DOE/EA-1826

FINAL ENVIRONMENTAL ASSESSMENT

FOR
DEPARTMENT OF ENERGY LOAN GUARANTEE FOR
THE AV SOLAR RANCH ONE PROJECT
IN LOS ANGELES AND KERN COUNTIES, CALIFORNIA

U.S. Department of Energy
Loan Guarantee Program Office
Washington, DC 20585

August 2011

TABLE OF CONTENTS

Chapter **Page**

EXECUTIVE SUMMARY ES-1

INTRODUCTION ES-1
PURPOSE AND NEED ES-1
PROPOSED ACTION AND ALTERNATIVES ES-2
SUMMARY OF ENVIRONMENTAL CONSEQUENCES ES-3

1.0 PURPOSE AND NEED 1-1

1.1 PURPOSE OF AND NEED FOR ACTION 1-1
1.2 BACKGROUND 1-3
1.3 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT 1-3
1.4 PUBLIC PARTICIPATION 1-3

1.4.1 Introduction 1-3
1.4.2 Project Outreach 1-4
1.4.3 Project Scoping and Hearings 1-4
1.4.4 Availability of the Environmental Assessment 1-6

1.5 DOCUMENT ORGANIZATION 1-7

2.0 PROPOSED ACTION AND ALTERNATIVES 2-1

2.1 DESCRIPTION OF PROPOSED ACTION 2-1

2.1.1 Proposed Project and Site 2-1
2.1.2 Permits and Authorizations 2-11
2.1.3 Applicant-committed Measures 2-11

2.2 ALTERNATIVES CONSIDERED BUT ELIMINATED 2-12

2.2.1 Site Alternatives 2-12
2.2.2 Alternative Sizes 2-13
2.2.3 Alternative Site Layout 2-14

2.3 NO ACTION ALTERNATIVE 2-14

Chapter **Page**

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES 3-1

3.1 INTRODUCTION 3-1
3.2 LAND USE AND AGRICULTURE 3-1

3.2.1 Regulatory Framework 3-1
3.2.2 Affected Environment 3-3
3.2.3 Environmental Consequences 3-5

3.3 VISUAL RESOURCES 3-8

3.3.1 Affected Environment 3-8
3.3.2 Environmental Consequences 3-8

3.4 AIR QUALITY 3-12

3.4.1 Regulatory Framework 3-12
3.4.2 Affected Environment 3-16
3.4.3 Environmental Consequences 3-20

3.5 NOISE 3-29

3.5.1 Regulatory Framework 3-29
3.5.2 Affected Environment 3-29
3.5.3 Environmental Consequences 3-31

3.6 GEOLOGY AND SEISMICITY 3-37

3.6.1 Affected Environment 3-37
3.6.2 Environmental Consequences 3-39

3.7 WATER RESOURCES 3-41

3.7.1 Regulatory Framework 3-41
3.7.2 Affected Environment 3-42
3.7.3 Environmental Consequences 3-45

3.8 BIOLOGICAL RESOURCES 3-49

Chapter **Page**

3.8.1 Regulatory Framework 3-49
3.8.2 Affected Environment 3-50
3.8.3 Environmental Consequences 3-62

3.9 CULTURAL RESOURCES. 3-69

3.9.1 Regulatory Framework 3-69
3.9.2 Affected Environment 3-70
3.9.3 Environmental Consequences 3-74

3.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE 3-76

3.10.1 Affected Environment 3-76
3.10.2 Environmental Consequences 3-78

3.11 PUBLIC HEALTH AND SAFETY 3-79

3.11.1 Regulatory Framework 3-79
3.11.2 Affected Environment 3-80
3.11.3 Environmental Consequences 3-82

3.12 TRANSPORTATION 3-84

3.12.1 Affected Environment 3-85
3.12.2 Environmental Consequences 3-86

4.0 CUMULATIVE EFFECTS 4-1

4.1 AREA OF EVALUATION 4-1
4.2 IDENTIFIED POTENTIAL CUMULATIVE PROJECTS 4-2
4.3 CUMULATIVE IMPACT ASSESSMENT 4-6

4.3.1 Land Use 4-7
4.3.2 Visual Resources 4-7
4.3.3 Air Quality and Greenhouse Gases 4-8
4.3.4 Noise 4-8
4.3.5 Water Resources 4-9
4.3.6 Biological Resources 4-9
4.3.7 Cultural Resources 4-9

Chapter **Page**

4.3.8 Transportation 4-10

5.0 LIST OF PREPARERS 5-1
6.0 LIST OF AGENCIES CONTACTED 6-1
7.0 REFERENCES 7-1

Tables

Table 1.4-1 List of Agencies and Organizations Consulted 1-5
Table 2.1-1 Required Project Permits and Approvals 2-12
Table 3.4-1 National Ambient Air Quality Standards 3-13
Table 3.4-2 California Ambient Air Quality Standards 3-15
Table 3.4-3 Attainment Status for the AVAQMD and KCAPCD 3-16
Table 3.4-4 Estimated Maximum Total Construction Emissions of Criteria Pollutants (Tons) During Maximum 38-month Construction Period 3-17
Table 3.4-5 Estimated Daily Maximum Construction Emissions of Criteria Pollutants (Lbs/Day) for Transmission Line Installation in Kern County ... 3-18
Table 3.4-6 Estimated Maximum Annual Operational Emissions of Criteria Pollutants (Tons/Year) 3-25
Table 3.4-7 Estimated Criteria Pollutant Emissions for California Grid Mix Power Generation Equivalent to AV Solar Ranch One 3-26
Table 3.4-8 Direct and Indirect Greenhouse Gas Emission Estimates (Metric Tons CO_2e/Year) 3-27
Table 3.5-1 Noise Impact Criteria – Project Construction 3-29
Table 3.5-2 Noise Impact Criteria – Project Operation 3-29
Table 3.5-3 Distances (in Feet) to Project Site from Noise-sensitive Receptor Locations 3-30
Table 3.5-4 Typical Construction Equipment Noise Levels 3-32
Table 3.5-5 Sound Levels of Typical Noise Sources and Noise Environments (A-weighted Sound Levels) 3-33
Table 3.5-6 Transmission Line Construction Noise Levels 3-35
Table 3.8-1 Sensitive Species that Could Occur in the Project Region and Their Potential to Occur on the Project Site 3-54
Table 3.10-1 Demographic Characteristics in Project Area, Los Angeles and Kern Counties, and State of California 3-78
Table 3.12-1 Peak Hour Intersection Level of Service Results, Existing Conditions 3-86
Table 3.12-2 Roadway Segment Level of Service Results, Existing Conditions 3-87
Table 3.12-3 Peak Project Construction Trip Generation 3-88
Table 3.12-4 Peak Project Operations Trip Generation 3-88

Tables (Continued) **Page**

Table 3.12-5 Level of Service Descriptions 3-89
Table 3.12-6 Peak Hour Intersection Level of Service Results, Year 2013 No Project Conditions 3-90
Table 3.12-7 Peak Hour Intersection Level of Service Results, Future (2013) 3-90
Table 3.12-8 Roadway Segment Level of Service Results, Year 2013 No Project Conditions 3-91
Table 3.12-9 Roadway Segment Level of Service Results, Future (2013) 3-92

Figures **Follows Page**

Figure 2-1 Regional Vicinity Map 2-2
Figure 2-2 Site Location Topographic Map 2-2
Figure 2-3 Site Location Aerial Map 2-2
Figure 2-4 Conceptual Facility Site Plan 2-2
Figure 3.2-1 State and Federal Lands in Project Region 3-4
Figure 3.2-2 Existing General Plan Land Use Designations 3-4
Figure 3.2-3 Existing Zoning 3-4
Figure 3.2-4 Existing Nearby Powerlines 3-4
Figure 3.3-1 KOP Location Aerial Map 3-10
Figure 3.3-2 KOP 1 – Existing and Simulated View 3-10
Figure 3.3-3 KOP 2 – Existing and Simulated View 3-10
Figure 3.3-4 KOP 3 – Existing and Simulated View 3-10
Figure 3.3-5 KOP 4 – Existing and Simulated View 3-10
Figure 3.5-1 AV Solar Ranch One Nearby Residences 3-30
Figure 3.6-1 Regional Fault and Epicenter Map 3-38
Figure 3.7-1 CDFG Jurisdictional Streambeds on the Project Site 3-44
Figure 3.7-2 FEMA Flood Insurance Rate Map for Project Site Area 3-46
Figure 3.7-3 FEMA Flood Insurance Rate Map for the Transmission Line Route 3-46
Figure 3.8-1 Vegetation Communities Within the Project Site 3-52
Figure 3.8-2 Joshua Tree Woodland Habitat SEA 3-60
Figure 3.8-3 Vegetation Communities Along the Transmission Line Route 3-60
Figure 4.1-1 Cumulative Projects Location Map 4-2

