a highly faulted anticlinal structure. In the southern part of the Santa Ana Mountains the anticline passes into an extensive, nearly horizontal surface that was deeply weathered during the Paleocene and is partly covered by Miocene basalt flows.

East of the Santa Ana Mountains block and west of the San Jacinto Fault Zone, the Perris block (fig. 3), forms a roughly rectangular area of relatively low relief that has remained relatively stable and undeformed during the Neogene. The Perris block is underlain by lithologically diverse prebatholithic metasedimentary rocks intruded by plutons of the Peninsular Ranges batholith. Supra-batholithic volcanic rocks are preserved in the western part of the block. Several erosional and depositional surfaces are developed on the Perris block (e.g., Dudley, 1936; Woodford and others, 1971) and thin to relatively thick sections of nonmarine, mainly Quaternary, sediments discontinuously cover the basement.

In the Elephant Hill area (fig. 1) west of Pomona, deeply weathered tonalite (Keh) is poorly exposed in a few road cuts. It is lithologically similar to Peninsular Ranges batholithic rocks and contrasts with tonalite (Kgp) three kilometers to the north at Ganesha Park, which has affinities (e.g., initial Sr ratio) to San Gabriel Mountains granitic rocks. These two localities provide the limited surface control for placement of the boundary between the Peninsular Ranges and San Gabriel Mountains assemblages west of San Antonio Canyon.

Paleozoic Metamorphic Rocks

Metamorphic rocks that include thick sections of marble (PzPzmp) (photo 73) in the Riverside-Colton area are considered to be of Paleozoic age based on general lithologic affinities with dated Paleozoic rocks further to the south in the Peninsular Ranges. Based on lithology, marble bearing units in the Mount Eden area (fig. 1) and on the east side of the Lakeview Mountains are also interpreted as being Paleozoic (photo 74). Ordovician conodonts have been recovered from somewhat similar carbonate rocks in the Coyote Mountains in western Imperial County (Dockum, 1982; Miller and Dockum, 1983). All of these metamorphic rock sections do not appear to be derived from familiar Paleozoic sections in the Great Basin, partly because they are southwest of the San Andreas Fault. Where marble is sparse or missing in metamorphic sections of the Peninsular Ranges, the protolith could also be Mesozoic. Metamorphism

mountain-side (north) down sense of movement. If this is the case, it is the opposite sense of movement associated with the nearby, semi-parallel Santa Ana Fault.

Fault zone bounding the north side of San Bernardino Mountains

A prominent, discontinuous system of south dipping reverse faults bounds the north side of the San Bernardino Mountains northward and eastward from the vicinity of Deep Creek, Fifteen Mile Valley 7.5' quadrangle. Meisling (1984) and Meisling and Weldon (1989) refer to the faults as a thrust system, but except for the east central part of the zone, well east of the quadrangle, limited dip measurements are mostly greater than 40 degrees. They interpret the zone to shallow considerably in the subsurface.

Eroded fault and fault-line scarps tens of meters high are associated with late movement on parts of the fault zone. North of the Ord Mountains segment of the San Bernardino Mountains, the fault zone passes into a monoclinal flexure for several kilometers and then back into a fault (Meisling, 1984; Meisling and Weldon, 1989). Meisling (1984), Meisling and Weldon (1989), and J.C. Matti (oral commun., 2000)) consider northeast and east striking parts of this fault zone to be dominantly reverse or thrust movement, but some of the northwest striking parts to be strike slip.

Initial development of the fault zone was in early Pleistocene, but maximum movement occurred in middle Pleistocene. Middle Pleistocene fanglomerates flanking the western part of the range contain abundant, large, angular clasts derived from the San Bernardino Mountains, so elevation and drainage pattern off of the range had been established by that time. Meisling and Weldon (1989) consider this north-bounding fault system to be responsible for most of the uplift of the central San Bernardino Mountains, and that the uplift tapered off toward the western and eastern ends of the range.

Squaw Peak Fault

The Squaw Peak Fault, Cajon 7.5' quadrangle, is a deformed fault of unknown extent interpreted by Meisling and Weldon (1989) to be a late Miocene to early Pliocene thrust. It is highly disrupted by younger faults, and changes from north striking in its southern part to west-northwest striking in its northern part. Where exposed, the southern part of the fault dips steeply east, and the northwestern part, shallowly north. In the northern part, the fault places Crowder Formation over Cajon Valley Formation, and in the southern part, granitic rocks of the San Bernardino assemblage over Cajon Valley Formation.

DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS

Qdg **Disturbed ground (late Holocene)**—Bedrock fragmented to sand- and gravel-sized pieces; commonly mixed with Quaternary sedimentary material found at site. Occurs mainly in areas where construction or excavation has obscured, mixed, redistributed, or covered naturally occurring units; thickness generally less than 3 meters. Areas shown as disturbed ground are localities where results of human activity generally preclude accurate identification or classification of natural geologic units

Qaf **Artificial fill (late Holocene)**—Sand, gravel, and bedrock from pits, quarries, and excavations related to construction, mining, or quarrying activities; mapped primarily where materials are placed for construction of highways, canals, railway grades, dams, and water catchment basins. Only large features are mapped; not shown in some places where unit obscures detailed surficial or bedrock relations. Differs from disturbed ground (Qdg) in that generally large amounts of rock and (or) sediment have been imported to site

Qw **Very young wash deposits (late Holocene)**—Unconsolidated sand and gravel deposits in active washes, ephemeral river channels of axial-valley streams, and in channels on active surfaces of alluvial fans; has fresh flood scours and channel-and-bar morphology. Essentially no soil development. Subject to localized reworking and introduction of new sediment mainly during winter months. In places, especially upper reaches of some drainages, contains clasts several meters across that were deposited by flash floods. Grain shape ranges from angular to rounded; larger clasts tend to be more rounded than smaller clasts. All sediment derived from local bedrock or reworked from local, older

Quaternary deposits. In Mojave River bed, almost all sediment is fine- to very coarse-grained sand containing lesser gravel and pebbles; clasts larger than pebbles are sparse. Gravel bars up to 100 m long fairly common. In beds of Arrastre Creek, Mescal Creek, and Big Rock Creek, clasts are mixed sand to boulders and include numerous bars dominated by one or another of larger clast sizes. Unit in Sheep Creek differs from other Qw deposits; it is dominated by debris-flow deposits originating in steep headwater area of drainage in Mesozoic Pelona Schist. Debris flows catastrophically transported during years of heavy snowfall when rapid melt occurs (Morton and Campbell, 1974; Sharp and Nobles, 1953). In Cajon Wash and beds of Lytle Creek and Santa Ana River, clasts are mixed sand to boulders, coarsening toward mountains; in lower reaches of Santa Ana River, unit consists mostly of unconsolidated sand and gravel. North of mountains and west of Mojave River, nearly all Qyw deposits are cut by medial channels of Qw too small to show at map scale. Divisions are distinguished by relative position in local terrace riser succession and by overlapping relations. In northwestern part of quadrangle, within 2 km of San Andreas Fault Zone, includes most of stream channel deposits unit of Barrows and others (1985) and Barrows (1987). Locally subdivided to include:

Qw_3 **Very young wash deposits, Unit 3**—Unconsolidated sand, gravel, and pebble deposits that form very slightly elevated terraces. Unit common in vicinity of city of Riverside. Also mapped within, or along margins of, active Mojave River channel. Grain size distribution and degree of rounding generally same as Qw deposits at similar distances from mountain front. Has slightly less prominent vegetative cover than most Qw deposits. Probably intermittently active during high water in years of peak rainfall. Range of clast size, shape, and distribution similar to that of Qw deposits

Qw_2 **Very young wash deposits, Unit 2**—Unconsolidated, mixed sand, gravel, pebble, cobble, and boulder deposits that form slightly elevated, low terraces within, or along margins of, active washes. Grain size distribution and degree of rounding generally same as Qw units at similar distances from mountain front. Clast compositions reflect bedrock and older Quaternary sources within individual drainages. Commonly has noticeably denser vegetative cover than Qw_3 deposits, especially larger, older bushes and trees. Appears to be intermittently active based on localized bar-and-swale geomorphology and channel scouring. May or may not undergo redistribution or destruction during high water in years of peak rainfall. Range of clast size, shape, and distribution similar to that of Qw deposits

Qw_1 **Very young wash deposits, Unit 1**—Unconsolidated sand-and-gravel deposits that form consistent, but low, elevated terraces in or marginal to channelized washes of streams and rivers. Grain size distribution and degree of rounding generally same as Qw units at similar distances from mountain front. Largely abandoned by modern stream flows; less likely to become occupied or destroyed by major flood events than Qw_2 deposits. Has noticeably denser vegetative cover than Qw_3 or Qw_2 deposits, may show suggestion of soil development, and has larger, older bushes and trees. Range of clast size, shape, and distribution similar to that of Qw deposits

Qf **Very young alluvial-fan deposits (late Holocene)**—Unconsolidated to slightly coherent, essentially undissected deposits of sand, gravel, and boulders that form active and recently active parts of alluvial fans (photo 587). Clasts typically angular to subrounded, rarely rounded. Deposits generally coarsen toward heads of fans. Relative abundance of clast sizes varies greatly depending on setting, size of drainage area, and sediment source. At most places, unit lacks soil development, but on south side of San Bernardino Mountains, locally is capped by weak A/AC soils. On north side of San Bernardino and San Gabriel Mountains, unit occurs chiefly as small fans emanating from limited-extent, steep canyons, mouths of channels cut in dissected scarps, or mouths of channels

cut in elevated, older Quaternary deposits. Surfaces typically cut by braided streams, but deposition exceeds dissection. Where subdivision of Qf deposits is possible, subunits are distinguished from one another by relative position in local terrace riser succession, by local superposition, or by relative dissection. Includes:

Qf_2 **Very young alluvial-fan deposits, Unit 2**—Unconsolidated to loosely compacted alluvial-fan deposits. Essentially undissected, but surface typically cut by anastomosing network of channels. Size, shape, and distribution of clasts similar to that of unit Qf. Distinguished in most cases as fans built out on Qf_1 sediments, and to some degree as fans relatively less dissected than, or emanating from channels cut into, Qf_1 sediments. Appearance from place to place differs greatly; primarily dependent on sediment source, steepness of source area and fan location, and distance from mountain front

Qf_1 **Very young alluvial-fan deposits, Unit 1**—Unconsolidated to loosely compacted alluvial-fan deposits, varying in grain size from sand to boulders. Degree of compaction unreliable for distinguishing Qf_1 from other Qf units or some Qyf units. Has general physical characteristics of Qf and Qf_2 sediments. Mode of occurrence, in addition to range of clast size, clast shape, and clast distribution, similar to that of unit Qf and Qf_2. Distinguished in most cases as fans upon which Qf and Qf_2 fans have built, and to lesser degree as fans that are relatively more dissected than Qf and Qf_2 fans, or as fans that are cut by channels from which Qf and Qf_2 fans emanate. Appearance from place to place differs greatly; primarily dependent on sediment source, steepness of source area and fan location, and distance from mountain front

Qa **Very young axial-channel deposits (late Holocene)**—Unconsolidated deposits of silty, sandy and cobbly alluvium deposited by streams in through-going stream valleys; cemented only where carbonate rocks are in source area. Includes:

Qa_1 **Very young axial-channel deposits, Unit 1**—Largely unconsolidated to barely consolidated alluvial deposits in valley bottoms. Varies in grain size from sand to boulders; finer size-fractions more common. Has general physical characteristics of Qa sediments, but is relatively more dissected than Qa, and is distinguished by relative position in local terrace-riser succession. Appearance from place to place differs greatly; primarily dependent on sediment source and steepness of source area

Qv **Very young alluvial-valley deposits (late Holocene)**—Active and recently active fluvial deposits along valley floors. Consists of unconsolidated sandy, silty, or clay-bearing alluvium; coarser clasts are relatively rare

Qc **Very young colluvial deposits (late Holocene)**—Unconsolidated sediment and loose sediment, rock fragments, and soil material deposited by rain wash or slow continuous downslope creep; found mainly, but not exclusively, at base of slopes or hillsides. In western San Bernardino Mountains, much of sediment is angular, derived from extensive grus developed on Cretaceous and Jurassic granitic units. No soil development

Qt **Very young talus deposits (late Holocene)**—Unconsolidated to slightly consolidated deposits of angular pebble-, cobble-, and boulder-size material that form scree and rubble on hill slopes and at base of slopes. In places, loose and hazardous to walk on. Best developed below steep faces of highly fractured granitic and metamorphic rocks in eastern San Gabriel Mountains. In places, probably includes some colluvium. Numerous small talus cones found on steeper slopes in San Bernardino and eastern San Gabriel Mountains are too small to map

Qsw **Very young slope-wash deposits (late Holocene)**—Unconsolidated sand, cobbles, and pebbles deposited by water not confined to channels. Most deposits are angular, multi-mineralogic sand derived from in-place weathering of granitic rocks, but many include larger clasts transported by torrential storms or clasts spalled from up-slope outcrops of bedrock

Qls **Very young landslide deposits (late Holocene)**—Slope-failure deposits consisting of chaotically mixed soil and rubble and (or) displaced bedrock blocks; most are debris slides and rock slumps or earth slumps. Landslides may or may not be active. Landslide morphology well preserved. In San Bernardino Mountains in Holcomb Creek drainage northeast of Lake Arrowhead, consists of granitic rubble. On west side of Bear Canyon, near east edge of San Bernardino quadrangle, consists of granitic rubble and probably includes some talus. In eastern San Gabriel Mountains between Deer Canyon and San Sevaine Flats, consists of granitic rubble and possibly includes some talus and slope wash

Qpl **Very young playa deposits (late Holocene)**—Pale-brown to pale-gray, silty, sandy clay, and clayey silt. Relatively coherent where damp or dry. All playa deposits, including Qp_1, restricted to Rabbit Dry Lake (photo 366) and small unnamed dry lake 7 km west of Rabbit Dry Lake. New sediment is distributed and uppermost part of existing sediment redistributed by wind generated wave action during wet periods. Along margins, mixed with and includes some very young eolian deposits (Qe)

Qpl_1 **Very young playa deposits, Unit 1**—Pale-brown to pale-gray silty, sandy clay, and clayey silt. Relatively coherent where completely dry. Slightly elevated and locally shows incipient dissection compared to active playa surface of Rabbit Dry Lake (photo 366). Along margins, mixed with and includes some very young eolian deposits (Qe)

Ql **Very young lacustrine deposits (late Holocene)**—Silt, sand, and gravel associated with sag ponds along San Andreas Fault strands; also underlies floor of closed pull-apart depression in Elsinore Fault Zone that is partly filled by Lake Elsinore (Alberhill and Elsinore 7.5' quadrangles). Sediments are commonly submerged, but are exposed partly or completely during dry periods. Dominately gray, clayey, silty, and fine-grained sandy lacustrine deposits

Qlv **Very young lacustrine and fluvial deposits (late Holocene)—**Dominately gray, clayey, silty, and fine-grained sandy lacustrine deposits interbedded with fluvial deposits. Underlies floor of closed pull-apart depression in San Jacinto Fault Zone that is partly filled by ephemeral Mystic Lake (photo 242) (Lakeview and El Casco 7.5'quadrangles)