Appendices

Appendix A Hazardous Materials Used and Wastes Generated During Operations
Appendix B Applicant-committed Measures
Appendix C Summary of Archaeological Sites and Isolated Artifacts Recorded and Evaluated within the Project Site

Appendices (Continued)

Appendix D State Special-status Species Detected in Project Area
Appendix E Farmland Conversion Impact Rating Forms
Appendix F USFWS Correspondence Regarding Federal Species Considered in EA

COMMONLY USED ACRONYMS AND ABBREVIATIONS

A	Agriculture
A-2	Heavy Agriculture
AB32	Assembly Bill 32
AC	Alternating Current
ACM	Applicant-committed Measures
ADT	Average Daily Traffic
AF	Acre-feet
AFC	Application for Certification (CEC)
AFY	Acre-feet per Year
APE	Area of Potential Effect
AQAP	Air Quality Attainment Plan
AQMP	Air Quality Management Plan
ASTM	American Society for Testing Materials
AVAQMD	Antelope Valley Air Quality Management District
AVSR1	AV Solar Ranch One Project
BLM	Bureau of Land Management
BMP	Best Management Practices
BPA	Bonneville Power Administration
CAA	Clean Air Act (Federal)
CAAQS	California Ambient Air Quality Standards
CAISO	California Independent System Operator
CalOSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDOC	California Department of Conservation
CdTe	Cadmium Telluride
CEC	California Energy Commission
CESA	California Endangered Species Act
CFC	Chlorofluorocarbons
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	Cubic Feet Per Second
CMP	Congestion Management Program
CNDDB	California Natural Diversity Data Base
CNEL	Community Noise Equivalent Level

CNPS	California Native Plant Society
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide equivalent
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CSC	California Species of Concern
CUP	Conditional Use Permit
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CWC	California Water Code
dB	Decibels
dBA	Decibels “A” Scale
DC	Direct Current
DOE	U.S. Department of Energy
DOT	Department of Transportation
DWR	Department of Water Resources
EA	Environmental Assessment
EDD	State of California Employment Development Department
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EJ	Environmental Justice
EMF	Electric and Magnetic Fields
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FPPA	Farmland Protection Policy Act
g	Gravitational acceleration
GHG	Greenhouse gas
GIS	Geographic Information System
GO	General Order (CPUC)
gpm	Gallons per minute
GPS	Global positioning system
GW	Gigawatt
GWh	Gigawatt-hours
HEVMP	Habitat Enhancement and Vegetation Management Plan
HMMP	Hazardous Materials Management Plan

hp	Horsepower
HV	High Voltage
Hz	Hertz
IPCC	Intergovernmental Panel on Climate Change
ITE	Institute of Transportation Engineers
JTWH	Joshua Tree Woodland Habitat
KCAPCD	Kern County Air Pollution Control District
KCPD	Kern County Planning Department
Kern COG	Kern Council of Governments
kHz	Kilohertz (unit of frequency)
KOP	Key Observation Point
kV	Kilovolts (unit of electrical potential)
kVA	Kilovolt Amperes
kV/m	Kilovolts per Meter
kW	Kilowatt
LACDPH	Los Angeles County Department of Public Health
LACDPW	Los Angeles County Department of Public Works
LACDRP	Los Angeles County Department of Regional Planning
LACFD	Los Angeles County Fire Department
Ldn	Day-Night Level (of noise)
Leq	Equivalent Level (of noise)
LID	Low Impact Development
Lmax	Maximum Level (of noise)
LMI	Labor Market Information
LOS	Level of Service
LRWQCB	Lahontan Regional Water Quality Control Board
LV	Low Voltage
MAF	Million acre-feet
MBTA	Migratory Bird Treaty Act
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
mG	Milligauss (unit of magnetic field strength)
mg/L	Milligram Per Liter
MM	Mitigation Measure
MMRP	Mitigation Monitoring and Reporting Plan
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheet
MV	Medium Voltage
MW	Megawatt
MWh	Megawatt-hours
MWh/yr	Megawatt-hours Per Year

N-1	Non-Urban 1
N_2	Nitrogen Gas
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHMLAC	Natural History Museum of Los Angeles County
NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxide
NO_X	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service (formerly Soil Conservation Service [SCS])
NRHP	National Register of Historic Places
NSR	New Source Review
O_3	Ozone
OHV	Off-highway Vehicle
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
PCS	Plant Control System
PF	Public Facilities
PG&E	Pacific Gas & Electric
pH	A scale from 0 to 14 for acidity (below 7) or alkalinity (above 7) of a solution, representing the negative logarithm of hydrogen ion (H^+) concentration. Abbreviation of the German "potentz (power) hydrogen."
Phase I ESA	Phase I Environmental Site Assessment
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter with an aerodynamic diameter of 2.5 microns or less
PM_{10}	Particulate Matter with an aerodynamic diameter of 10 microns or less
PPA	Power Purchase Agreement
ppm	Parts Per Million
PRC	Public Resources Code
PSD	Prevention of Significant Deterioration
PUC	Public Utility Commission
PV	Photovoltaic
Qal	Quaternary Alluvium
Qc	Pleistocene non-marine sediments
R	Residential
RCNM	Roadway Construction Noise Model
ROW	Right-Of-Way
ROG	Reactive Organic Gases

RWQCB	Regional Water Quality Control Board
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCADA	Supervisory Control and Data Acquisition
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCCIC	South Central Coast Information Center
SCS	Soil Conservation Service
SEA	Significant Ecological Area
SEATAC	Significant Ecological Area Technical Advisory Committee
SF_6	sulfur hexafluoride (insulating medium)
SHPO	State Historic Preservation Office
SJAB	San Joaquin Air Basin
SLIC	Spills, Leaks, Investigations, and Cleanups
SMGB	State Mining and Geology Board
SO_2	Sulfur Dioxide
SO_X	Oxides of Sulfur
SPCC	Spill Prevention, Countermeasures, and Control
SR	State Route
SSJVIC	Southern San Joaquin Valley Information Center
SSURGO	Soil Survey Geographic Database
SUSMP	Standardized Urban Stormwater Mitigation Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TRTP	Tehachapi Renewable Transmission Project
TWSC	Two-way stop controlled
UBC	Uniform Building Code
UFC	Uniform Fire Code
USACE	U.S. Army Corps of Engineers
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VC	Viewer Concern
VE	Viewer Exposure
VQ	Visual Quality

EXECUTIVE SUMMARY

INTRODUCTION

The U.S. Department of Energy (DOE) is proposing to issue a loan guarantee to AV Solar Ranch 1, LLC (Applicant) for the design and construction of the AV Solar Ranch One Project located in Los Angeles and Kern counties, California, in the Antelope Valley, the western tip of the Mohave Desert.

DOE has prepared this Environmental Assessment (EA) to comply with the National Environmental Policy Act (NEPA) (42 USC 4321, et. seq.), the Council on Environmental Quality's regulations for implementing NEPA (40 CFR Parts 1500–1508) and DOE's NEPA regulations (10 CFR Part 1021). The EA examines the potential impacts associated with the proposed action and No Action Alternative to determine whether the proposed action has the potential for significant environmental impacts. If no significant impacts are identified during preparation of this EA, DOE will issue a Finding of No Significant Impact (FONSI). If potentially significant impacts are identified, DOE will prepare an Environmental Impact Statement (EIS). DOE will use the information from the NEPA process to inform its funding decision.