Qe **Very young eolian deposits (late Holocene)**—Fine-grained sand and silt. Along north bank of Arrastre Canyon between San Bernardino and Granite mountains, forms thin sand patches in lee of desert vegetation; mapped only where sand patches have coalesced. Unconsolidated, active or recently active sand dune deposits along coast in Newport Beach area. Shows dune morphology in coastal areas, but generally not in desert areas

Qm **Very young marine deposits (late Holocene)**—Unconsolidated, active or recently active sandy beach deposits along coast

Qes **Very young estuarine deposits (late Holocene)—**Unconsolidated, active, sandy, silty, and clayey organic-rich estuarine deposits (Newport Beach 7.5' quadrangle)

Qs **Very young surficial deposits (late Holocene)**—Silt, sand, and pebble- to small-cobble gravel. Mostly unconsolidated, but locally, slightly consolidated. Includes many small scattered deposits consisting of sediment that does not have features allowing confident assignment to any specific surficial materials unit. Some were identified on aerial photographs, and not checked at site. Probably includes wash, alluvial-fan, colluvial, and valley-filling deposits

Qs_1 **Very young surficial deposits, Unit 1**—Sand and pebble to small- cobble gravel not assigned to any specific surficial materials unit. Essentially same characteristics as very young surficial deposits unit (Qs), but distinguished either as terraces cut into Qs sediments, or parts of Qs sediments that show anomalous dissection

Qyw **Young wash deposits (Holocene and late Pleistocene)**—Unconsolidated to slightly consolidated sand and gravel deposits in marginal parts of active and recently active washes and ephemeral river channels of axial-valley streams. Differs

from very young wash deposits by absence or modification of flood scours, modified channel-and-bar morphology, and immature soil horizons. Mapped mainly on north sloping fan surfaces north of Cajon Summit area, where sediment is mixed with eroded and slumped material from steep, high, stream embankments. Clast size reflects distance from mountain front to same degree as Qw deposits. All is sediment derived from local bedrock or reworked from local, older Quaternary deposits. West of Rabbit Dry Lake and west of Silverwood Lake, includes sediment in partially abandoned washes. Subunits are distinguished by relative position in local terrace riser succession. Includes:

Qyw_3 **Young wash deposits, Unit 3 (early Holocene)**—Unconsolidated silt, sand, and coarse-grained sand to cobble alluvium. Forms low, moderately well defined terrace risers along Antelope Valley wash south of Hesperia. Truncated by locally younger Qyw sediments, but shows very little surface modification

Qyw_2 **Young wash deposits, Unit 2 (early Holocene)**—Unconsolidated to slightly consolidated silt, sand, and coarse-grained sand to cobble alluvium. Forms relatively low, but well defined terrace risers along Antelope Valley wash south of Hesperia. Truncated by Qyw_3 sediments, but shows only slight surface modification

Qyw_1 **Young wash deposits, Unit 1 (early Holocene and late Pleistocene)**—Unconsolidated to slightly consolidated silt, sand, and coarse-grained sand to cobble alluvium. Forms well defined terrace risers along west side of Mojave River southeast of Hesperia. Stands above, and is truncated by younger Qyw_2 sediments; shows slight surface modification

Qyf **Young alluvial-fan deposits (Holocene and late Pleistocene)**—Unconsolidated to moderately consolidated silt, sand, pebbly cobbly sand, and bouldery alluvial-fan deposits having slightly to moderately dissected surfaces (photo 417). Young alluvial-fan deposits, including subunits, constitute most widespread, and probably greatest in terms of sediment volume, of all Quaternary units. Forms large and small fans throughout quadrangle. Covers large areas in upper part of Cajon Canyon and on north side of San Gabriel Mountains west of Sheep Creek. Close to mountains, unit typically contains large proportion of cobbles and boulders. Intermediate and distal parts of large fans west of Sheep Creek are mainly pale-brown, mixed silt to medium-grained sand, containing sparse, coarse-grained sand and pebble lenses. Except where coarser-grained lenses are present, stratification is obscure. Clast compositions, especially in upper third of fans, reflect bedrock source areas and clast compositions of nearby older Quaternary units. In San Bernardino Mountain area, fans emanating from areas underlain by deeply weathered Cretaceous granitic rocks are relatively fine grained and contrast with coarser grained fans emananating from areas underlain by Triassic and older rocks. Includes from youngest to oldest:

Qyf_7 **Young alluvial-fan deposits, Unit 7 (late Holocene and latest Pleistocene)**—Unconsolidated alluvial-fan deposits. Consists of gravel, sand, and silt; youngest part of Qyf. In part distinguished on basis of relative terrace levels. Restricted to southwest side of San Timeteo Badlands in northeastern Santa Ana quadrangle

Qyf_6 **Young alluvial-fan deposits, Unit 6 (late Holocene and latest Pleistocene)**—Unconsolidated alluvial-fan deposits consisting of fine- to coarse-gravel, sand, and silt; young part of Qyf. In part distinguished on basis of relative terrace levels. Restricted to Lamb Canyon area in northeastern Santa Ana quadrangle

Qyf_5 **Young alluvial-fan deposits, Unit 5 (late Holocene)**—Unconsolidated to slightly consolidated coarse-grained sand to bouldery alluvial-fan deposits having slightly dissected to essentially undissected surfaces. Stage S_7 soils in Devore area. Notably finer grained in some parts of quadrangle, especially in distal parts of fans. Braided stream pattern on surfaces of fans that is related to deposition is relatively unmodified. On south side of San Gabriel Mountains, includes large, well formed fan emanating from Lytle Creek drainage; largely

boulder alluvium in headward parts of fan, grading southward into dominantly sand and gravel. West of Phelan, includes Sheep Creek fan which has distinct gray-green color, and strongly contrasts with nearly all other alluvial material in quadrangle. Sheep Creek fan is composed essentially of material derived from Pelona Schist, and mainly deposited by debris flows. Parts of unit subsequently redistributed by conventional stream flow, especially in distal areas. Fans of Qyf_5 sequence are younger than Qyf_4 fans based mainly on relative position in terrace riser sequence and on superposition and overlap relations of adjacent fans

Qyf_4 **Young alluvial-fan deposits, Unit 4 (late Holocene)**—Unconsolidated to slightly consolidated silt, sand, and coarse-grained sand to bouldery alluvial-fan deposits having slightly to moderately dissected surfaces. Stage S_7 soils in Devore area. Fans emanating from canyons on south side of San Gabriel Mountains contain large proportion of coarse boulders, especially in upper parts. Fans emanating from canyons on south side of San Bernardino Mountains contain coarse boulders in upper parts, but grade over short distances southward into sand and pebble alluvium. On south side of both ranges, typically braided stream pattern on surfaces of fans related to deposition is only slightly modified. Large area of Qyf_4 between Granite Mountains and Mojave River is slightly consolidated silt and sand, that contains lenses and individual matrix-supported clasts generally less than 2 cm across. Represents large area of coalesced fan material. Surface is smooth and undulating, showing only slight dissection in upper parts. Unit in this part of quadrangle may contain some axial-valley deposits, especially near western end of Granite Mountains. Age relative to Qyf_5 and Qyf_3 based mainly on overlap relations of adjacent fans and degree of dissection compared to fans in general area

Qyf_3 **Young alluvial-fan deposits, Unit 3 (middle Holocene)**—Slightly to moderately consolidated silt, sand, and coarse-grained sand to bouldery alluvial-fan deposits having slightly to moderately dissected surfaces. In Devore area, unit has stage S_6 or incipient stage S_5 soils developed. West of Mojave River, consists of relatively uniform, medium brown silt and sand containing sparse granule and pebble lenses and scattered, matrix-supported, pebble-sized clasts. Fan surfaces are slightly to moderately dissected, and in many places show low amplitude, rolling surfaces having swales and ridges parallel to axes of fans. In this area, may include some Qyf_2 and Qyf_4 deposits. Cut by several large Qyw washes incised to depths as great as 4 m, containing active medial Qw channels too small to map

Qyf_2 **Young alluvial-fan deposits, Unit 2 (early Holocene)**—Slightly consolidated coarse-grained sand to bouldery alluvial-fan deposits having moderately dissected surfaces and, in Devore area, well-developed S_5 soils. Widespread on both north and south sides of San Gabriel and San Bernardino Mountains, mainly forming relatively small fans. On south side of mountains, especially San Gabriel Mountains, fans contain high percentage of boulders. On north side of San Bernardino Mountains, east of Mojave River, fans are made up largely of sand- to pebble-sized clasts in a silty matrix. There, most show very indistinct stratification; surfaces are relatively smooth, but are cut by discreet, wide, deeply incised channels

Qyf_1 **Young alluvial-fan deposits, Unit 1 (early Holocene and late Pleistocene)**—Slightly to moderately consolidated silt, sand, and coarse-grained sand to bouldery alluvial-fan deposits having moderately dissected surfaces. Has well-developed S_5 soils on south side of San Gabriel and San Bernardino mountains. Appears to form major fill that was deposited throughout San Bernardino Valley region during transition between late Pleistocene and Holocene (McFadden and Weldon, 1987; Morton and Matti, 1987). Also, widespread on north side of San Bernardino Mountains, but mainly forming relatively small fans. On south side of mountains, especially San Gabriel Mountains, fans contain much higher

percentage of boulders than on north side of San Bernardino Mountains, east of Mojave River. There fans are made up largely of sand- to pebble-size clasts, and most show very indistinct stratification

Qya **Young axial-channel deposits (Holocene and late Pleistocene)**—Slightly to moderately consolidated silt, sand, and gravel deposits. Units distinguished from each other on basis of soil-profile development, relative position in local terrace-riser succession, and degree of erosional dissection. In central and eastern San Gabriel Mountains, some deposits contain abundant boulders derived from steep valley sides and steep tributary canyons. Unit in that area also may include some very young alluvial-fan deposits (Qf) and young alluvial-fan deposits (Qyf) emanating from tributary canyons and gulches, especially along Prairie Fork of San Gabriel River. Includes:

Qya_6 **Young axial-channel deposits, Unit 6 (Late Holocene)**—Fluvial deposits along canyon floors. Consists of unconsolidated sand, silt, and clay-bearing alluvium. Youngest part of Qya. In part distinguished on basis of relative terrace levels

Qya_5 **Young axial-channel deposits, Unit 5 (late Holocene)**—Young part of late Quaternary valley fill. Consists mainly of thin- to thick-bedded very fine to medium sand that varies from white and light gray (10YR 8/1 and 7/1) to very pale brown (10YR 8/3 and 8/4 to 7/3). Sand is interlayered with subordinate pebbly fine sand and dark-colored organic-rich layers. On south side of Transverse Ranges, unit commonly capped by weak A/C soil (San Emigdio fine sandy loam of Woodruff and Brock, 1980, map sheet 10). South of mountain front, forms large and small benches along Santa Ana River, Yucapia Creek, and Cajon Wash. Although not differentiated, some deposits mapped as Qw and Qyw adjacent to Mojave River may be included in this unit

Qya_4 **Young axial-channel deposits, Unit 4 (late Holocene)**—Forms thin veneers resting on strath terraces incised into unit Qya_3, or forms low terrace risers standing one meter or less above active washes. Consists of pale brown and very pale brown (10YR 6/3 to 8/3) fine to coarse sand and pebbly sand that coarsens upstream to poorly sorted fine to coarse sand and sandy-pebble to small-cobble gravel. On south side of Transverse Ranges, unit capped by weak $A/AC/C_{ox}$ soils (Hanford coarse sandy loam and Tujunga loamy sand of Woodruff and Brock, 1980, map sheet 10). Occupies inactive channels adjacent to Mill Creek and forms benches along Santa Ana River, City Creek, and Yucaipa Creek. Although not mapped, some deposits mapped as Qw and Qyw flanking main channel of Mojave River may be part of this unit

Qya_3 **Young axial-channel deposits, Unit 3 (middle Holocene)**—Forms terrace risers standing 1 to 2 m above active washes. Unit probably is no more than 2 to 5 m thick, and consists of pale brown and very pale brown (10YR 6/3 to 7/3 and 7/4 to 8/4) fine- to coarse-grained sand and pebbly sand that coarsens up-stream to poorly sorted fine- to coarse-grained sand and sandy pebble to small-cobble gravel. On south side of Transverse Ranges, unit capped by weak to moderate $A/AC/C_{ox}$ soils (Tujunga loamy sand and gravelly loamy sand of Woodruff and Brock, 1980; locally includes Soboba gravelly loamy sand). In Yucaipa Valley region, unit represents aggradational event, and formed as fluvial sediment, back-filled valleys buttressing against high-standing older alluvial deposits. Extensively developed adjacent to Santa Ana River channel, and on northeast side of Cajon Wash, flanking Shandin Hills on both sides

Qya_2 **Young axial-channel deposits, Unit 2 (early Holocene)**—Forms terrace risers intermediate to those of Qya_1 and Qya_3. Consists of pale brown and very pale brown, fine- to very coarse-grained sand and pebbly sand that coarsens upstream to poorly sorted sand and sandy pebble to small-cobble gravel. Areally very restricted compared to other Qya units

Qya_1 **Young axial-channel deposits, Unit 1 (early Holocene and late Pleistocene)**—Forms terrace risers standing several meters above active washes. Probably is less than 5 m thick and consists of pale brown and very pale brown (10YR 6/3 to

8/3) fine- to very coarse-grained sand and pebbly sand that coarsens up-stream to poorly sorted sand and sandy pebble- to small-cobble gravel. Unit is capped by moderately developed $A/AC/B_{cambric}/C_{ox}$ soils (grouped variously by Woodruff and Brock, 1980, into Greenfield and Tujunga loamy sand and sandy loam and Oak Glen gravelly sandy loam). In Yucaipa Valley region, unit formed as fluvial sediment, backfilled valleys, buttressing against high-standing older alluvial deposits. In San Bernardino Valley area, unit is part of region-wide fill that was deposited during transition between late Pleistocene and Holocene (McFadden and Weldon, 1987; Morton and Matti, 1987)

Qyv **Young alluvial-valley deposits (Holocene and late Pleistocene)**—Fluvial deposits along valley floors. Consists of unconsolidated sand, silt, and clay-bearing alluvium. Includes:

Qyv_1 **Young alluvial-valley deposits, Unit 1 (early Holocene and late Pleistocene)**—Fluvial deposits along valley floors west of Casa Loma Fault. Consists of unconsolidated sand, silt, and clay-bearing alluvium

Qyc **Young colluvial deposits (Holocene and late Pleistocene)**—Undissected to slightly dissected, unconsolidated to slightly consolidated, relatively stabilized deposits of sediment, rock fragments, and soil material deposited by rain wash or slow continuous downslope creep. In northwestern San Bernardino Mountains, largely derived from redistribution of extensive grus developed on Cretaceous and Jurassic units. Minor soil development