PURPOSE AND NEED

The Energy Policy Act of 2005 (EPAct 2005) established a Federal loan guarantee program for eligible energy projects that employ innovative technologies. Title XVII of EPAct 2005 authorizes the Secretary of Energy to make loan guarantees for a variety of types of projects, including those that "avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued." The two principal goals of the loan guarantee program are to encourage commercial use in the United States of new or significantly improved energy-related technologies and to achieve substantial environmental benefits by reducing reliance on fossil fuels and reducing greenhouse gas emissions.

AV Solar Ranch 1, LLC submitted an application to DOE under the federal loan guarantee program pursuant to the Energy Policy Act to support construction of a 230-megawatt gross output photovoltaic (PV) solar power plant. The Project would utilize a photovoltaic (PV) technology using cadmium-telluride (CdTe) solar panels, at least 50 megawatts (MW) of which would be mounted on single-axis trackers. The remainder would be mounted on fixed-tilt supports. To date, the largest operating PV power plants within the United States that use the proposed CdTe thin film PV module technology are 21 MW and 10 MW in size with 6 months and 2 years of operating experience, respectively. The proposed Project would be considerably larger than any of these projects.

In addition, the Project will employ new inverter technology to support and improve the reliability of the electric power system. This technology, referred to as "Fault Ride-Through" technology, requires the use of new and innovative solar inverters designed to keep the Project operational during certain fault conditions on the electric grid. Also, the Project will employ new "dynamic voltage regulation" technology in the inverters to support and improve the reliability of the electric power system.

The purpose and need for agency action is to comply with the DOE mandate under the Energy Policy Act by selecting eligible projects that meet the goals of the Act. DOE is using the NEPA process and this EA to assist in determining whether to issue a loan guarantee to the Applicant to support the proposed Project.

PROPOSED ACTION AND ALTERNATIVES

DOE's proposed action is to issue a loan guarantee to the Applicant for design, construction, and startup of the AV Solar Ranch One Project, a proposed solar power generating facility that uses PV technology. This Project would generate approximately 230 MW gross output of renewable energy that is expected to help meet national, regional, and state renewable energy goals, helps offset the production of greenhouse gases, and reduce the dependence on foreign energy.

The solar generation facility portion of the Project is located in Los Angeles County, California approximately 15 miles northwest of downtown Lancaster, California and about 60 miles north of downtown Los Angeles. The Project includes an approximately 4.25-mile-long (3.5 miles off-site and 0.75 mile on-site) 230-kilovolt (kV) transmission line, which will connect the facility substation to Southern California Edison (SCE)'s approved Whirlwind Substation in Kern County. Figure 2-1 in Chapter 2 shows the general location of the Project (facility site and 230-kV transmission line). The Project facility site will be located on approximately 2,100 acres of private land, previously used for agriculture. The site is located at the intersection of State Route 138 (West Avenue D) and 170th Street West. Full-scale construction is scheduled to begin in the 3rd quarter of 2011. Commercial operation for the entire facility is scheduled for 2013. However, given the modular nature of the PV technology, the Project is expected to become operational in stages, with the first stage in service as early as the 2nd quarter of 2012.

Alternatives that were considered but dismissed are discussed in Chapter 2. A No Action Alternative is also evaluated in this EA, which assumes that DOE would not provide funds to AV Solar Ranch One to construct the Project. Without DOE funding, the Applicant may have greater difficulty obtaining financing for the Project, which may result in a delay in the start of construction, construction in smaller increments over a longer period, potentially increased Project cost, or could possibly result in the Project not being built. While there is a possibility the Project would be constructed without DOE's loan guarantee, for purposes of NEPA

review, the No Action Alternative assumes that the Project would not be built. Information from this alternative establishes a baseline against which the proposed action alternative can be compared.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Based on the analysis of the Final EA, DOE expects no significant adverse impacts from construction and operation of the Project. Additionally, DOE expects the solar energy generated by the Project to have potential beneficial impacts on global climate change and air quality because it may offset the need for energy produced by burning fossil fuels.

The No Action Alternative would have no impacts on the resources evaluated in the EA but would not realize the potential beneficial impacts of bringing additional renewable energy capacity to market.

CHAPTER 1.0
PURPOSE AND NEED

1.1 PURPOSE OF AND NEED FOR ACTION

The U.S. Department of Energy's (DOE's) proposed action is to issue a loan guarantee to AV Solar Ranch 1, LLC (Applicant) that would be used for the design and construction of the AV Solar Ranch One Project (Project) located in Los Angeles and Kern counties, California.

The Energy Policy Act of 2005 (EPAct 2005) established a Federal loan guarantee program for eligible energy projects that employ innovative technologies. Title XVII of EPAct 2005 authorizes the Secretary of Energy to make loan guarantees for a variety of types of projects, including those that "avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; and employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued." The two principal goals of the loan guarantee program are to encourage commercial use in the United States of new or significantly improved energy-related technologies and to achieve substantial environmental benefits. Rising energy prices and global climate change resulting from elevated greenhouse gases in the atmosphere provide further need for the accelerated commercial use of new and significantly improved energy technologies. The purpose and need for agency action is to comply with DOE's mandate under EPAct 2005 by selecting eligible projects that meet the goals of the Act. DOE is using the NEPA process to assist in determining whether to issue a loan guarantee to the Applicant to support the proposed Project.

Executive Order 13212, dated May 18, 2001, mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner." The Project has a Power Purchase Agreement (PPA) with a utility in the State of California, which has a mandatory renewable energy portfolio of 33 percent by 2020. These state and federal policies and regulations provide a further purpose and need for the Project.

The proposed Project would utilize a photovoltaic (PV) technology using cadmium-telluride (CdTe) solar panels. To date, the largest operating PV power plants within the United States that use the proposed CdTe thin film PV module technology are 21 MW and 10 MW in size with 6 months and 2 years of operating experience, respectively. The proposed Project would generate 230 MW, at least 50 MW of which would be mounted on single-axis trackers. The remainder would be mounted on fixed-tilt supports. In addition the Project will employ new inverter technology, referred to as "Fault Ride-Through" technology, designed to keep the Project operational during certain fault conditions on the electric grid. Also, the Project will employ new "dynamic voltage regulation" technology in the inverters to support and improve

the reliability of the electric power system. The current combination of decreasing PV module prices, increasing module efficiencies, improved and innovative inverter technology, and regulatory/government incentives is improving the viability of large utility-scale projects using these technologies. However, financing large scale PV projects that would use this state-of-the-art technology is currently constrained because being innovative means it is less proven and the credit crisis has reduced the financing options that are available for a project this large. Although it is possible that the Project would be built without the loan guarantee, it would take longer to attract financing and would likely be built out more slowly and in stages over time.

Financially supporting the Project would facilitate the deployment of state-of-the art PV technology in large utility-scale commercial projects, potentially making renewable, solar-generated electricity more efficient.

PV panels generate electricity without producing significant air emissions. To the extent PV projects displace natural gas and other fossil fuels used to produce electricity, PV installations reduce generation of carbon dioxide (CO_2) and other greenhouse gasses (GHGs). The Applicant expects the Project to generate 628,000 gross megawatt-hours per year (MWh/yr) of output (or 18,800 gigawatt-hours [GWh] of electricity over the 30 year life of the Project). The potential reduction in GHGs related to operation of the Project has been estimated using the eGRID estimate (USEPA 2009a) of CO_2 equivalent (CO_2e)[1] emissions per megawatt-hour (MWh). Assuming that the Project operates for 30 years and that the capacity of the Project displaces electricity produced by all power generation sources in California (average), the estimated Project-related net reduction of GHGs is 194,629 metric tons[2] of CO_2e annually or an estimated total displacement of 5,838,870 metric tons of CO_2e over the life of the Project. This is based on an average emission factor that considers the aggregate total of all California sources of electrical generation (e.g., natural gas, hydroelectric, nuclear, solid fuel [category includes coal, petroleum coke, wood, refuse-derived fuel, and peat], and other renewables).

Therefore, the Project potentially would contribute to the avoidance and reduction of air pollutants and anthropogenic emissions of greenhouse gases, as required by EPAct 2005.

The proposed AV Solar Ranch One Project would also create up to an estimated peak of 453 construction-related jobs (numbers will vary depending on the stage of construction) during the duration of the construction period. Full-scale construction is planned to begin in the 3rd quarter of 2011 and continue through 2013. The ongoing operation of the solar generation facility will also require approximately 16 full time workers.

[1] CO_2 equivalent (CO_2e) is a metric for describing how much global warming a given type and amount of greenhouse gas may cause using the functionally equivalent amount of CO_2 as the reference.
[2] A metric ton is 1,000 kilograms, or about 2,205 pounds.

1.2 BACKGROUND

The Project submitted an application to Los Angeles County Regional Planning for a Conditional Use Permit (CUP) in March 2009. The County has conducted an environmental review of the Project, in compliance with the California Environmental Quality Act (CEQA). The County released a Draft Environmental Impact Report (DEIR) for public review on June 16, 2010, and a final EIR was published on August 31, 2010. The EIR identified no significant environmental impacts associated with the Project. The Project has been sited and designed to be consistent with County zoning and with local and regional land use plans. Final certification of the EIR by the County occurred on December 7, 2010.

1.3 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

This EA presents information on the potential impacts associated with guaranteeing a loan to the Applicant and covers the construction and operation of the AV Solar Ranch One Project. DOE has prepared the EA in accordance with the National Environmental Policy Act of 1969 (NEPA), Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500−1508), and DOE NEPA Implementing Procedures (10 CFR 1021). If no significant impacts are identified during preparation of the DOE EA, DOE will issue a Finding of No Significant Impact (FONSI). If potentially significant impacts are identified, DOE will prepare an Environmental Impact Statement (EIS).

This EA: 1) describes the affected environment relevant to potential impacts of the proposed action and No Action Alternative; 2) analyzes potential environmental impacts that could result from the proposed action and No Action Alternative; 3) identifies and characterizes cumulative impacts that could result from the proposed action in relation to other ongoing or proposed activities within the surrounding area; and 4) provides DOE with environmental information for use in decision-making to protect, preserve, and enhance the human environment and natural ecosystems.

1.4 PUBLIC PARTICIPATION

1.4.1 Introduction

Under NEPA regulations, scoping is not formally required for the preparation of an EA (40 CFR Part 1501). However, AV Solar Ranch One has conducted an extensive public outreach program as part of Project development. A scoping meeting and public hearing has also been conducted as part of the Los Angeles County permitting processes. These efforts were designed to distribute information about the Project and solicit input from the public and interested stakeholders. These outreach efforts included interactions with stakeholders via one-on-one briefings, stakeholder meetings, presentations to the local communities and

organizations, and formal hearings. In addition, a Project website, fact sheets, and a toll-free telephone information line were also used to communicate with interested parties.

Throughout the ongoing outreach process, the Project received support from the local community, and federal, state, and local elected officials. The public outreach efforts that were conducted for the Project are summarized below.

1.4.2 Project Outreach

AV Solar Ranch One implemented an extensive outreach process to identify community issues and concerns associated with the Project. This outreach program included the following:

- Stakeholder Meetings and Briefings – meetings with agency departments and staff, Native American representatives, local landowners, community leaders, and other interested stakeholders to provide information about the Project, the proposed technology, the need for and benefits of the Project, and schedule.
- Elected Officials – meetings with federal, state, and local elected officials and their staff to promote awareness of the Project and its affect on their constituencies.
- Environmental and Conservation Organizations – meetings with representatives of environmental organizations and conservation groups, and presentations at general membership meetings.
- Public Outreach – a fact sheet and presentation of the Project to the local community.
- Business Organizations – meetings and presentations to local business organizations such as local Chamber of Commerce and Board of Trade.
- Project Website – AV Solar Ranch One maintains a Project website (http://www.first solar.com/communities/antelopevalley) that provides information about the Project, its benefits, environmental characteristics, and Project schedule. The website is updated regularly to keep stakeholders informed of Project progress and changes. The website also includes an email address to request regular Project updates.

Throughout the ongoing outreach process, the Project has received support from the local Antelope Acres Town Council, and federal, state, and local elected officials.

A list of the organizations and individuals contacted through the outreach process is provided in Table 1.4-1.

1.4.3 Project Scoping and Hearings

AV Solar Ranch One submitted a Zoning Permit and Land Division application to Los Angeles County in March 2009. As part of the permitting process, the County conducted an

TABLE 1.4-1
LIST OF AGENCIES AND ORGANIZATIONS CONSULTED

Category	Entity
Agencies and Regulatory Authorities	U.S. Fish and Wildlife Service
	U.S. Department of Defense
	U.S. Department of Agriculture, Natural Resource Conservation Service
	Los Angeles County Planning Department Director and Staff
	Los Angeles County Department of Public Works
	Los Angeles County Department of Public Health
	Los Angeles County Fire Department
	Los Angeles County Significant Ecological Area Technical Advisory Committee
	Antelope Valley Air Quality Management District
	Antelope Valley Resource Conservation District
	California Department of Conservation
	California Air Resources Board
	California Department of Transportation
	California State Park District Superintendent and Planner
	California State Park Indian Museum Curator
	California Department of Fish and Game
	California Office of Historic Preservation
	Lahontan Regional Water Quality Control Board
	Native American Heritage Commission
	Antelope Acres Town Council
	Antelope Valley Association of Town Councils
	City of Lancaster
	City of Palmdale
	Edwards Air Force
	Rosamond Community Service District
	Community of Antelope Acres Town Council
	Kern County Air Pollution Control District
	Kern County Public Works and Planning Departments
	Southern California Association of Governments
	Tataviam/Fernadeno Band of Mission Indians Representatives
Elected Officials	Los Angeles County Supervisor Michael Antonovich and Staff
	Governor Arnold Schwarzenegger
	Congressman Kevin McCarthy and Staff

TABLE 1.4-1 (CONTINUED)
LIST OF AGENCIES AND ORGANIZATIONS CONSULTED

Category	Entity
	Assemblyman Steve Knight and Staff
	Office of Senator George Runner
	Office of Senator Dianne Feinstein
Environmental Organizations	Antelope Valley Chapter of the Sierra Club
	Desert and Mountain Conservation Authority
	Santa Monica Mountain Conservancy
	Poppy Reserve/Mojave Desert Interpretive Association
Organizations	Antelope Valley Farm Bureau
	Antelope Valley Board of Trade
	Greater AV Economic Alliance (GAVEA)
	Antelope Valley Chamber of Commerce
	Antelope Valley College
	Westside School District
	Antelope Valley Natural Resources Conservation Service
	Antelope Valley East Kern Water Agency
	West Valley County Water District
	South Central Coastal Information Center (Cultural Resources)
	Pacific Gas and Electric Company
	Southern California Edison Company
Media	Valley Press News
	Antelope Valley News

evaluation under CEQA, including public outreach and participation. The County held an initial Scoping Meeting in May of 2009, the Draft Environmental Impact Report (DEIR) for the Project was published in June, 2010 with a 45-day period allowed for public comment, and a public hearing on the DEIR was held on June 30, 2010. The Final Environmental Impact Report (FEIR) was published on August 31, 2010. The County held final hearings and certified the EIR, and approved the Project, including the CUP and Vesting Tentative Tract Map, on December 7, 2010. Public notices were issued by the County for all CEQA-related meetings, hearings, and release documents.

1.4.4 Availability of the Environmental Assessment

On May 10, 2011, DOE sent the draft EA and solicited comments from the California State Clearinghouse. The California State Clearinghouse transmitted the draft EA to various Departments, including Conservation, Transportation, Fish & Game, and Historic

Preservation, and Commissions, including Energy, Native American Heritage, Public Utilities, and State Lands. The draft EA was also posted on the Loan Programs Office website with instructions on how to provide comments and a notice of availability was published in the *Antelope Valley Press*. The comment period was for a period of 30 days.. The Final EA is also available on the Loan Programs Office NEPA documents webpage (located at http://lpo.energy.gov/?page_id=1514).

1.5 DOCUMENT ORGANIZATION

This EA has been organized into the following Chapters. A list of acronyms and abbreviations follows the Table of Contents.