Qyt **Young talus deposits (Holocene and late Pleistocene)**—Slightly to moderately dissected, consolidated to cemented deposits of angular and subangular pebble-, cobble-, and boulder-size material that form scree and rubble on hill slopes and at base of slopes. In most cases, debris is angular and unsorted. In some areas, probably includes localized chutes of Qt and active talus. In San Gabriel Mountains, includes distal parts of some talus cones that gradationally pass into slopewash-like deposits originating from finer grained material preferentially washed from talus

Qysw **Young slope-wash deposits (Holocene and late Pleistocene)**—Unconsolidated to slightly consolidated sand, cobbles, and pebbles deposited by water not confined to channels. Rarely more than a few meters thick, except locally at bases of some broad, extensive slopes. Surfaces show incipient dissection. Probably includes colluvium at places, and colluvial deposits. Especially in northwestern part of quadrangle probably includes slope-wash materal

Qyls **Young landslide deposits (Holocene and late Pleistocene)**—Slope-failure deposits that consist of displaced bedrock blocks and (or) chaotically mixed rubble. Slightly dissected or modified surfaces. Deposits may or may not be active under current range of climatic conditions. Widespread throughout quadrangles, but found as concentrated, multiple slides in steep areas of highly fractured Mesozoic granitic rocks and in areas underlain by Mesozoic Pelona Schist, especially along or near San Andreas Fault Zone. Large area of Qyls west of Bluecut is made up of numerous large and small landslides. Concentration of young landslides at head of Bear Canyon near east edge of San Bernardino quadrangle, contain numerous low-angle, subhorizontal gouge and breccia zones that probably formed at time of landsliding. Very abundant Qyls landslides in Puente Formation in Chino Hills, in Bedford Canyon Formation in Santa Ana Mountains, and in Tertiary and Quaternary units in San Joaquin Hills

Qypl **Young playa deposits (Holocene and late Pleistocene)**—Pale-brown to pale-gray silty, sandy clay, and clayey silt. Relatively coherent where completely dry. Slightly elevated, hummocky, and shows slight dissection by low gradient streams compared to modern playa deposits

Qye **Young eolian deposits (Holocene and late Pleistocene)**—Silt and medium- to fine-grained sand. Relatively large deposits east and west of Mojave River are thin and in places include patches of alluvial-fan deposits not completely covered by eolian material. Subtle, modified dune morphology preserved in parts of large

deposit east of Mojave River. Slightly dissected by thin, discontinuous, poorly developed stream channels oriented mainly parallel to dune crests. Numerous, small, discontinuous eolian deposits too small to show at map scale are scattered east and west of Mojave River. Includes:

$Qyed_1$ **Young eolian deposits (dune sand), Unit 1 (early Holocene and late Pleistocene)**—Slightly consolidated to moderately consolidated, yellowish brown (10YR 5/4) to pale brown (10YR 6/3) and light brownish gray (10YR 6/2), fine- to medium-grained sand, silty sand, and slightly gravelly sand; locally contains layers of sandy pebble gravel and gravelly sand. Found east of Lytle Creek-Cajon Creek Wash on south side of Shandin Hills. Similar to unit $Qoed_3$. Forms large northwest-trending dunes that appear to be broadly linguoid to longitudinal

$Qyes_1$ **Young eolian deposits (sheet sand), Unit 1 (early Holocene and late Pleistocene)**—Slightly consolidated to moderately consolidated, yellowish brown (10YR 5/4) to pale brown (10YR 6/3) and light brownish gray (10YR 6/2), fine- to medium-grained sand, slightly gravelly sand, sandy pebble gravel, and gravelly sand. Gravelly beds represent fluvial deposits interstratified with finer-grained eolian deposits that mainly are sand. Restricted to area east of Lytle-Creek-Cajon Creek Wash, west and southwest of Shandin Hills. On east side of wash forms low rolling surfaces adjacent to unit $Qyed_1$, and is lithologically similar to that unit

Qys **Young surficial deposits (Holocene and late Pleistocene)**—Sand to boulder deposits not assigned to any specific surficial materials unit of this age. Includes wash, alluvial-fan, colluvial, and valley-filling deposits. Slightly dissected, slightly consolidated. Most small deposits in northern San Bernardino Mountains are in inactive parts of stream channels, and are mixtures of grus, valley-filling sediment, and slumped or sheetwashed sediment from sides of stream valleys. Almost all deposits assigned to this unit were identified from aerial photographs, and not observed directly

Qypt **Young peat deposits (Holocene)—**Deposits of low density peat and peaty sediments (Newport Beach 7.5' quadrangle)

Qow **Old wash deposits (late to middle Pleistocene)**—Slightly to moderately indurated, gravel and sand alluvial wash deposits. Slightly dissected; typically elevated above modern washes

Qof **Old alluvial-fan deposits (late to middle Pleistocene)**—Moderately- to well-consolidated silt, sand, and gravel. Subunits are distinguished on basis of soil-profile development, degree of dissection, and relative position in local terrace-riser succession. On south side of San Bernardino Mountains, reddish-brown alluvial-fan deposits of primarily sand- to boulder-sized clasts are moderately consolidated and slightly to moderately dissected. They have moderate to well developed pedogenic soils ($A/AB/B/C_{ox}$ profiles with B_t horizons). On north side of San Bernardino Mountains, Qof deposits near east edge of quadrangle are mainly coarse debris flows consisting of angular boulders in matrix ranging from small boulders to silt. They are essentially unstratified, and have moderately well developed soil horizons and well dissected surfaces. Old fan deposits southeast of Hesperia, east of Mojave River, are stream-deposited, consisting of poorly to moderately well stratified pebble- to boulder-bearing sand, containing pebble to boulder lenses. Fan surfaces are cut by well defined channels separated by relatively smooth surfaces having moderately well developed soil horizons. West of Sheep Creek, on north side of San Gabriel Mountains, Qof fans consist of massive to poorly bedded, sand to boulder alluvium. Many show 2-m-thick soil profiles having well developed B_1 horizons ranging from dark brown to orangish-brown. Moderately well consolidated; highly dissected (Kenney, 1999). In Santa Ana quadrangle, extensive Qof deposits surround Lakeview Mountains, flank both sides of

Santiago Creek east of Orange, and occur at places in and along Elsinore trough. Includes:

Qofv **Old alluvial-fan deposits and young alluvial-valley deposits (Holocene and late to middle Pleistocene)**—Reddish-brown, gravel and sand alluvial-fan deposits; moderately indurated. Includes discontinuous younger alluvial-valley deposits locally

Qof_3 **Old alluvial-fan deposits, Unit 3 (late to middle Pleistocene)**—On south side of San Bernardino Mountains, moderately dissected interstratified sand and gravel capped by soils having B_t horizons a few tens of centimeters thick (Greenfield soils of Woodruff and Brock, 1980). Unit occurs in alluvial fans that flank Yucaipa Ridge and San Bernardino Mountains west of mouth of Mill Creek Canyon. Southeast of Hesperia and east of Arrastre Canyon, unit is reddish-brown in upper meter, grading downward to mediun brown; primarily sand- to boulder-sized clasts; moderately consolidated and variably dissected. Cut by deep canyons, but relatively smooth, undulating, elevated surfaces; commonly ponded against $Qvof_1$. Distinguished primarily by relative overlap relations at fan margins and relative dissection. East and west of Sheep Creek, fans are similar to those southeast of Hesperia, but surfaces are modified by numerous low-relief arroyos. In Santa Ana quadrangle, extensive Qof_3 deposits south and southwest of Riverside

Qof_2 **Old alluvial-fan deposits, Unit 2 (late to middle Pleistocene)**—On south side of San Bernardino Mountains, moderately dissected interstratified sand and gravel capped by soils having B_t horizons as much as 50 cm thick (Ramona soils of Woodruff and Brock, 1980). Unit occurs in alluvial fans that flank Crafton Hills, Yucaipa Ridge, and San Bernardino Mountains, and locally within the ranges (photo 362). On north side of San Bernardino Mountains, south of Rabbit Lake, unit is largely massive debris flows having irregular, varibly disseced, bouldery surfaces. Proximal parts of fans are reddish-brown in upper meter, and have much higher sand and gravel fraction near surface; moderately consolidated; surface littered with abundant, very large, angular boulders. Unit commonly flanks and laps onto $Qvof_2$. Distinguished mainly by relative degree of dissection and by overlap relations at fan margins

Qof_1 **Old alluvial-fan deposits, Unit 1 (middle Pleistocene)**—On south side of San Bernardino Mountains, moderately dissected interstratified sand and gravel capped by soils having B_t horizons as much as 50 to 150 cm thick (photo 567) (Ramona soils of Woodruff and Brock, 1980). On north side of San Bernardino Mountains, reddish-brown alluvial fan deposits of primarily sand- to boulder-sized clasts that are moderately consolidated and slightly to moderately dissected. Distinguished as terraces cut into locally older Qof sediments. On north side of San Bernardino Mountains, chiefly restricted to small area northeast of Silverwood Lake. There, distinguished from other Quaternary units using aerial photographs; deposits are distinctly elevated and more dissected than Qyf units, but less dissected than locally older Qof units

Qoa **Old axial-channel deposits (late to middle Pleistocene)**—On south side of San Bernardino Mountains, consists of moderately to well consolidated silt, sand, and gravel having moderate to well developed pedogenic soils ($A/AB/B/C_{ox}$ profiles with B_t horizons). Subunits are distinguished on basis of soil-profile development and relative position in local terrace-riser succession. Consists of two main deposits (Qoa_1 and Qoa_2) that filled valley areas as result of deposition by Oak Glen and Yucaipa Creeks and their tributaries, and third (Qoa_3) that forms thin veneer on strath terrace cut into Qoa_2. Qoa units rest unconformably on underlying San Timoteo Formation. Mapped as undifferentiated Qoa only west of Santa Ana River, near Crestmore. Includes:

Qoa_7 **Old axial-channel deposits, Unit 7 (late Pleistocene)**—Moderately indurated, slightly dissected gravel, sand, silt, and clay-bearing alluvium. Youngest

subdivision of Qoa. Correlates with Qoa_7 unit in Oceanside 30' x 60' quadrangle south of Santa Ana quadrangle

Qoa_3 **Old axial-channel deposits, Unit 3 (late to middle Pleistocene)**—On south side of San Bernardino Mountains, alluvial-valley deposit that forms thin veneer of sand and pebbly sand on strath terrace incised into unit Qoa_2. Capped by soils having thin to moderate B_t horizons (Greenfield soils of Woodruff and Brock, 1980). Unit very restricted, mapped only in southeastern part of quadrangle

Qoa_2 **Old axial-channel deposits, Unit 2 (late to middle Pleistocene)**—On south side of San Bernardino Mountains, moderately dissected interstratified sand and gravel capped by soils having B_t horizons as much as 50 cm thick (Ramona soils of Woodruff and Brock, 1980). Unit mapped only in southeastern part of quadrangle. In valley of Oak Glen Creek, north of Yucaipa, unit Qoa_2 forms widespread fill more than 10 m thick that rests unconformably on unit Qoa_1. On bench beneath City of Yucaipa, unit Qoa_2 is more restricted in distribution and forms thin veneer deposited on strath incised into Qoa_1

Qoa_1 **Old axial-channel deposits, Unit 1 (late to middle Pleistocene)**—On south side of San Bernardino Mountains, moderately dissected interstratified sand and gravel capped by soils having B_t horizons as much as 150 cm thick (Ramona soils of Woodruff and Brock, 1980). Unit occurs in and south of valley of Oak Glen Creek, north of Yucaipa, in southeastern part of quadrangle. There, consists of poorly sorted sand and pebble-cobble-boulder gravel preserved beneath overlying unit Qoa_2. In Yucaipa Valley, Qoa_1 forms widespread body deposited by stream flows of Yucaipa and Oak Glen Creeks that converged southwest and flowed down ancestral Live Oak Canyon

Qov **Old alluvial-valley deposits (late to middle Pleistocene)**—Moderately indurated, commonly slightly dissected sand, silt, and clay-bearing alluvium. Some deposits include thin alluvial deposits of Holocene age

Qoc **Old colluvial deposits (late to middle Pleistocene)**—Slightly to well dissected, unconsolidated to slightly consolidated, stabilized deposits of sediment, rock fragments, and soil material deposited by rain wash or slow continuous downslope creep. Forms small, discontinuous deposits at various places in quadrangle, but most abundantly in northwesternmost and northeasternmost parts

Qols **Old landslide deposits (late to middle Pleistocene)**—Slope-failure deposits that consist of chaotically mixed rubble and (or) displaced bedrock blocks (terminology follows Varnes, 1978). Moderately dissected, and probably inactive under current climatic and tectonic conditions. Large area of multiple slides mapped in Yucaipa Ridge area in southeastern part of quadrangle; there slides developed almost entirely in Mill Creek Formation of Gibson (1971). Large area of multiple slides also mapped on east side of San Antonio Ridge in upper part of San Gabriel River drainage; there slides mainly developed in Pelona Schist

Qop **Old paralic deposits, undivided (late to middle Pleistocene)**—Paralic deposits consisting of poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of silt, sand and cobbles. These deposits rest on now emergent wave cut abrasion platforms preserved by regional uplift (photos 418 and 419). Where more than one number shown (e.g. Qop_{2-4}) those deposits are undivided. Qop_5 is found in the Oceanside 1:100,000-scale quadrangle to the south, but is not known to occur in Santa Ana quadrangle. Includes:

Qop_7 **Old paralic deposits, Unit 7**—Paralic deposits consisting of poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of silt, sand and cobbles. These deposits rest on the 9-11 m Bird Rock terrace. Age about 80,000 years. In database, unit is queried because correlation with well dated Qop_7 in Oceanside 1:100,000-scale quadrangle to the south is uncertain

Qop_6 **Old paralic deposits, Unit 6**—Paralic deposits consisting of poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of silt, sand and cobbles. These deposits rest on the 22-23 m Nestor terrace. Age about 120,000 years.