- **Chapter 1, Purpose and Need,** describes the purpose of and need for the proposed DOE action, the background of the Loan Guarantee Program, and the scope of the analysis. It also describes the organization of the EA.
- **Chapter 2, Proposed Action and Alternatives,** discusses the proposed action, alternatives considered but eliminated, and the No Action Alternative.
- **Chapter 3, Affected Environment and Environmental Consequences,** describes the existing baseline conditions of the resources that may be affected by implementing the proposed action, including land use, visual resources, air quality, noise, geology and seismicity, water resources, biological resources, cultural resources, socioeconomics and environmental justice, public health and safety, and transportation and environmental effects associated with the proposed action and No Action Alternative.
- **Chapter 4, Cumulative Effects,** describes potential impacts to the environment from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions.
- **Chapter 5, List of Preparers,** provides a brief description of credentials for the preparers of the EA.
- **Chapter 6, List of Agencies Contacted,** provides a list of agencies contacted associated with the studies conducted for this EA.
- **Chapter 7, References,** describes the sources of information used in preparing the EA.

CHAPTER 2.0
PROPOSED ACTION AND ALTERNATIVES

This chapter provides information on the AV Solar Ranch One (AVSR1) Project and describes the proposed action, the alternatives considered and the No Action Alternative.

2.1 DESCRIPTION OF PROPOSED ACTION

The DOE's proposed action is to issue a loan guarantee to the Applicant for the design, construction, and startup of the Project. The Applicant submitted an application to DOE under the Federal loan guarantee program pursuant to Section 1703 of the EPAct 2005.

2.1.1 Proposed Project and Site

The proposed Project that may receive DOE financial assistance involves construction of the AV Solar Ranch One Project. The Project, which consists of a solar generation facility and a 230-kV transmission line, would generate approximately 230 MW of renewable energy through the use of PV technology. The Project facility would be located in the Antelope Valley, in unincorporated Los Angeles County (Figure 2-1). The approximately 4.25-mile-long (3.5 miles off-site and 0.75 mile on-site) 230-kilovolt kV transmission line will connect from the on-site facility substation to Southern California Edison (SCE)'s approved Whirlwind Substation in Kern County. Topographic and aerial maps of the proposed Project solar generation facility and off-site transmission line locations are shown on Figures 2-2 and 2-3, respectively. The Project has received approval for Project development from Los Angeles County. The County approved the Project Conditional Use Permit on December 7, 2010 authorizing development of the Project on the Site. This approval confirms that the proposed use is consistent with adjacent land uses and is in conformity with the county's zoning and land use plans.

The Project solar generation facility site would occupy approximately 2,100 acres. Equipment and facilities have been arranged for optimum use of the site as well as to ensure efficient operability and maintainability. The conceptual site layout for the Project facility is depicted on Figure 2-4 and indicates the location and size of the proposed equipment and improvements, including the solar field, access roads, and the on-site overhead 34.5-kV transmission lines.

Most of the 2,100-acre Project facility site will be disturbed by construction of the Project. Temporary construction lay down, construction trailers and parking areas will be provided on the site.

2.1.1.1 Facility and Technology Description

The proposed Project consists of a utility scale solar photovoltaic facility utilizing CdTe solar panels (PV modules), which have been commercially proven on a smaller scale. The solar generation portion of the Project would be one of the largest solar projects of any technology in the world based on megawatts of capacity. At least 50 MW of the PV modules will be installed on tracking structures, as described below.

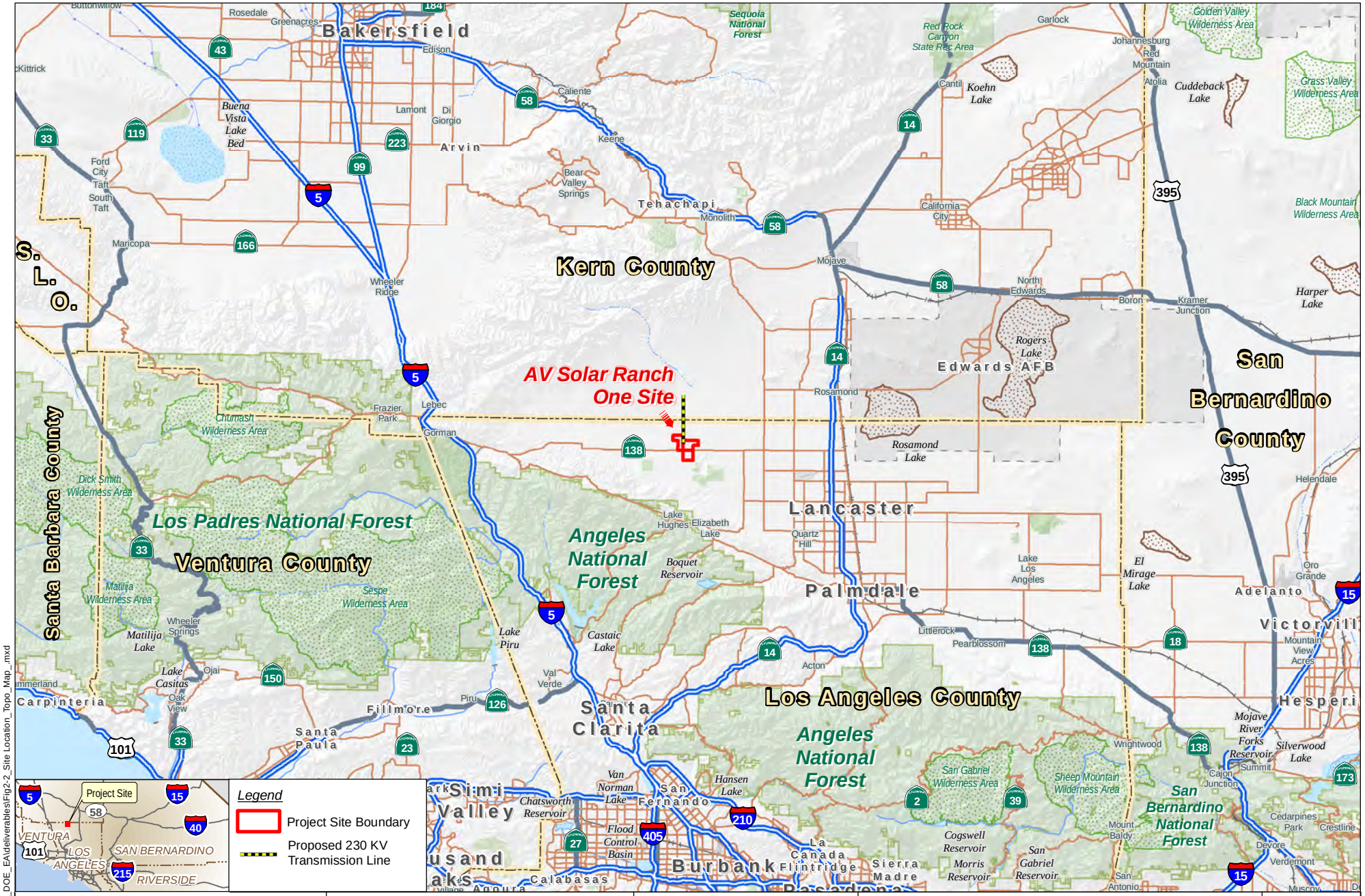
The PV modules are non-reflective and convert sunshine into direct current (DC) electricity at a conversion efficiency of 11 percent. The DC output of multiple rows of PV modules is collected through one or more combiner boxes (combining the output of multiple rows) and directed to an inverter. The inverter converts the DC power to alternating current (AC) power, which flows to a transformer where it is stepped up to collection level voltage. Multiple transformers are connected in parallel in a daisy chain configuration and the power is directed to the Project substation, where the power is stepped up further by two or more high-voltage (HV) transformers for delivery to the grid.

All of the electricity generated by the Project is generated through the conversion of solar energy to electricity by the PV modules, which qualify as renewable energy resources under state and federal Renewable Energy Standards. The PV modules would not directly consume fossil fuels of any type, and will not require a backup generator that consumes fossil fuels. A diesel-fueled firewater backup pump may be installed so that firewater is available during power outages. The Project may require some electricity from the grid to keep transformers warm during non-daylight hours, provide service to the Operation and Maintenance (O&M) building, and realign the tracker-mounted solar modules panels to the east so that they are properly oriented towards the morning sun.