Qop_4 **Old paralic deposits, Unit 4**—Paralic deposits consisting of poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of silt, sand and cobbles. These deposits rest on the 34-37 m Stuart Mesa terrace. Age about 200,000-300,000 years

Qop_3 **Old paralic deposits, Unit 3**—Paralic deposits consisting of poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of silt, sand and cobbles. These deposits rest on the 45-46 m Guy Fleming terrace. Age about 320,000-340,000 years

Qop_2 **Old paralic deposits, Unit 2**—Paralic deposits consisting of poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of silt, sand and cobbles. These deposits rest on the 55m Parry Grove terrace. Age about 413,000 years

Qop_1 **Old paralic deposits, Unit 1**—Paralic deposits consisting of poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of silt, sand and cobbles. These deposits rest on the 61-63 m Golf Course terrace. Age about 450,000 years

Qop_{2-6} **Old paralic deposits, Units 2-6, undivided**—Paralic deposits consisting of poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of silt, sand and cobbles. These deposits rest on the 22-55m terraces

Qop_{3-6} **Old paralic deposits, Units 3-6, undivided**—Paralic deposits consisting of poorly sorted, moderately permeable, reddish-brown, interfingered strandline, beach, estuarine and colluvial deposits composed of silt, sand and cobbles. These deposits rest on the 22-46 m terraces

Qopf **Old paralic deposits overlain by alluvial-fan deposits (late to middle Pleistocene)—**Areas where old paralic deposits are capped by extensive but thin, discontinuous, younger, locally derived, sandy alluvial fan deposits

Qolb **Old lacustrine deposits (bar) (late to middle Pleistocene)**—Pale-brown to pale-gray silty, sandy clay, and clayey silt. Has higher sand and silt component than younger lacustrine deposits. Relatively coherent when completely dry. Slightly elevated and incipiently dissected. Along margins, mixed with and includes some eolian deposits (Qoe). Mapped only around Rabbit Lake (dry) in northeastern part of quadrangle

Qoe **Old eolian deposits (late to middle Pleistocene)**—Stablized silt and medium- to fine-grained sand. Unconsolidated to slightly consolidated. Mapped only around Rabbit Lake (dry) in northeastern part of quadrangle

$Qoed_3$ **Old eolian deposits (dune sand), Unit 3 (late to middle Pleistocene)**—Slightly consolidated to moderately consolidated, yellowish brown (10YR 5/4) to light yellowish brown (10YR 6/4) and very pale brown (10YR 7/4), fine- to medium-grained sand and lesser amounts of silty sand and slightly gravelly sand that is well sorted to poorly sorted. Occurs on Rialto-Colton terrace west of Lytle-Creek-Cajon Creek Wash and north of Santa Ana River. Depositional structures are texturally massive to finely laminated. Forms large north-trending longitudinal dunes. Unit may be as much as 80 ft thick where dune forms are tallest (Clarke, 1977)

$Qoes_3$ **Old eolian deposits (sheet sand), Unit 3 (late to middle Pleistocene)**—Slightly consolidated to moderately consolidated, yellowish brown (10YR 5/4) to light yellowish brown (10YR 6/4) and very pale brown (10YR 7/4), fine to medium sand and lesser amounts of silty sand and slightly gravelly sand that is well sorted to poorly sorted; locally contains layers of sandy pebble gravel and gravelly sand. Occurs on Rialto-Colton terrace west of Lytle-Creek-Cajon Creek Wash and north of Santa Ana River. Similar to unit $Qoed_3$, except lacks

surface dune forms. Depositional structures are texturally massive to finely laminated. Forms sheets and low rolling upper surfaces adjacent to dunes of unit $Qoed_3$

Qos **Old surficial deposits (late to middle Pleistocene)**—Reddish-brown alluvial deposits not assigned to any specific surficial materials unit of this age. Chiefly sand- to boulder-sized clasts that are moderately consolidated and slightly to moderately dissected. Includes alluvial-fan, colluvial, and valley-filling deposits. Forms small, discontinuous deposits at various places in quadrangle, but most abundantly in Lake Arrowhead area, along eastern edge of quadrangle, and in San Gabriel Canyon area

Qvof **Very old alluvial-fan deposits (middle to early Pleistocene)**—Moderately to well consolidated silt, sand, gravel, and conglomerate. Subdivided units are distinguished on basis of soil-profile development, relative position in local terrace-riser succession, and overlapping relationships. In much of Peninsular Ranges area, unit is moderately well consolidated orangish brown sand and silt that is typically well dissected (photo 21). Very extensively developed on north side of San Bernardino and San Gabriel mountains, especially in area between Mojave River and Sheep Creek alluvial fan. Includes upper part of unit Meisling and Weldon (1989) term Victorville fan deposits (photos 354 and 295). Typically consists of medium to dark, reddish-brown lithic arkose. Moderately to well consolidated; in places, supports natural and artifical vertical faces 10 m high. Grain size variable over wide range, but mostly medium to very coarse sand; ranges from sparsely to highly conglomeratic. Bedding features obscure in much of unit, most commonly defined by lensoidal pods of conglomerate or conglomeratic, lithic arkose. Contains abundant, conspicuous clasts of Pelona Schist in most of unit. In places subdivided into:

$Qvof_3$ **Very old alluvial-fan deposits, Unit 3 (middle to early Pleistocene)**—In Yucaipa area and northwestward along and near San Andreas Fault, limited to localized deposits of brown silty sand a few meters thick that overlies unit $Qvof_2$. Consists of well consolidated, crudely stratified, light yellowish-brown (10YR 6/4 to 5/4), texturally massive to faintly laminated, poorly sorted, fine- to very coarse-grained sand. Capped by A/AB/B soils having Bt horizons as much as 1 to 2 m thick (Ramona soils as mapped by Woodruff and Brock, 1980). Extensively developed in Grand Terrace area north of Riverside. There, unit consists of thick, yellowish-brown, massive to moderately well bedded, sparsely conglomeratic arkose. Moderately well consolidated. Matrix supported, sparsely distributed pebble beds are common locally. On north side of San Bernardino Mountains, near east edge of quadrangle, unit consists of massive debris flow deposits containing unsorted, unbedded, angular and subrounded boulders up to 1 m across. Upper meter of deposits is orangish-brown, grading downward to light and medium brown. Upper surfaces are littered with angular and subrounded boulders

$Qvof_2$ **Very old alluvial-fan deposits, Unit 2 (early Pleistocene)**—In Yucaipa area and northwestward along and near San Andreas Fault, unit forms sequence of sand and subordinate gravel as much as 30 m thick. Well dissected, well consolidated, but friable, well stratified, medium- to very coarse-grained sand containing abundant pale pink, potassium feldspar angular granules and pebbles; locally capped by veneer of unit $Qvof_3$ or by A/AB/B soil. On north side of San Bernardino Mountains, near east edge of quadrangle, unit consists of massive debris flow deposits consisting of angular and subrounded boulders and lesser sand and gravel. Upper part is pale orangish-brown, grading downward to light and medium brown. Probably more than 10 m thick. Deeply incised compared to Qof fans. Flanked and overlapped by Qof_2 and $Qvof_3$ debris flows, and cut by thrust faults partly responsible for uplift of range

$Qvof_1$ **Very old alluvial-fan deposits, Unit 1 (early Pleistocene)**—In Yucaipa area and northwestward along and near San Andreas Fault, unit is reddish-brown,

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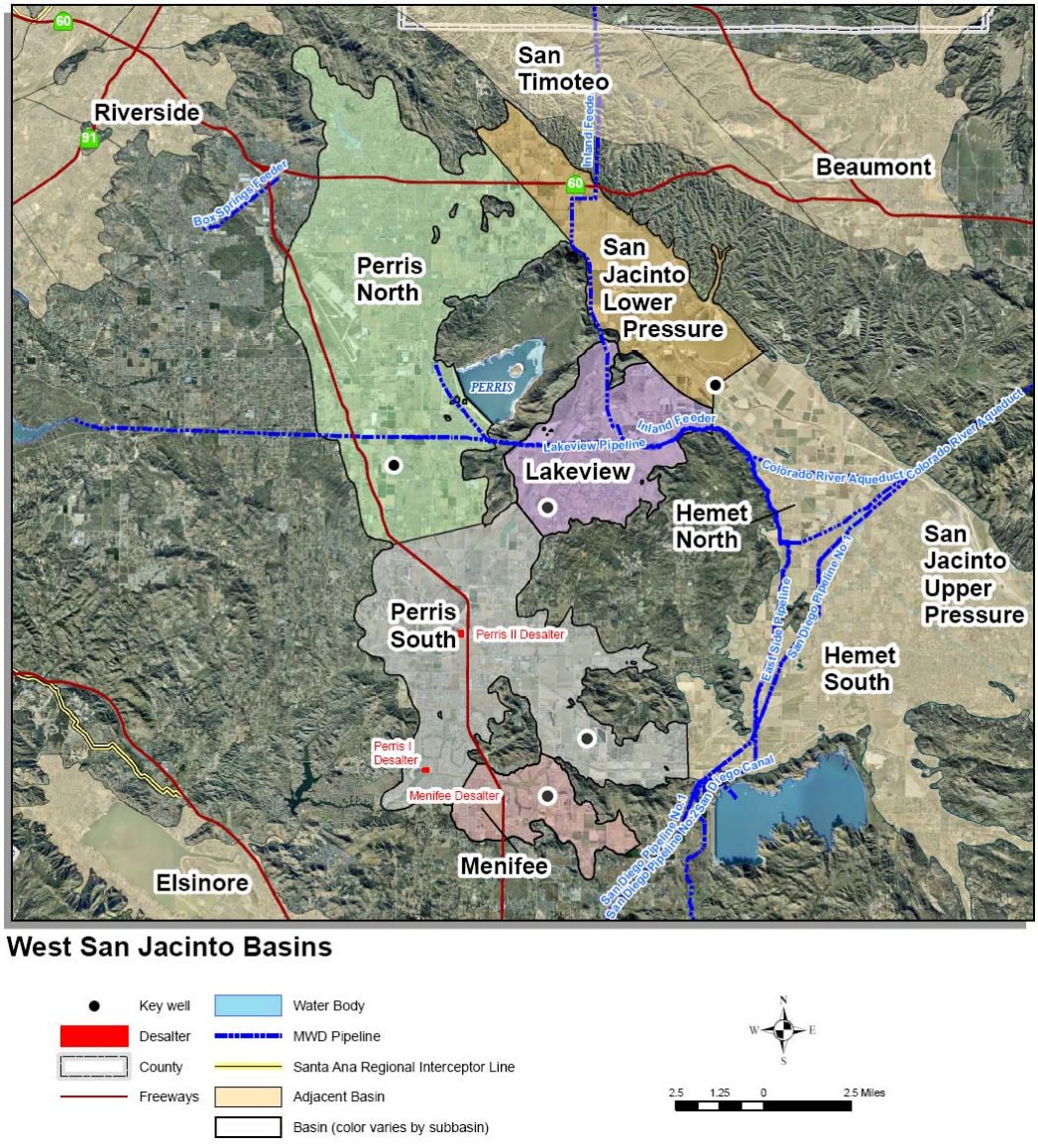
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The West San Jacinto Basins are located within the western portion of the San Jacinto River watershed in Riverside County. The West San Jacinto Basins underlie the service area of Metropolitan member agencies Eastern Municipal Water District (Eastern MWD) and a minor portion of Western Municipal Water District (Western MWD), and are divided into five basins, or management zones (Perris North, Perris South, San Jacinto Lower Pressure, Lakeview, and Menifee). The West San Jacinto Basins are utilized for groundwater supply for the cities of Perris, Moreno Valley, and Sun City; unincorporated areas of Menifee, Juniper Flats, Sunnymead, Edgemont, Romoland, Homeland, Mead Valley, Quail Valley, and Winchester. A map of the West San Jacinto Basins is provided in **Figure 17-1**.

Figure 17-1
Map of the West San Jacinto Basins



BASIN CHARACTERIZATION

The following section provides a physical description of the West San Jacinto Basins, including geographic location and hydrogeologic character.

Basin Producing Zones and Storage Capacity

Groundwater occurrence in the West San Jacinto Basins is generally within unconfined alluvium. As described above, the West San Jacinto Basins are divided into five subbasins that are differentiated by physical constrictions such as bedrock highs, narrows and faults between the zones or water quality variations. Hydrogeologic parameters for each subbasin are summarized in **Table 17-1** and discussed below.

Table 17-1
Summary of Hydrogeologic Parameters of West San Jacinto Basins

Parameter Structure	Description
Aquifer(s)	Unconfined alluvium
Depth of groundwater basin	Perris North: Up to 850 feet Perris South: Up to 1,000 feet Lakeview: More than 1,000 feet Menifee: Up to 900 feet San Jacinto Lower Pressure: Up to 1,200 feet
Depth of producing zones or screen intervals	Perris North: 250 to 700 feet Perris South: 100 to 350 feet (desalter wells) 200 to 600 feet (southeast) Lakeview: 300 to 1,000 feet Menifee: 100 to 600 feet San Jacinto Lower Pressure: Data not available
Yield and Storage	
Natural Safe Yield	36,200 AFY
Operational Safe Yield	48,100 AFY
Total Storage	1.8 million AF
Unused Storage Space (2000)	700,000 AF
Portion of Unused Storage Space Available for Storage	~200,000 AF (Lakeview only)

Source: Eastern MWD, 1995, 2005b, and 2006

Total depth of the West San Jacinto Basins ranges from about 40 feet to 1,350 feet. The deepest basins are the Lakeview and San Jacinto Lower Pressure subbasins with total depths over 1,000 feet. The San Jacinto Lower Pressure subbasin has alluvium to about 1,200 feet in depth, although it is comprised mostly of clays and silts and produces little water. Maximum depths in the other basins range from 600 to 900 feet. Producing zones range in depth from 100 to 1,000 feet.

Total storage within the West San Jacinto Basins has been estimated to be approximately 1.8 million AF (Eastern MWD, 2005b). In 2000, there was an estimated 1.1 million AF in storage, or about 700,000 AF in unused storage space (Eastern MWD, 2005b). Within the West San Jacinto Basins, Lakeview is the only subbasin with available unused storage capacity. About 200,000 AF of the unused storage space is available for additional storage (Eastern MWD, 2006a). Storage in the subbasins other than Lakeview is not useable due to poor water quality.

Safe Yield/Long-Term Balance of Recharge and Discharge

The natural safe yield is estimated to be approximately 36,200 AFY (Eastern MWD, 2005b), which represents the yield of the basin without artificial recharge. If artificial recharge is included, the yield of the basin increases to about 48,100 AFY (Eastern MWD, 2005b).

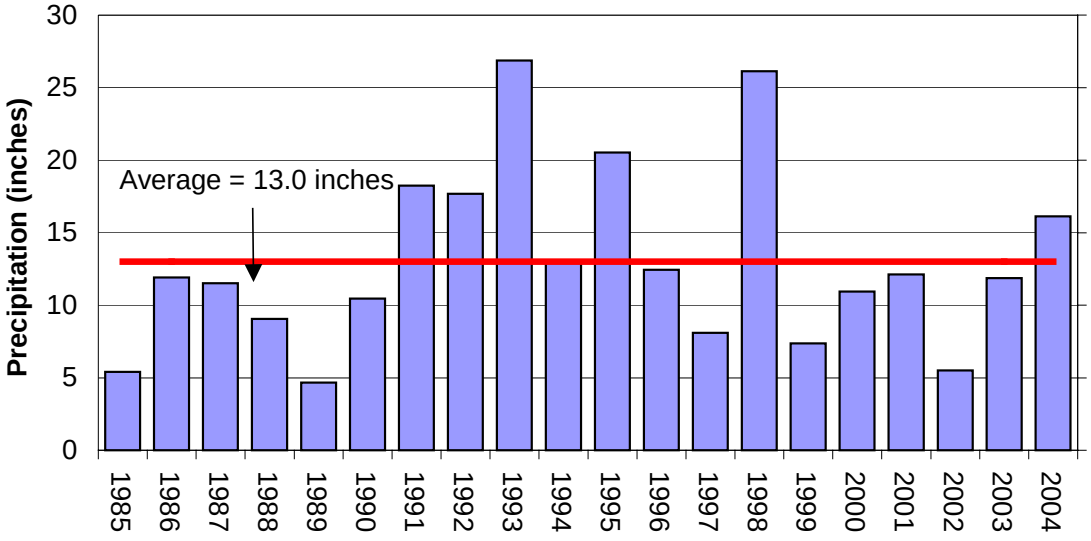
Sources of recharge in the West San Jacinto Basins consist of: percolation of stormwater runoff, precipitation, applied water, artificial recharge, and subsurface inflows from adjacent areas. Total natural inflows are estimated to be about 38,200 AFY (Eastern MWD, 2005b), more than 50 percent of which is a result of deep percolation of agricultural returns. Average recharge from stormflow percolation and runoff from the mountains is estimated to be about 11,500 AFY, or about 30 percent of the total inflows (Eastern MWD, 2005b). Deep percolation of precipitation also recharges the groundwater in the basin. Average historical precipitation in the area has been about 12 inches. However, over the 20-year period from 1985 to 2004 the average was slightly above with historical average at 13 inches as shown on **Figure 17-2** (CIMIS 2006). Annual evapotranspiration in the area is about 50 inches and, therefore, deep percolation of rainfall only occurs during wet years. The long-term recharge from precipitation in the West San Jacinto Basins is estimated to be about 6,400 AFY (Eastern MWD, 2005b).

Primary outflows include outflow to the Hemet-San Jacinto Basins to the east and groundwater production. About 2,000 AFY flows from the West San Jacinto Basins to the Hemet-San Jacinto Basins.

GROUNDWATER MANAGEMENT

The following section describes how the West San Jacinto Basins are currently managed. It includes a description of the governing structure within the basins and agreements with adjacent basins.

Figure 17-2
Historical Precipitation in the West San Jacinto Basins



Source: UC IPM, 2006
Hemet.T Station

Basin Governance

The West San Jacinto Basins are managed by Eastern MWD under the authority of the West San Jacinto Groundwater Basin Management Plan (Management Plan), which was cooperatively developed and adopted in 1995 under Assembly Bill 3030. Elements of the Management Plan include: artificial recharge, recovery of degraded groundwater to be blended with imported water, recovery of brackish water using demineralization treatment technologies, conjunctive use, and agricultural groundwater exchange. The managing agencies and their roles in groundwater management in the West San Jacinto Basins are summarized in **Table 17-2**.

The Management Plan also established an advisory committee that oversees management activities in the basin. Advisory committee members include the Nuevo Water Company, the cities of Moreno Valley and Perris, the McCanna Ranch Water Company, and two elected representatives from the private water producers.

Interactions with Adjoining Basins

Depending on groundwater levels, groundwater may flow between the Hemet-San Jacinto Basins to the east and southeast. This basin interaction primarily occurs between the San Jacinto Lower Pressure subbasin and the Lakeview subbasin of the West San Jacinto Basins and the San Jacinto Upper Pressure and Hemet North subbasins of the Hemet-San Jacinto Basins to the south. Flow can also occur between the Perris South and Menifee subbasins and the Hemet South subbasin of the Hemet-San Jacinto Basins to the east. These flows are not regulated and there are no formal agreements regarding these flows.

Table 17-2
Summary of Management Agencies in West San Jacinto Basins

Agency	Role
Eastern MWD	Basin Manager Implementation of water resources management projects (desalters, water treatment facilities, etc). Implementation of groundwater monitoring programs Member of Advisory Committee Retail and wholesale water sales Groundwater producer Operation of wastewater treatment and recycled water facilities
Nuevo Water Company	Member of Advisory Committee Groundwater producer
City of Moreno Valley	Member of Advisory Committee
City of Perris	Member of Advisory Committee Groundwater producer
McCanna Ranch Water Company	Member of Advisory Committee Groundwater producer

WATER SUPPLY FACILITIES AND OPERATIONS

The following section describes the water supply facilities within the West San Jacinto Basins. Facilities currently include 16 active municipal production well, 57 agricultural wells, about 340 acres of reclaimed water ponds and 3 desalters.

Municipal Production Wells

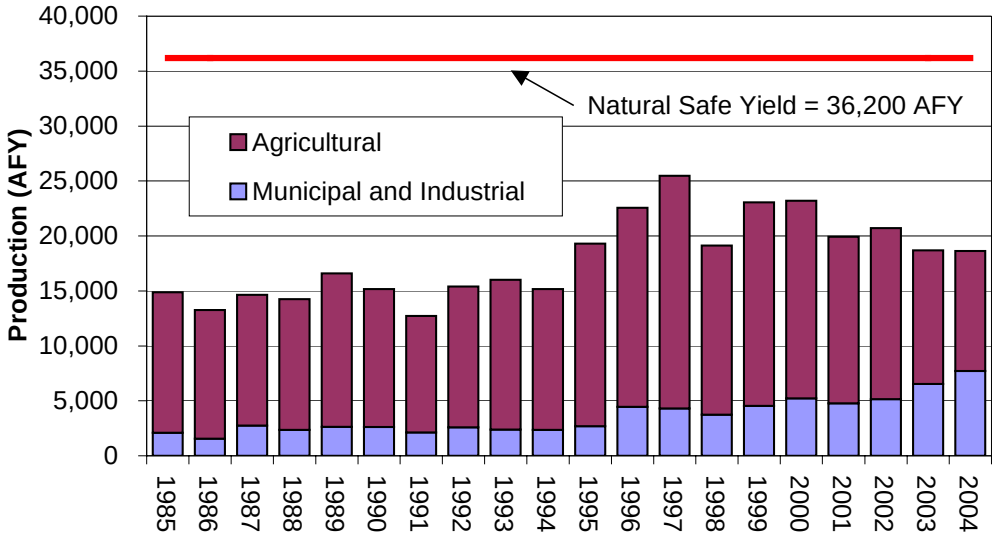
According to Eastern MWD, there are 16 active municipal production wells in the West San Jacinto Basins. Details of the production wells are provided in **Table 17-3**. **Figure 17-3** shows historical groundwater production between 1985 and 2004. Between 1985 and 1994, the percent of the total production attributed to municipal production was relatively small (averaging 15 to 16 percent). After 1995, with increasing shift from agricultural to urban land use and implementation of the Management Plan, the amount and relative percent of municipal production increased to an average of about 23 percent between 1995 and 2004.

Table 17-3
Summary of Production Wells in the West San Jacinto Basins

Category	Number of Active Wells	Estimated Production Capacity [1] (AFY)	Average Production 1985-2004 (AFY)	Well Operation Cost ($/AF)
Municipal	16	7,710	3,626	Regular wells $56 Desalter wells $83
Agricultural	57	17,974	14,310	Data not available
Total	**73**	**25,684**	**17,936**	-

Note: 1 Production capacity is based upon maximum annual production in past 5 years

Figure 17-3
Historical Groundwater Production in the West San Jacinto Basins



Source: Eastern, 1995 and 2006a

As shown in **Figure 17-3**, groundwater production in the West San Jacinto Basins generally decreased from a high of more than 25,000 AFY in 1997 to about 18,600 AFY in 2004. Most of this reduction is due to decreasing production from the Perris North and Lakeview subbasins. Total production levels are relatively low when compared with the estimated safe yield. This limited utilization of the groundwater is primarily due to the generally poor quality of the groundwater in a large proportion of the West San Jacinto area, such as the Perris South and

Menifee subbasins and in portions of the Perris North and Lakeview subbasins as discussed in more detail below.

Other Production

Non-municipal production is entirely for agricultural purposes from 57 wells. As summarized in **Figure 17-3**, between 1985 and 1994, agricultural production ranged from 81 to 88 percent of the total production. After 1995, with increasing shift from agricultural to urban land use the agricultural production decreased to about 60 percent of the total groundwater production in 2004.

ASR Wells

There are no ASR wells in the West San Jacinto Basins.

Spreading Basins

There are no spreading basins located in the West San Jacinto Basins used specifically for groundwater recharge. Recycled water storage ponds, though, contribute incidental recharge. There are about 340 acres of ponds used for regional water reclamation facilities in the Perris South area.

Seawater Intrusion Barriers

There are no seawater intrusion barriers in the West San Jacinto Basins.

Desalters

As part of the Management Plan, and with the help of funding through Metropolitan's Groundwater Recovery Program (GRP), Eastern MWD has implemented a Groundwater Salinity Management Program to reduce the total dissolved solids (TDS) concentrations in the Menifee and Perris South subbasins. This program consists of three desalination facilities. Specifically, the Menifee and the Perris I desalters are in operation, and the Perris II desalter is in design. The Menifee Desalter came online in 2001. The Perris I desalter came online in 2005. These facilities recover high-TDS water and treat it for potable use. The two online desalters produce 3 to 7 MGD of potable water. The desalters are a source of water, and help to decrease dependency on imported water. However, another role of the desalters is to call attention to and address the migration of brackish groundwater into areas of good quality groundwater (Eastern MWD, 2006). The locations of the desalters are shown in **Figure 17-1**.

GROUNDWATER LEVELS

Under the Management Plan Groundwater Monitoring Program, water levels in municipal and private agricultural wells are measured twice per year, in the spring and fall (Eastern MWD, 2006). There were 135 wells with groundwater level measurements in both 2003 and 2004. In spring 2005, groundwater level measurements were recorded for 158 wells. In

addition, water levels for another 404 wells (mostly monitoring wells) were reported to Eastern MWD by March Air Reserve Base (Eastern MWD, 2006).

According to Eastern MWD, the depth to groundwater within the West San Jacinto Basins ranges between 10 to 346 feet below ground surface (Eastern MWD, 2006). **Figure 17-4** shows groundwater elevations within the West San Jacinto Basins subbasins during early 2005.

Groundwater elevations range from above 1,700 feet MSL in the San Jacinto Lower Pressure area to less than 1,200 feet MSL in the Lakeview area. In general, groundwater flow directions are highly variable and largely dependent upon local pumping depressions and hydrogeologic structure. For example, groundwater flow is generally from northwest to southeast in the San Jacinto Lower Pressure subbasin and northern portion of the Perris North subbasin Groundwater flow is toward the east in the southern portion of the Perris North subbasin and most the Perris South subbasin. Groundwater flow is generally toward the west in the Lakeview and Menifee subbasin. It important to note that groundwater flows from the northern portion of the Perris South subbasin into the Lakeview subbasin, allowing poorer quality water of the Perris South subbasin to enter the higher quality Lakeview subbasin. This issue is discussed in more detail below.

Historical water levels from representative wells in the West San Jacinto Basins are shown on **Figure 17-5**. Water levels have remained relatively stable in the Perris South and Menifee subbasins since 1995, while water levels have increased in the Perris North and Lakeview subbasins (largely due to decreased production) and decreased in the San Jacinto Lower Pressure subbasin. The cause of the decreased water levels in the San Jacinto Lower Pressure subbasin is unknown.

GROUNDWATER QUALITY

The following section describes the groundwater quality within the West San Jacinto Basins. In general, groundwater quality in the West San Jacinto Basins is fair to poor with total dissolved solids (TDS) concentrations exceeding 10,000 mg/L in some areas.

Groundwater Quality Monitoring

Water quality samples are collected once a year under the West San Jacinto Groundwater Management Plan's Groundwater Monitoring Program (Eastern MWD 2005b and 2006). These samples are usually collected in the summer from all available municipal and private (agricultural) wells. In 2005, 102 water quality samples (general mineral and nitrogen) were collected (Eastern MWD, 2006).

Figure 17-4
Groundwater Contour Map for the West San Jacinto Basins – Spring 2005

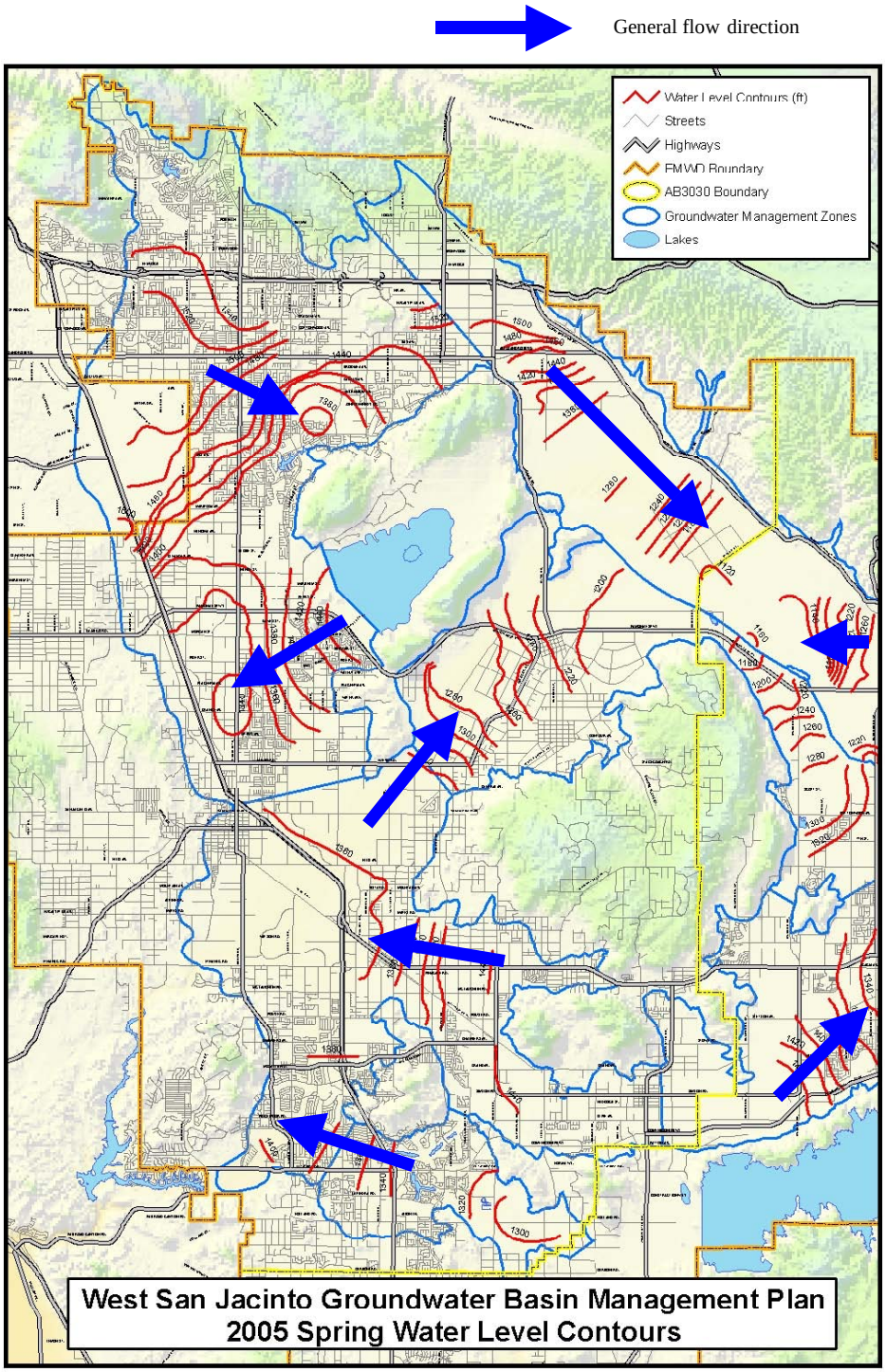
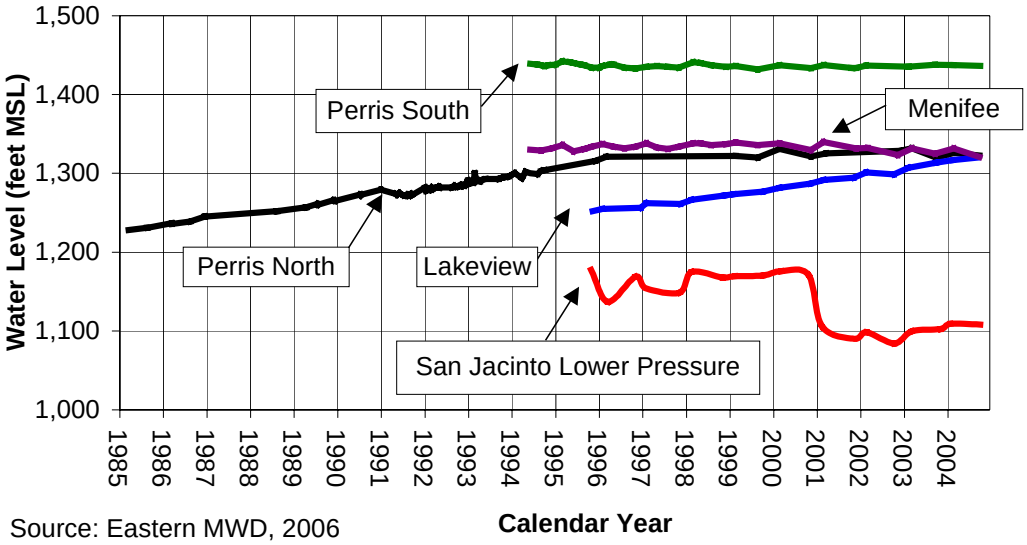