The major Project equipment includes the following:

- PV modules with CdTe solar panels
- Single-axis trackers (to position PV panels with the sun's movement)
- Fixed tilt mounting structures
- DC to AC inverters, rated between 500 kW and 3,000 kW
- Three-phase, pad-mounted medium voltage transformers, or similar; and high voltage step-up transformers

The present design calls for PV modules, inverters, and transformers to be combined into approximately 1 MW, or larger, blocks that are repeated to reach the full contract capacity. The inverter and transformer manufacturers and capacities will be selected based on cost, efficiency, reliability, and market availability of these units.



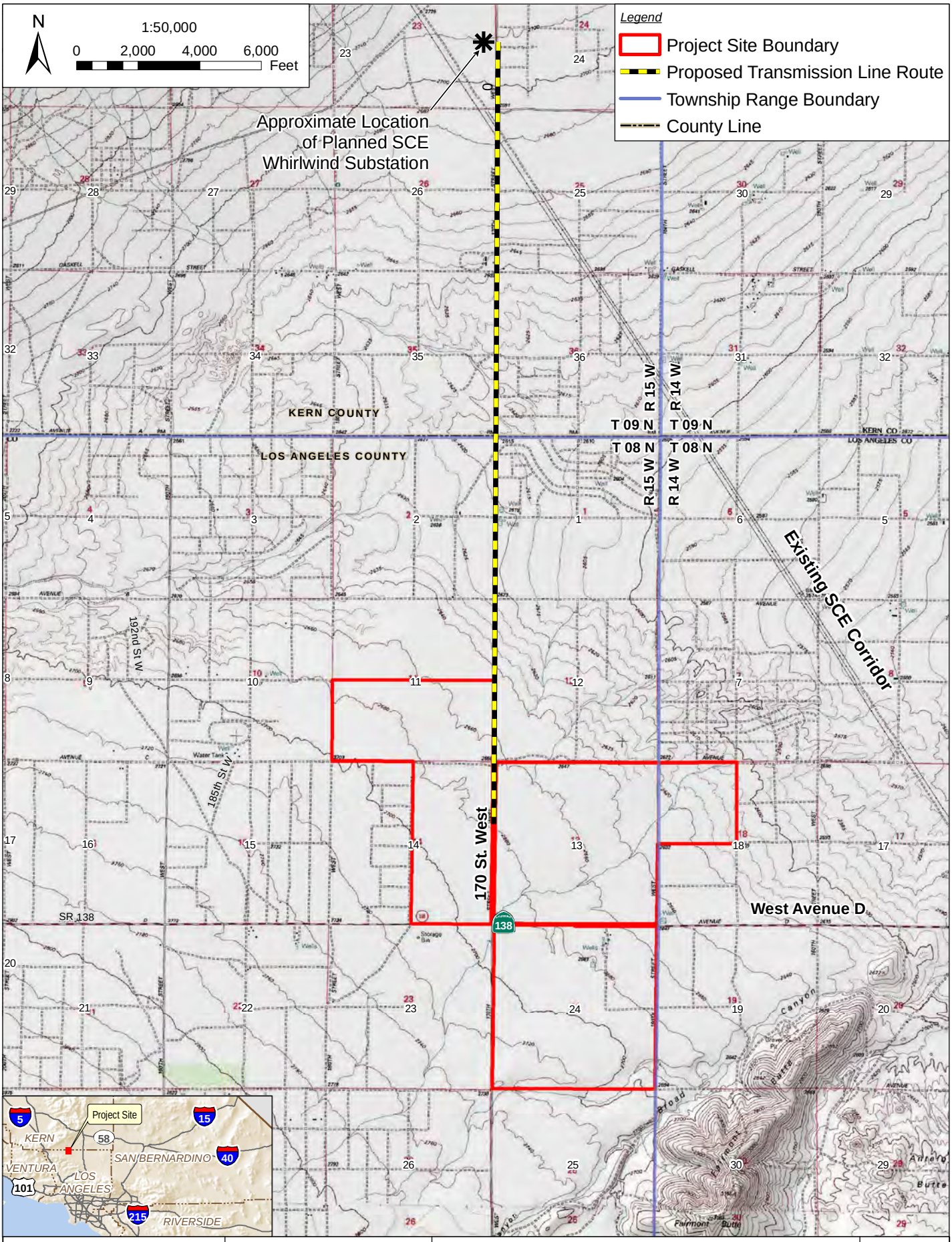
Source:
[1] ESRI StreetMap USA (2006). [2] Hillshade, 30 Meter Resolution (based on the National Elevation Dataset (NED) - U.S. Geological Survey, Teale Data Center GIS Solutions Group, USFS Region 5.

AV Solar Ranch One Environmental Assessment

Figure 2-1. REGIONAL VICINITY MAP

2011

T:\FirstSolar\AVSR1_DOE_EA\deliverables\Fig2-2_Site Location_Topo_Map_.mxd



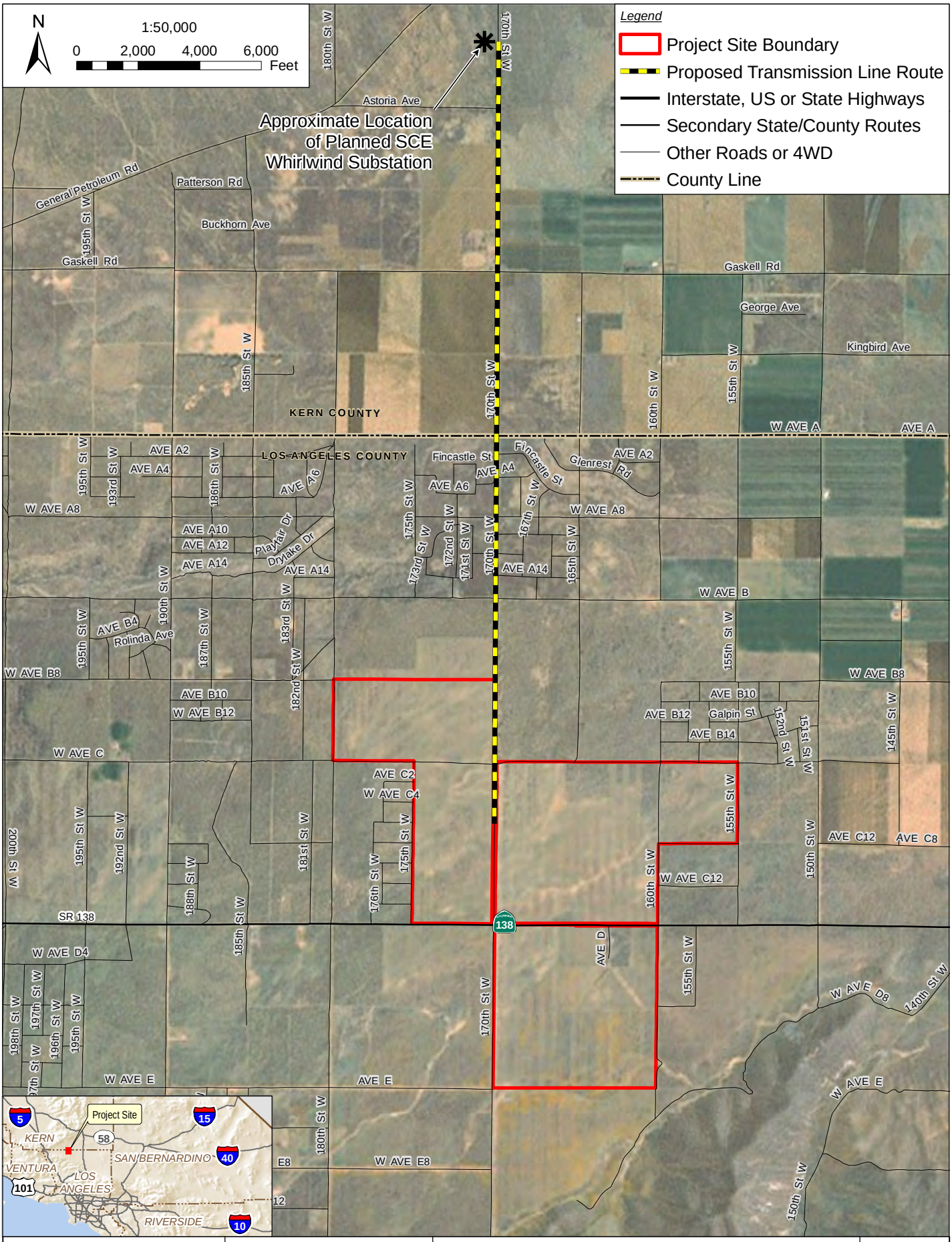
Source: [1] USGS 1:24,000-scale topographic map created with TOPO!, (c)2007 National Geographic Maps, All Rights Reserved, [2] ESRI StreetMap USA (2007).