Figure 17-5
Historical Water Levels in the West San Jacinto Basins



Source: Eastern MWD, 2006

Groundwater Contaminants

Table 17-4 summarizes the constituents of concern in the West San Jacinto Basins. These include TDS, nitrate, volatile organic compounds (VOCs), perchlorate, iron and manganese. Water quality in the West San Jacinto Basins is generally poor, particularly in the Perris South, Menifee and San Jacinto Lower Pressure subbasins. The water with the highest TDS level (10,100 mg/L) was found in the southwest portion of the Perris South subbasin. The lowest TDS concentration of 220 mg/L was found in the northwest portion of the Perris North subbasin. **Figures 17-6 and 17-7** show 2005 concentrations of TDS and nitrate (as N), respectively.

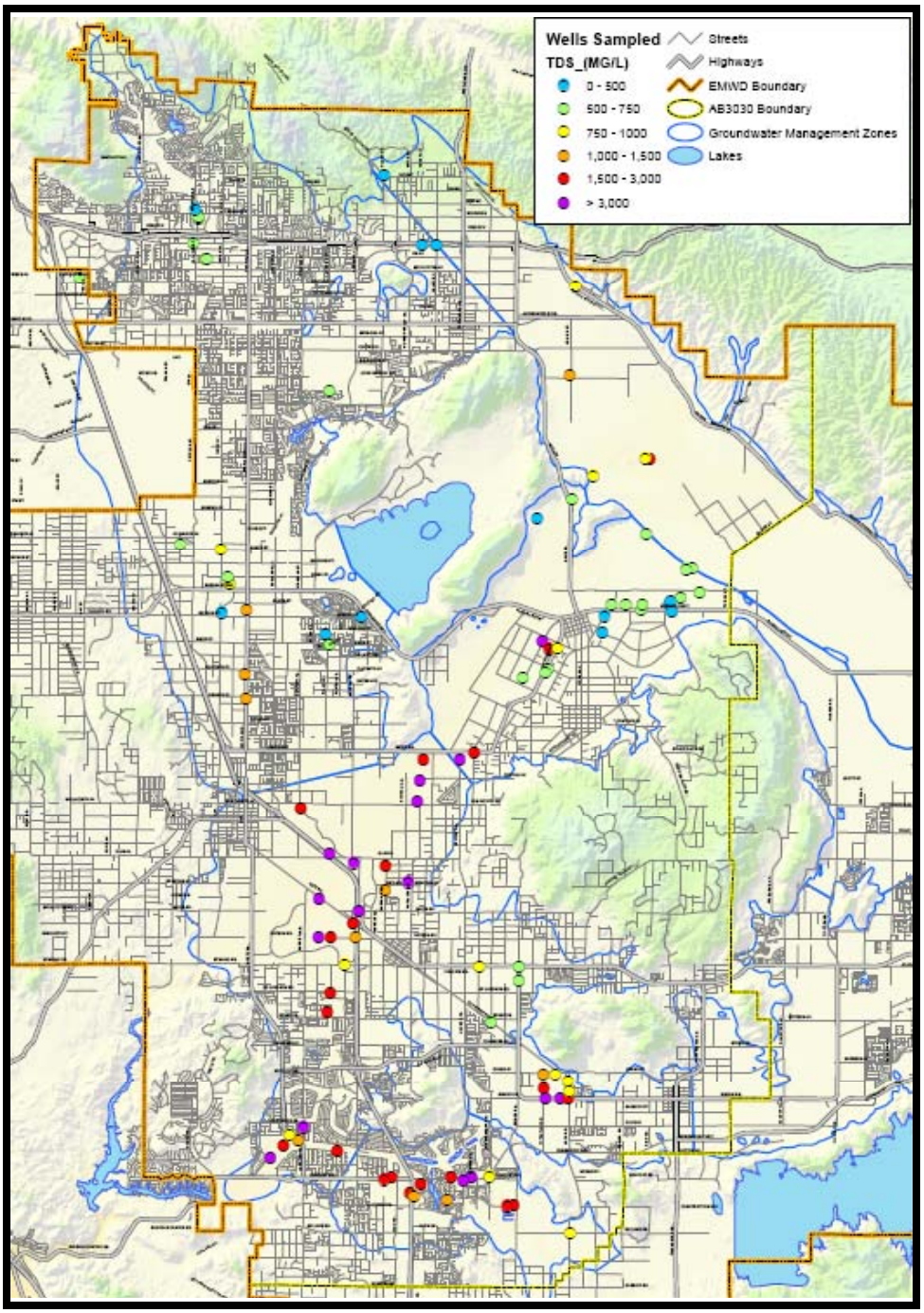
The groundwater resources of the Lakeview subbasin have been relied upon for irrigation and domestic water supply uses since the early part of the twentieth century. Although as seen in **Figure 17-5**, groundwater levels since 1995 have been rising in the Lakeview subbasin, historically significant groundwater level declines and water quality degradation have occurred. In the early 1960s, basin flow patterns changed as a result of excessive pumping in the Lakeview subbasin and groundwater flowed from the Perris South subbasin to the Lakeview subbasin. This change resulted in the intrusion of poor quality groundwater (high TDS) from the Perris South subbasin into areas previously containing good quality water. The poor quality water plume now extends more than two miles into the Lakeview subbasin. This reversal in the hydraulic gradient and the intrusion of poorer quality water into the Lakeview subbasin has resulted in the loss of use of production wells, depletion of groundwater reserves, and higher pumping costs. As discussed above, one of the purposes of the Perris Desalter Program is to reverse the migration trend of the poorer quality groundwater into the Lakeview subbasin. (Eastern MWD, 2006a)

Table 17-4
Summary of Constituents of Concern in the West San Jacinto Basins

Constituent	Units	Range	Description
TDS Secondary MCL = 500	mg/L	**Lakeview** 360 to 4,360 **Perris North** 220 to 1,310 **Perris South** 580 to 10,100 **San Jacinto L. Pressure**: 260 to 1,870 **Menifee** 910 to 3,680	Values reported are summarized from the 2005 Water Quality Monitoring Program for 102 wells
Nitrate (as N) Primary MCL = 10	mg/L	**Lakeview** ND to 21 **Perris North** ND to 23 **Perris South** ND to 18 **San Jacinto L. Pressure** ND to 8 **Menifee** ND to 10	Values reported are summarized from the 2005 Water Quality Monitoring Program for 102 wells
VOCs **(TCE and PCE)** Primary MCL for TCE = 5 Primary MCL for PCE = 5	µg/L	PCE: 1.5 to 7.9 TCE: 1.5 to 1.7	PCE detected in Eastern MWD's Moreno Valley Wells 44 and 49; TCE detected in Eastern MWD's Perris Valley Well 56. VOC plumes occur at March Air Reserve Base
Perchlorate Notification level = 6	µg/L	5 to 11	Detected in Eastern MWD's Moreno Valley Wells 44 and 49
Iron and manganese Secondary MCL Iron = 300 Manganese = 50	µg/L	**Iron** ND to 260 (240 for desalter wells) **Manganese** ND to 92 (310 for desalter wells)	Iron and manganese are reported for East Valley Wells and for Desalter Wells 75 and 76

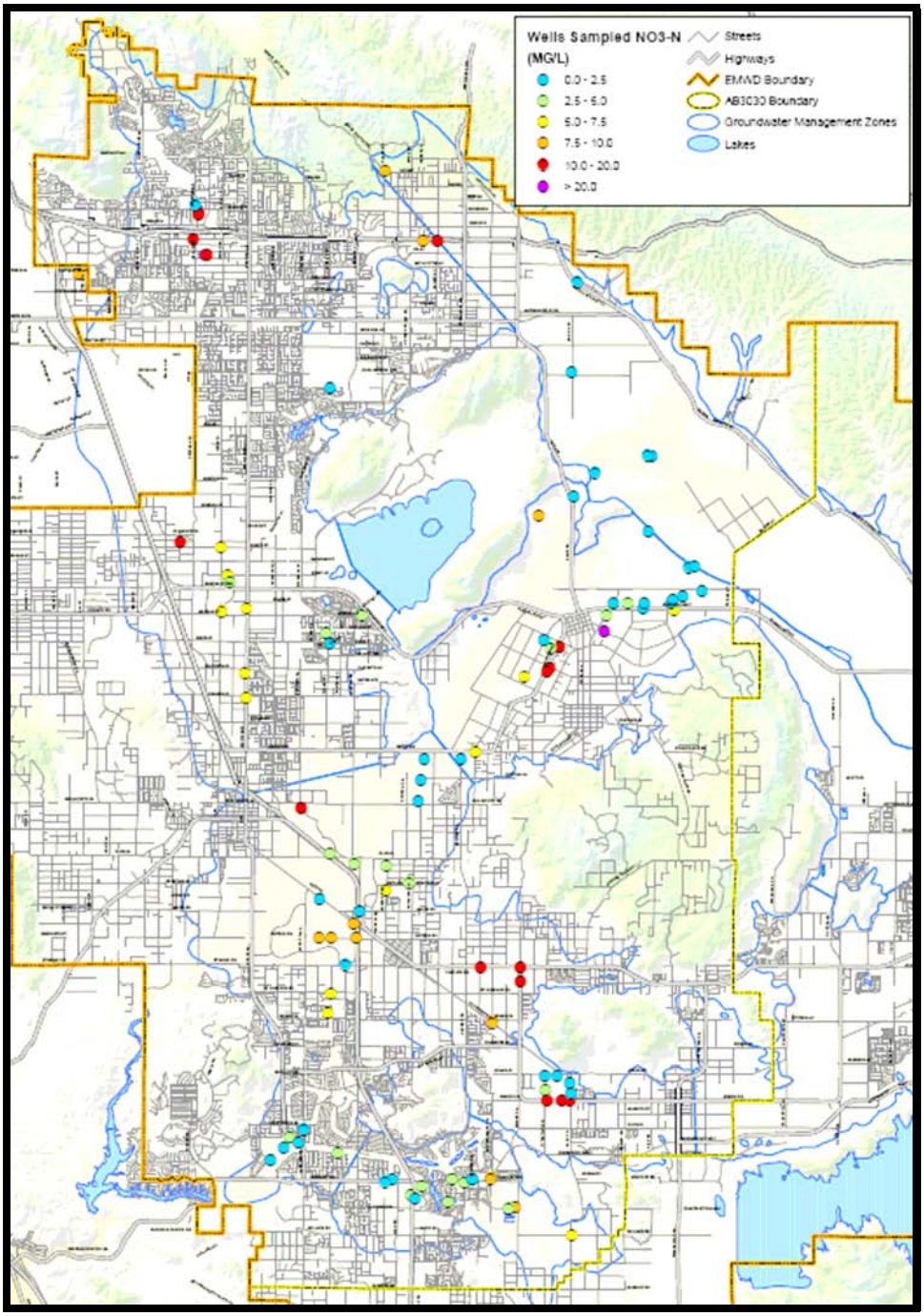
Source: Eastern MWD, 2004, 2005, 2006b

Figure 17-6
Summary of TDS Concentrations (2005)



Eastern MWD, 2006a

Figure 17-7
Summary of Nitrate Concentrations (2005)



Eastern MWD, 2006a

Since the opening of March Air Force Base in 1918, in the Perris North subbasin, various aircraft operations used cleaning solvents, petroleum products, and other hazardous substances. For more than eight decades, these contaminants were spilled, disposed of onto the ground, or stored in underground tanks that subsequently leaked. As a result, soil and groundwater have been contaminated by a variety of chemicals. The cleanup activity or remedial action is in accordance with an agreement signed by the Air Force and the three regulatory agencies overseeing environmental cleanup at March (U.S. Environmental Protection Agency, California E.P.A. Department of Toxic Substances Control, and California Regional Water Quality Control Board). As part of the cleanup effort, March Air Reserve Base operates monitoring, extraction, and injection wells. (Eastern MWD, 2006a)

Historical agricultural use and naturally occurring conditions in the Menifee and Perris South subbasins have contributed to high TDS groundwater in these areas.

Groundwater production has decreased in some areas due to conversion of agricultural lands to residential uses and high TDS in groundwater. The reduced production has resulted in rising groundwater levels. Rising groundwater can leach salts from the soil into the groundwater, and create areas of higher TDS levels or brackish groundwater. (Eastern MWD, 2006a)

Blending Needs

Groundwater production from a few wells is blended with imported water to meet drinking water quality regulations. Blending provided by Eastern MWD (2006a) is summarized in **Table 17-5**.

Groundwater Treatment

As discussed above, the Menifee and Perris Desalters treat up to 3,400 AFY of groundwater from the Menifee and Perris South subbasins and March Air Reserve Base operates treatment systems for the cleanup of VOCs, petroleum hydrocarbons and other hazardous substances. Approximately 1,441 AF was treated by the Menifee Desalter in 2004. The Perris I and Perris II desalters were not yet online during the period of record for this report.

Table 17-6 summarizes the cost to treat the high TDS water recovered from the 8 currently operating wells (Eastern MWD, 2006a).

Table 17-5
Blending Needs in the West San Jacinto Basins

Constituent Blended	Average Annual Blended (AFY)
Nitrate	900
TDS	1,400

Table 17-6
Summary of Groundwater Treatment in the West San Jacinto Basins

Treatment Type	Number of Wells	Constituents(s) of Concern	Treatment Target	Treatment Cost ($/AF)	Amount Treated (AFY)
Reverse Osmosis	8	TDS	500 mg/L	$503.50	3,400

CURRENT GROUNDWATER STORAGE PROGRAMS

No formal groundwater storage programs have been reported in the West San Jacinto Basins.

BASIN MANAGEMENT CONSIDERATIONS

Considerations for the West San Jacinto Basins include:

- There are no legal constraints, limitations, or ongoing/potential legal disputes within the West San Jacinto Management Area.

- The primary constraint on groundwater extraction is poor water quality, which limits use of groundwater as a potable water resource. Another related limiting factor involves controlling the migration of poor quality water into areas of pumped good quality groundwater.

References:

California Department of Water Resources (DWR), 2006. California's Groundwater Bulletin 118 – San Jacinto Groundwater Basin. Updated 1/20/06. Website: http://www.dpla2.water.ca.gov/publications/groundwater/bulletin118/basins/pdfs_desc/8-5.pdf Accessed 7/10/07.

Eastern Municipal Water District (Eastern MWD), 1995, groundwater Management Plan, West San Jacinto Groundwater Basin

Eastern Municipal Water District (Eastern MWD), 2005a, West San Jacinto Groundwater Basin Management Plan 2004 Annual Report

Eastern Municipal Water District (Eastern MWD), 2005b, Urban Water Management Plan

Eastern Municipal Water District (Eastern MWD), 2006a, groundwater Study Questionnaire for West San Jacinto Groundwater Basin Management Plan Area

Eastern Municipal Water District (Eastern MWD), 2006b, West San Jacinto Groundwater Basin Management Plan 2005 Annual Report

Map Unit Description

Western Riverside Area, California

Du Domino silt loam

Setting

Elevation: 1000 to 1800 feet
Mean annual precipitation: 12 to 12 inches
Mean annual air temperature: 63 to 63 degrees F
Frost-free period: 230 to 280 days

Composition

Domino and similar soils: 85 percent
Minor components: 15 percent

Description of Domino

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and Qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to Duripan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate maximum: 10 percent
Gypsum maximum: 0 percent
Available water capacity: Low (about 4.6 inches)

Interpretive Groups

Land capability classification (irrigated): 3s
Land capability (non irrigated): 3s
Ecological site: SILTY BASIN (R019XD068CA)

Typical Profile

0 to 14 inches: silt loam
14 to 27 inches: silt loam
27 to 36 inches: cemented
36 to 63 inches: loam, sandy loam

Minor Components

Unnamed
Percent of map unit: 3 percent

Chino
Percent of map unit: 3 percent

Willows
Percent of map unit: 3 percent

Unnamed
Percent of map unit: 3 percent

Unnamed
Percent of map unit: 3 percent

Dv Domino silt loam, saline-alkali

Setting

Elevation: 1000 to 1800 feet
Mean annual precipitation: 12 to 12 inches
Mean annual air temperature: 63 to 63 degrees F
Frost-free period: 230 to 280 days

Composition

Domino and similar soils: 85 percent
Minor components: 15 percent

Description of Domino

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and Qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to Duripan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate maximum: 10 percent
Gypsum maximum: 0 percent
Salinity maximum: Slightly saline or moderately saline (8.0 to 16.0 mmhos/cm)
Available water capacity: Very low (about 3.0 inches)

Interpretive Groups

Land capability classification (irrigated): 3s
Land capability (non irrigated): 3s
Ecological site: SILTY BASIN (R019XD068CA)

Typical Profile

0 to 14 inches: silt loam
14 to 27 inches: silt loam
27 to 36 inches: cemented
36 to 63 inches: loam, sandy loam

Minor Components

Chino

Percent of map unit: 10 percent

Willows

Percent of map unit: 4 percent

Unnamed

Percent of map unit: 1 percent
Landform: Depressions

EpA Exeter sandy loam, deep, 0 to 2 percent slopes

Setting

Elevation: 300 to 700 feet
Mean annual precipitation: 7 to 15 inches
Mean annual air temperature: 64 to 64 degrees F
Frost-free period: 250 to 300 days

Composition

Exeter and similar soils: 85 percent
Minor components: 15 percent

Description of Exeter

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and Qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to Duripan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate maximum: 1 percent
Gypsum maximum: 0 percent
Available water capacity: Low (about 5.3 inches)

Interpretive Groups

Land capability classification (irrigated): 2s
Land capability (non irrigated): 3e
Ecological site: LOAMY (R019XD029CA)

Typical Profile

0 to 16 inches: sandy loam
16 to 37 inches: sandy clay loam
37 to 50 inches: indurated
50 to 60 inches: stratified sandy loam to silt loam

Minor Components

Greenfield

Percent of map unit: 5 percent

Ramona

Percent of map unit: 5 percent

Monserate

Percent of map unit: 5 percent

EpC2 Exeter sandy loam, deep, 2 to 8 percent slopes, eroded

Setting

Elevation: 300 to 700 feet
Mean annual precipitation: 7 to 15 inches
Mean annual air temperature: 64 to 64 degrees F
Frost-free period: 250 to 300 days

Composition

Exeter and similar soils: 85 percent
Minor components: 15 percent

Description of Exeter

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and Qualities

Slope: 2 to 8 percent
Depth to restrictive feature: 40 to 60 inches to Duripan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 1 percent
Gypsum maximum: 0 percent
Available water capacity: Low (about 5.3 inches)

Interpretive Groups

Land capability classification (irrigated): 2e
Land capability (non irrigated): 3e
Ecological site: LOAMY (R019XD029CA)

Typical Profile

0 to 16 inches: sandy loam
16 to 37 inches: sandy clay loam
37 to 50 inches: indurated
50 to 60 inches: stratified sandy loam to silt loam

Minor Components

Ramona

Percent of map unit: 5 percent

Monserate

Percent of map unit: 5 percent

Greenfield

Percent of map unit: 5 percent

HcC Hanford coarse sandy loam, 2 to 8 percent slopes

Setting

Elevation: 150 to 900 feet
Mean annual precipitation: 9 to 20 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 250 to 280 days

Composition

Hanford and similar soils: 85 percent
Minor components: 15 percent

Description of Hanford

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and Qualities

Slope: 2 to 8 percent
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 0 percent
Gypsum maximum: 0 percent
Available water capacity: Moderate (about 7.0 inches)

Interpretive Groups

Land capability classification (irrigated): 2e
Land capability (non irrigated): 3e
Ecological site: SANDY (R020XD012CA)

Typical Profile

0 to 8 inches: coarse sandy loam
8 to 40 inches: fine sandy loam
40 to 60 inches: stratified loamy sand to coarse sandy loam

Minor Components

Greenfield
Percent of map unit: 5 percent

Ramona
Percent of map unit: 5 percent

Unnamed
Percent of map unit: 2 percent

Tujunga
Percent of map unit: 2 percent

Unnamed
Percent of map unit: 1 percent

PaA Pachappa fine sandy loam, 0 to 2 percent slopes

Setting

Elevation: 1000 to 1000 feet
Mean annual precipitation: 14 to 14 inches
Mean annual air temperature: 63 to 63 degrees F
Frost-free period: 270 to 270 days

Composition

Pachappa and similar soils: 85 percent
Minor components: 15 percent

Description of Pachappa

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and Qualities

Slope: 0 to 2 percent
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high or high (0.57 to 1.98 in/hr)
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate maximum: 5 percent
Gypsum maximum: 0 percent
Available water capacity: Moderate (about 9.0 inches)

Interpretive Groups

Land capability classification (irrigated): 1
Land capability (non irrigated): 3c
Ecological site: LOAMY (R019XD029CA)

Typical Profile

0 to 20 inches: fine sandy loam
20 to 63 inches: loam

Minor Components

San emigdio
Percent of map unit: 5 percent

Hanford
Percent of map unit: 5 percent

Greenfield
Percent of map unit: 5 percent

PaC2 Pachappa fine sandy loam, 2 to 8 percent slopes, eroded

Setting

Elevation: 1000 to 1000 feet
Mean annual precipitation: 14 to 14 inches
Mean annual air temperature: 63 to 63 degrees F
Frost-free period: 270 to 270 days

Composition

Pachappa and similar soils: 85 percent
Minor components: 15 percent

Description of Pachappa

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and Qualities

Slope: 2 to 8 percent
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high or high (0.57 to 1.98 in/hr)
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 5 percent
Gypsum maximum: 0 percent
Available water capacity: Moderate (about 8.4 inches)

Interpretive Groups

Land capability classification (irrigated): 2e
Land capability (non irrigated): 3e
Ecological site: LOAMY (R019XD029CA)

Typical Profile

0 to 20 inches: fine sandy loam
20 to 40 inches: loam
40 to 63 inches: fine sandy loam

Minor Components

San emigdio
Percent of map unit: 5 percent

Hanford
Percent of map unit: 5 percent

Greenfield
Percent of map unit: 5 percent

RaA Ramona sandy loam, 0 to 2 percent slopes

Setting

Elevation: 250 to 3500 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 63 to 63 degrees F
Frost-free period: 230 to 320 days

Composition

Ramona and similar soils: 85 percent
Minor components: 15 percent

Description of Ramona

Setting

Landform: Alluvial fans, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Properties and Qualities

Slope: 0 to 2 percent
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate maximum: 1 percent
Gypsum maximum: 0 percent
Available water capacity: Moderate (about 8.1 inches)

Interpretive Groups

Land capability classification (irrigated): 1
Land capability (non irrigated): 3c
Ecological site: LOAMY (R019XD029CA)

Typical Profile

0 to 14 inches: sandy loam
14 to 23 inches: fine sandy loam
23 to 68 inches: sandy clay loam
68 to 74 inches: gravelly sandy loam

Minor Components

Greenfield

Percent of map unit: 5 percent

Hanford

Percent of map unit: 5 percent

Tujunga

Percent of map unit: 5 percent

RsC Riverwash

Setting

Elevation: 700 to 2900 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 110 to 180 days

Composition

Riverwash: 100 percent

Description of Riverwash

Setting

Landform: Channels
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and gravelly alluvium derived from mixed sources

Properties and Qualities

Slope: 0 to 8 percent
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High or very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 0 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate maximum: 0 percent
Gypsum maximum: 0 percent
Available water capacity: Very low (about 1.9 inches)

Interpretive Groups

Land capability (non irrigated): 8

Typical Profile

0 to 6 inches: gravelly coarse sand
6 to 60 inches: stratified extremely gravelly coarse sand to gravelly sand

Wf Willows silty clay

Setting

Elevation: 0 to 1700 feet
Mean annual precipitation: 19 to 19 inches
Mean annual air temperature: 61 to 61 degrees F
Frost-free period: 210 to 250 days

Composition

Willows and similar soils: 85 percent
Minor components: 15 percent

Description of Willows

Setting

Landform: Basin floors
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium drived from mixed sources

Properties and Qualities

Slope: 0 to 2 percent
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low or moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 0 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate maximum: 5 percent
Gypsum maximum: 0 percent
Salinity maximum: Very slightly saline or moderately saline (4.0 to 16.0 mmhos/cm)
Sodium adsorption ratio maximum: 2.0
Available water capacity: Low (about 5.1 inches)

Interpretive Groups

Land capability classification (irrigated): 3w
Land capability (non irrigated): 4w
Ecological site: SILTY BASIN (R019XD068CA)

Typical Profile

0 to 10 inches: silty clay
10 to 60 inches: clay

Minor Components

Madera

Percent of map unit: 5 percent

Domino

Percent of map unit: 5 percent

Chino

Percent of map unit: 5 percent

Wg Willows silty clay, saline-alkali

Setting

Elevation: 0 to 1700 feet
Mean annual precipitation: 19 to 19 inches
Mean annual air temperature: 61 to 61 degrees F
Frost-free period: 210 to 250 days

Composition

Willows and similar soils: 85 percent
Minor components: 15 percent

Description of Willows

Setting

Landform: Basin floors
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources

Properties and Qualities

Slope: 0 to 2 percent
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low or moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 0 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate maximum: 5 percent
Gypsum maximum: 0 percent
Salinity maximum: Very slightly saline or moderately saline (4.0 to 16.0 mmhos/cm)
Sodium adsorption ratio maximum: 2.0
Available water capacity: Low (about 5.1 inches)

Interpretive Groups

Land capability classification (irrigated): 3w
Land capability (non irrigated): 4w
Ecological site: SILTY BASIN (R019XD068CA)

Typical Profile

0 to 10 inches: silty clay
10 to 60 inches: clay

Minor Components

Madera

Percent of map unit: 5 percent

Domino

Percent of map unit: 5 percent

Chino

Percent of map unit: 5 percent

Wh Willows silty clay, strongly saline-alkali

Setting

Elevation: 0 to 1700 feet
Mean annual precipitation: 19 to 19 inches
Mean annual air temperature: 61 to 61 degrees F
Frost-free period: 210 to 250 days

Composition

Willows and similar soils: 85 percent
Minor components: 15 percent

Description of Willows

Setting

Landform: Basin floors
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources

Properties and Qualities

Slope: 0 to 2 percent
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low or moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 0 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate maximum: 5 percent
Gypsum maximum: 0 percent
Salinity maximum: Very slightly saline or moderately saline (4.0 to 16.0 mmhos/cm)
Sodium adsorption ratio maximum: 2.0
Available water capacity: Low (about 5.1 inches)

Interpretive Groups

Land capability classification (irrigated): 4w
Land capability (non irrigated): 7w
Ecological site: SILTY BASIN (R019XD068CA)

Typical Profile

0 to 10 inches: silty clay
10 to 60 inches: clay

Minor Components

Chino

Percent of map unit: 5 percent

Domino

Percent of map unit: 5 percent

Madera

Percent of map unit: 5 percent

Chemical Soil Properties

Western Riverside Area, California

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorption ratio
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
Du:								
Domino	0-14	10-15	---	7.9-8.4	5-10	0	0.0-4.0	0
	14-27	10-20	---	7.9-8.4	5-10	0	0.0-4.0	0
	27-36	---	---	---	---	---	---	---
	36-63	5.0-10	---	7.9-8.4	5-10	0	0.0-4.0	0
Dv:								
Domino	0-14	10-15	---	7.9-9.0	5-10	0	8.0-16.0	0
	14-27	10-20	---	7.9-9.0	5-10	0	8.0-16.0	0
	27-36	---	---	---	---	---	---	---
	36-63	0.0-5.0	---	7.9-9.0	5-10	0	8.0-16.0	0
EpA:								
Exeter	0-16	5.0-10	---	6.6-7.3	0	0	0.0	0
	16-37	10-20	---	6.6-7.8	0-1	0	0.0	0
	37-50	---	---	---	---	---	---	---
	50-60	5.0-10	---	7.4-8.4	0-1	0	0.0-2.0	0
EpC2:								
Exeter	0-16	5.0-10	---	6.6-7.3	0	0	0.0	0
	16-37	10-20	---	6.6-7.8	0-1	0	0.0	0
	37-50	---	---	---	---	---	---	---
	50-60	5.0-10	---	7.4-8.4	0-1	0	0.0-2.0	0
HcC:								
Hanford	0-8	5.0-10	---	5.6-7.8	0	0	0.0	0
	8-40	5.0-10	---	5.6-7.8	0	0	0.0	0
	40-60	5.0-10	---	5.6-7.8	0	0	0.0	0
PaA:								
Pachappa	0-20	5.0-10	---	6.1-7.8	0	0	0.0-2.0	0
	20-63	10-15	---	6.6-7.8	1-5	0	0.0-4.0	0
PaC2:								
Pachappa	0-20	5.0-10	---	6.1-7.8	0	0	0.0-2.0	0
	20-40	10-15	---	6.6-7.8	1-5	0	0.0-4.0	0
	40-63	5.0-10	---	6.6-8.4	1-5	0	0.0-4.0	0
RaA:								
Ramona	0-14	5.0-10	---	5.6-7.3	0	0	0.0	0
	14-23	5.0-10	---	6.1-7.3	0	0	0.0	0
	23-68	10-15	---	6.1-7.3	0-1	0	0.0	0
	68-74	5.0-10	---	6.6-8.4	0	0	0.0	0

Chemical Soil Properties

Western Riverside Area, California

Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbon-ate	Gypsum	Salinity	Sodium adsorption ratio
	In	*meq/100 g*	*meq/100 g*	*pH*	*Pct*	*Pct*	*mmhos/cm*	
RsC:								
Riverwash	0-6	---	0.0	---	0	0	0.0	0
	6-60	---	0.0	---	0	0	0.0	0
Wf:								
Willows	0-10	30-40	---	7.4-9.0	1-5	0	2.0-8.0	0-2
	10-60	30-40	---	8.5-9.0	1-5	0	4.0-16.0	0-2
Wg:								
Willows	0-10	30-40	---	7.4-9.0	1-5	0	2.0-8.0	0-2
	10-60	30-40	---	8.5-9.0	1-5	0	4.0-16.0	0-2
Wh:								
Willows	0-10	30-40	---	7.4-9.0	1-5	0	2.0-8.0	0-2
	10-60	30-40	---	8.5-9.0	1-5	0	4.0-16.0	0-2

Engineering Properties

Western Riverside Area, California

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash.