AV Solar Ranch One Environmental Assessment

Figure 2-2. SITE LOCATION TOPOGRAPHIC MAP

2011

T:\FirstSolar\AVSR1_DOE_EA\deliverables\Fig2-2_Site Location_Topo_Map_.mxd



Source:
[1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [2] ESRI StreetMap USA (2007).

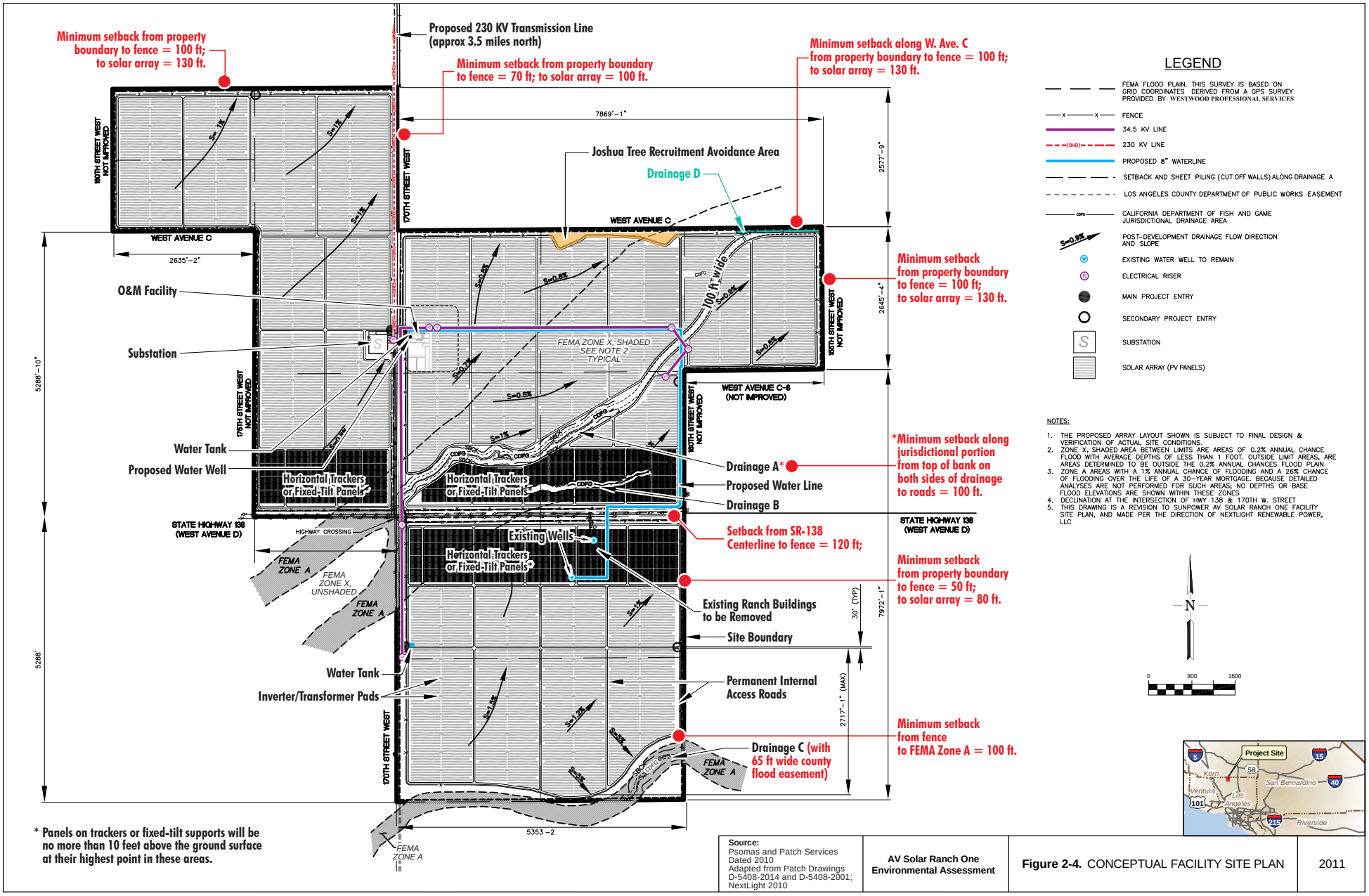
AV Solar Ranch One Environmental Assessment

Figure 2-3. SITE LOCATION AERIAL MAP

2011

T:\FirstSolar\AVSR1_DOE_EA\deliverables\Fig2-3_SiteLocationAerialMap.mxd

T/Ladd/AVSR1/NEPA EA.../209-019G



* Panels on trackers or fixed-tilt supports will be no more than 10 feet above the ground surface at their highest point in these areas.

Source: Psomas and Patch Services Dated 2010 Adapted from Patch Drawings D-5408-2014 and D-5408-2001; NextLight 2010	AV Solar Ranch One Environmental Assessment	**Figure 2-4.** CONCEPTUAL FACILITY SITE PLAN	2011

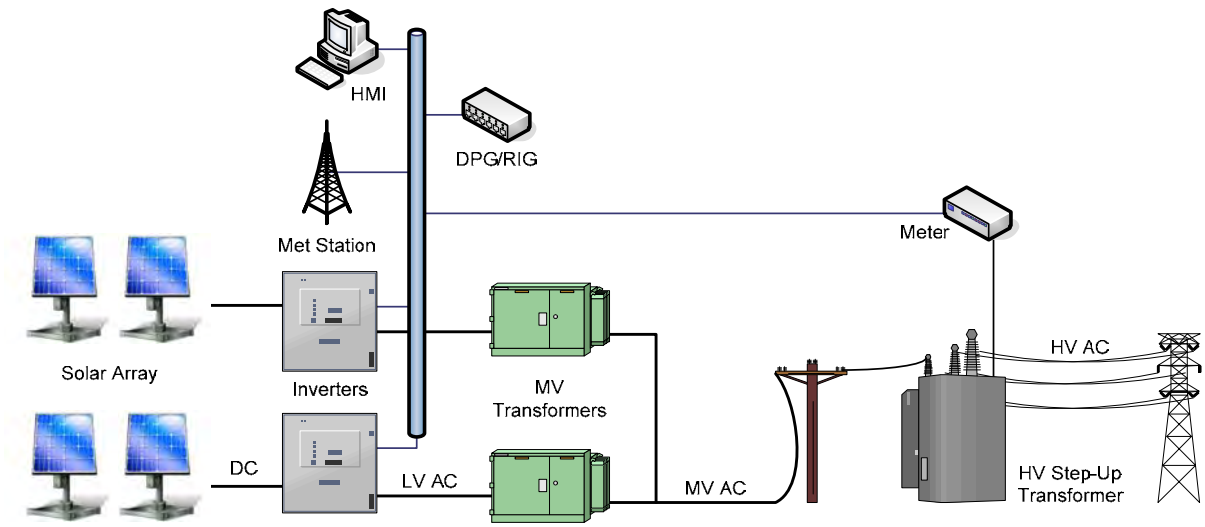
At least 50 MW of the PV panels will be mounted on tracking structures that will allow the modules to track the sun from east to west, from sunrise to sunset. This allows the PV modules to be oriented to the sun for optimal power generation. The remainder of the panels will be mounted on supports that maintain a fixed angle of approximately 20 degrees from horizontal. Tracker mounting structures are steel frame structures, arranged in rows on a north-south axis. The north-south axis of the trackers is either positioned horizontal, or at a fixed angle of approximately 20 degrees from horizontal. PV modules are mounted atop the trackers, and actuators rotate the structure and PV modules to face the sun throughout the day. The highest point for a PV module on a horizontal tracking mounting structure is during the morning and evening hours and is approximately 10 feet above the ground surface. The maximum height of tilted trackers is approximately 14 feet.