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 Inches	3-10 Inches	4	10	40	200		
	In				Pct	Pct					Pct	
Du:												
Domino	0-14	Silt loam	ML	A-4	0	0	100	100	85-100	60-80	25-40	NP-10
	14-27	Loam, Silty clay loam, Silt loam	CL	A-6	0	0	100	100	85-100	60-85	30-40	10-20
	27-36	Cemented	---	---	---	---	---	---	---	---	---	---
	36-63	Loam, Sandy loam	ML, SM	A-4	0	0	90-100	90-100	55-85	35-60	15-35	NP-10
Dv:												
Domino	0-14	Silt loam	ML	A-4	0	0	100	100	85-100	60-80	15-40	NP-10
	14-27	Loam, Silty clay loam, Silt loam	CL	A-6	0	0	100	100	85-100	60-85	30-40	10-20
	27-36	Cemented	---	---	---	---	---	---	---	---	---	---
	36-63	Loam, Sandy loam	ML, SM	A-4	0	0	90-100	90-100	55-85	35-60	15-35	NP-10
EpA:												
Exeter	0-16	Sandy loam	SM	A-4	0	0	95-100	85-100	50-70	35-50	20-30	NP-5
	16-37	Clay loam, Loam, Sandy clay loam	CL, SC	A-6	0	0	95-100	85-100	70-90	35-65	25-40	10-20
	37-50	Indurated	---	---	---	---	---	---	---	---	---	---
	50-60	Stratified sandy loam to silt loam	ML, SM	A-4	0	0	80-100	75-85	60-85	35-60	20-35	NP-10
EpC2:												
Exeter	0-16	Sandy loam	SM	A-4	0	0	95-100	85-100	50-70	35-50	20-30	NP-5
	16-37	Clay loam, Loam, Sandy clay loam	CL, SC	A-6	0	0	95-100	85-100	70-90	35-65	25-40	10-20
	37-50	Indurated	---	---	---	---	---	---	---	---	---	---
	50-60	Stratified sandy loam to silt loam	ML, SM	A-4	0	0	80-100	75-85	60-85	35-60	20-35	NP-10

Engineering Properties

Western Riverside Area, California

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 Inches	3-10 Inches	4	10	40	200		
	In				Pct	Pct					Pct	
HcC:												
Hanford	0-8	Coarse sandy loam	SM	A-4	0	0	95-100	90-100	50-75	35-50	20-30	NP-5
	8-40	Coarse sandy loam, Fine sandy loam, Sandy loam	SM	A-4	0	0	95-100	90-100	50-75	35-50	20-30	NP-5
	40-60	Stratified loamy sand to coarse sandy loam	SM	A-1, A-2	0	0	85-100	75-100	40-60	15-35	15-20	NP
PaA:												
Pachappa	0-20	Fine sandy loam	SM	A-4	0	0	100	95-100	70-85	35-50	20-30	NP-5
	20-63	Loam, Sandy clay loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	95-100	85-95	35-60	25-35	5-15
PaC2:												
Pachappa	0-20	Fine sandy loam	SM	A-4	0	0	100	95-100	70-85	35-50	20-30	NP-5
	20-40	Loam, Sandy clay loam	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	100	95-100	85-95	35-60	25-35	5-15
	40-63	Fine sandy loam, Sandy loam	SM	A-4	0	0	100	95-100	70-80	35-50	20-30	NP-5

Engineering Properties

Western Riverside Area, California

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 Inches	3-10 Inches	4	10	40	200		
	In				Pct	Pct					Pct	
RaA:												
Ramona	0-14	Sandy loam	SM	A-2, A-4	0	0	95-100	75-95	50-60	20-40	15-25	NP-5
	14-23	Fine sandy loam, Loam	CL-ML, ML, SC-SM, SM	A-4	0	0	95-100	75-95	50-80	40-60	20-30	NP-10
	23-68	Loam, Sandy clay loam, Sandy loam	SC, SC-SM	A-4, A-6	0	0	95-100	75-95	50-75	35-50	25-40	5-15
	68-74	Gravelly coarse sandy loam, Gravelly loam, Gravelly sandy loam	SC-SM, SM	A-1, A-2, A-4	0	0	60-80	50-75	30-65	15-50	15-35	NP-10
RsC:												
Riverwash	0-6	Gravelly coarse sand	GP, GP-GM, GW, GW-GM	A-1	---	0-5	50-80	50-75	15-45	0-10	---	NP
	6-60	Stratified extremely gravelly coarse sand to gravelly sand	GW, SW	A-1	---	0-25	25-55	25-50	10-30	0-5	---	NP
Wf:												
Willows	0-10	Silty clay	CH	A-7	0	0	100	95-100	90-100	85-95	50-70	30-45
	10-60	Clay, Silty clay	CH	A-7	0	0	100	95-100	90-100	85-95	50-70	30-45
Wg:												
Willows	0-10	Silty clay	CH	A-7	0	0	100	95-100	90-100	85-95	50-70	30-45
	10-60	Clay, Silty clay	CH	A-7	0	0	100	95-100	90-100	85-95	50-70	30-45

Engineering Properties

Western Riverside Area, California

Map symbol and soil name	Depth	USDA texture	Classification		Fragments		Percent passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 Inches	3-10 Inches	4	10	40	200		
	In				Pct	Pct					Pct	
Wh:												
Willows	0-10	Silty clay	CH	A-7	0	0	100	95-100	90-100	85-95	50-70	30-45
	10-60	Clay, Silty clay	CH	A-7	0	0	100	95-100	90-100	85-95	50-70	30-45

RUSLE2 Related Attributes

Western Riverside Area, California

Map symbol and soil name	Pct. of map unit	Hydrologic group	Kf	T factor	Representative value		
					% Sand	% Silt	% Clay
Du:							
Domino	85	C	.55	3	26.5	53.5	20.0
Dv:							
Domino	85	C	.55	3	26.5	53.5	20.0
EpA:							
Exeter	85	B	.24	2	65.9	19.1	15.0
EpC2:							
Exeter	85	B	.24	2	65.9	19.1	15.0
HcC:							
Hanford	85	B	.28	4	68.3	19.2	12.5
PaA:							
Pachappa	85	B	.24	5	67.5	21.0	11.5
PaC2:							
Pachappa	85	B	.24	5	67.5	21.0	11.5
RaA:							
Ramona	85	B	.20	5	68.8	23.7	7.5
RsC:							
Riverwash	100	---	.10	---	92.9	6.6	0.5
Wf:							
Willows	85	D	.20	5	5.3	44.7	50.0
Wg:							
Willows	85	D	.20	5	5.3	44.7	50.0
Wh:							
Willows	85	D	.20	5	5.3	44.7	50.0

Physical Soil Properties

Western Riverside Area, California

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
Du:														
Domino	0-14	---	---	15-25	1.40-1.50	4.00-14.00	0.15-0.18	0.0-2.9	0.5-1.0	.55	.55	3	4L	86
	14-27	---	---	20-35	1.40-1.50	0.42-1.40	0.15-0.18	3.0-5.9	0.0	.43	.55			
	27-36	---	---	---	---	0.00-0.01	---	---	---	---	---			
	36-63	---	---	10-20	1.45-1.60	1.40-4.00	0.06-0.10	0.0-2.9	0.0	.32	.32			
Dv:														
Domino	0-14	---	---	15-25	1.35-1.45	4.00-14.00	0.09-0.13	0.0-2.9	0.5-1.0	.55	.55	3	4L	86
	14-27	---	---	20-35	1.30-1.45	0.42-1.40	0.09-0.13	3.0-5.9	0.0	.55	.55			
	27-36	---	---	---	---	0.00-0.01	---	---	---	---	---			
	36-63	---	---	10-20	1.45-1.60	1.40-4.00	0.06-0.10	0.0-2.9	0.0	.32	.32			
EpA:														
Exeter	0-16	---	---	10-20	1.50-1.60	4.00-14.00	0.10-0.13	0.0-2.9	0.5-1.0	.24	.24	2	3	86
	16-37	---	---	22-35	1.45-1.60	1.40-4.00	0.14-0.17	3.0-5.9	0.0	.24	.28			
	37-50	---	---	---	---	0.00-0.01	---	---	---	---	---			
	50-60	---	---	5-15	1.50-1.65	1.40-4.00	0.09-0.15	0.0-2.9	0.0	.24	.28			
EpC2:														
Exeter	0-16	---	---	10-20	1.50-1.60	4.00-14.00	0.10-0.13	0.0-2.9	0.5-1.0	.24	.24	2	3	86
	16-37	---	---	22-35	1.45-1.60	1.40-4.00	0.14-0.17	3.0-5.9	0.0	.24	.28			
	37-50	---	---	---	---	0.00-0.01	---	---	---	---	---			
	50-60	---	---	5-15	1.50-1.65	1.40-4.00	0.09-0.15	0.0-2.9	0.0	.24	.28			
HcC:														
Hanford	0-8	---	---	7-18	1.50-1.60	14.00-42.00	0.10-0.15	0.0-2.9	0.5-1.0	.28	.28	4	3	86
	8-40	---	---	7-18	1.50-1.60	14.00-42.00	0.10-0.15	0.0-2.9	0.0	.28	.28			
	40-60	---	---	5-15	---	42.00-141.00	0.07-0.10	0.0-2.9	0.0	.20	.24			

Physical Soil Properties

Western Riverside Area, California

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
PaA:														
Pachappa	0-20	---	---	8-15	1.55-1.65	4.00-14.00	0.12-0.14	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	20-63	---	---	18-25	1.45-1.55	4.00-14.00	0.14-0.17	3.0-5.9	0.0	.49	.49			
PaC2:														
Pachappa	0-20	---	---	8-15	1.55-1.65	4.00-14.00	0.12-0.14	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	20-40	---	---	18-25	1.45-1.55	4.00-14.00	0.14-0.17	3.0-5.9	0.0	.32	.32			
	40-63	---	---	8-18	1.55-1.65	4.00-14.00	0.12-0.14	0.0-2.9	0.0	.55	.55			
RaA:														
Ramona	0-14	---	---	5-10	1.60-1.65	4.00-14.00	0.09-0.11	0.0-2.9	0.5-1.0	.28	.20	5	3	86
	14-23	---	---	8-15	1.50-1.65	4.00-14.00	0.10-0.15	0.0-2.9	0.0-0.5	.28	.20			
	23-68	---	---	18-27	1.70-1.90	1.40-4.00	0.12-0.17	0.0-2.9	0.0-0.5	.15	.37			
	68-74	---	---	10-15	1.50-1.60	1.40-4.00	0.05-0.10	0.0-2.9	0.0-0.5	.28	.32			
RsC:														
Riverwash	0-6	---	---	0-1	---	42.00-141.00	0.03-0.04	---	0.0-0.1	.05	.10	---	8	0
	6-60	---	---	0-1	---	42.00-141.00	0.02-0.03	---	0.0	.05	.17			
Wf:														
Willows	0-10	---	---	40-60	1.40-1.55	0.01-0.42	0.10-0.12	6.0-8.9	1.0-3.0	.20	.20	5	7	38
	10-60	---	---	40-60	1.40-1.50	0.01-0.42	0.06-0.10	6.0-8.9	0.0	.32	.32			
Wg:														
Willows	0-10	---	---	40-60	1.40-1.55	0.01-0.42	0.10-0.12	6.0-8.9	1.0-3.0	.20	.20	5	7	38
	10-60	---	---	40-60	1.40-1.50	0.01-0.42	0.06-0.10	6.0-8.9	0.0	.32	.32			

Physical Soil Properties

Western Riverside Area, California

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
Wh:														
Willows	0-10	---	---	40-60	1.40-1.55	0.01-0.42	0.10-0.12	6.0-8.9	1.0-3.0	.20	.20	5	7	38
	10-60	---	---	40-60	1.40-1.50	0.01-0.42	0.06-0.10	6.0-8.9	0.0	.32	.32			

Soil Features

Western Riverside Area, California

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
Du:									
Domino	Duripan	20-40	0-3	Strongly cemented	0	0	High	High	Low
Dv:									
Domino	Duripan	20-40	0-3	Strongly cemented	0	0	High	High	Low
EpA:									
Exeter	Duripan	40-60	4-17	Indurated	0	0	Moderate	High	Moderate
EpC2:									
Exeter	Duripan	40-60	4-17	Indurated	0	0	Moderate	High	Moderate
HcC:									
Hanford	---	---	---	---	0	0	Moderate	Low	Low
PaA:									
Pachappa	---	---	---	---	0	0	Moderate	Low	Low
PaC2:									
Pachappa	---	---	---	---	0	0	Moderate	Low	Low
RaA:									
Ramona	---	---	---	---	0	0	Moderate	Moderate	Low
RsC:									
Riverwash	---	---	---	---	---	---	None	---	---
Wf:									
Willows	---	---	---	---	0	0	High	High	Low

Soil Features

Western Riverside Area, California

Map symbol and soil name	Restrictive layer				Subsidence		Potential for frost action	Risk of corrosion	
	Kind	Depth to top	Thickness	Hardness	Initial	Total		Uncoated steel	Concrete
		In	In		In	In			
Wg:									
Willows	---	---	---	---	0	0	High	High	Low
Wh:									
Willows	---	---	---	---	0	0	High	High	Low