The single-axis tracker foundations will include one or more of the following designs: 1) ballast foundations approximately 10 feet long by 2 feet wide and 1.5 feet high; 2) concrete piers approximately 18 to 24 inches in diameter by 6 to 8 feet deep; 3) driven piers approximately 4 to 6 inches in diameter and 10 feet deep; or 4) screw-type foundations approximately 4.5 inches to 12 inches in diameter and up to 15 feet deep. The type of foundation will be determined based on site conditions.

The concrete electrical equipment pads that support the inverters and other electrical equipment are approximately 15 feet by 60 feet; however, these dimensions may vary depending upon the number of inverters and other equipment per pad. The electrical equipment enclosures are approximately 12 feet high. The enclosures will be painted a light, non-reflective color to avoid reflection and glare.

The wiring from the solar panels delivers the DC power along an underground trench and above ground conduit to the inverters located on the electrical equipment pads. The inverters convert the DC power to AC which is then stepped up to approximately 34.5 kV through medium-voltage transformers. This power is delivered along an overhead collection system to the Project substation; the power is then stepped up to 230 kV by two high-voltage transformers for interconnection to the electrical grid.

The following is a block diagram of the generation process:



DC – Direct Current
LV – Low Voltage
Met Station – Meteorological Station
AC – Alternating Current
MV – Mid Voltage
DPG/RIG – Data Processing Gateway/Remote Intelligent Gateway
HMI – Human-Machine Interface
HV – High Voltage

The Project will have a Supervisory Control and Data Acquisition (SCADA) system located in the O&M building that will allow for the remote monitoring and control of inverters and other Project components. The SCADA system will be able to monitor Project output and availability, and to run diagnostics on the equipment.

The Project will also have a local overall plant control system (PCS) that will provide monitoring of the solar field as well as control of the balance of facility systems. The microprocessor-based PCS will provide control, monitoring, alarm, and data storage functions for plant systems as well as communication with the Solar Field SCADA system.

One or more meteorological monitoring stations will be installed at the Project site to track solar insolation (radiation intensity), temperature, wind direction and speed and other parameters.

The Project includes a single operations and maintenance (O&M) building adjacent to the solar field (Figure 2-4). The building will be approximately 100 feet wide, 200 feet long, and 27.5 feet high. The O&M building will include administrative and operational offices as well as a material storage and equipment warehouse. The design and construction of this building will be consistent with County building standards, and its color will be chosen to minimize visual impact as approved by the Los Angeles County Department of Regional Planning.

2.1.1.1.1 <u>Electrical Interconnection</u>. The proposed Project substation would be located along the west side of 170th Street West as shown on Figure 2-4, and will step up the 34.5-kV collection-level voltage to 230 kV. The substation area will be approximately 350 feet by 350 feet, and will include a microwave tower, a control house, and two 50 percent high voltage

transformers. The tallest structure at the proposed substation is the microwave tower at approximately 60 feet.

The Project interconnection with the regional transmission system will be via Southern California Edison's (SCE) planned Whirlwind Substation, which is a part of SCE's Tehachapi Renewable Transmission Project, and which was approved by the California Public Utilities Commission (CPUC) in December 2009 (as described in Chapter 4), north of the Project site in southern Kern County (Figure 2-2). SCE's approved Whirlwind Substation will interconnect energy proposed by multiple renewable energy projects in various stages of permitting in Kern and Los Angeles counties, including the proposed AVSR1 Project. The purpose of the Whirlwind Station is to support delivery of wind energy from the Tehachapi area, and construction of the substation is not contingent on successful completion of the proposed Project.

An approximately 4.25-mile-long (3.5 miles off-site and 0.75 mile on-site), 230-kV transmission line will connect the Project's substation to the planned Whirlwind Substation. The transmission line will run along the public right-of-way (ROW) of 170th Street West, either within the public ROW or on adjacent private lands. The northern portion of the proposed transmission line route (approximately 2 miles) is located in southern Kern County. The Kern County portion of the ROW will be on the west and east sides of 170th Street West, primarily on private lands, but portions may be within the public ROW. The southern 2.25-mile portion of the transmission line, between the Project substation and the Los Angeles/Kern County line, will be buried underground. The northern portion of the transmission line (located in Kern County) will be constructed aboveground on steel monopole towers. All 230-kV crossings of 170th Street West, including those within Los Angeles County, will be aboveground. The 34.5-kV collection lines within the site boundary will be buried underground; however, crossings of 170th Street West would need to remain above ground due to subsurface utility crossing constraints.

During non-daylight hours, the Project would require small amounts of electricity from an external source for the O&M building, to keep transformers warm during non-daylight hours, and for plant lighting and security. This station service power is estimated 5,000 MW-hrs of electricity per year and would be provided by SCE. Power from the distribution service would be stepped down to an appropriate voltage to support plant auxiliaries and would be connected to the station service power switchgear.

2.1.1.1.2 <u>Water Usage/Sources</u>. The Project would utilize 150 acre-feet per year (AFY) of water per year during construction of the facility, primarily for dust control. Approximately 12 AF will be required annually for operation of the Project, including panel washes and domestic use. Water would be provided from on-site wells. Existing wells may be used for process water for construction and operations. A 100,000 gallon water storage tank will be constructed near the O&M building for process water and firefighting needs, and an

additional 10,000 gallon firewater tank will be located along 170th Street West, south of State Route 138 (SR-138).

Domestic water during operations will be supplied by a new well drilled on-site. Any new wells drilled for domestic purposes will be developed as per Los Angeles County Department of Public Health Standards.

2.1.1.1.3 Stormwater Drainage/Erosion Control. The Project site is relatively flat (ranging from approximately 1 to 2 percent gradient), sloping gently to the northeast from approximately 2,720 to 2,600 feet above mean sea level. The topography and slope are similar along the off-site portion of the transmission line route.

The Project site is traversed by three primary ephemeral drainages. As per the Federal Emergency Management Agency (FEMA), portions of the proposed Project site are potentially subject to flooding along Drainages A and C under the Los Angeles County 50-year Burned and Bulked Condition (worst case).

In order to meet the Los Angeles County Department of Public Works requirements for balancing pre- and post-development runoff volume, a series of infiltration basins will be installed within the solar field. The infiltration basins will function as a series of detention basins that will detain the excess stormwater runoff flow and volume on-site and allow it to infiltrate into the ground.

In addition to balancing the runoff volume, the infiltration basins would also function as a Best Management Practice (BMP) consistent with the Los Angeles County Standard Urban Stormwater Mitigation Plan (SUSMP). Stormwater runoff will flow into these infiltration basins where the water infiltrates into the soil and potential pollutants are removed through a combination of filtration, adsorption, and biological processes.

The most prominent, existing incised channel that traverses the site (Drainage A) has the potential to naturally meander during large storm events due to bank and bed erosion. As a protective measure, a cutoff wall consisting of sheet piling (15 feet deep and flush with the ground surface) may be installed along each side of the existing incised channel. The total length of the cutoff wall is expected to be about 10,000 feet. The cutoff wall is a potential future facility that would not be installed unless monitoring of the channel over time following large storm events indicates that the channel is meandering and, thus, the cutoff wall is needed to protect the solar field facilities from channel erosion.

The current topography is suitable for the placement of PV panels with little site preparation or improvements required. Most of the Project Site will be drained by sheet flow to on- and off-site drainages as it is currently configured. Surface water from the facility site drains toward the closed basin of Rosamond Lake within the boundaries of Edwards Air Force Base, which is located approximately 15 miles east of the facility site.

Soil stabilization measures will be used to prevent soil erosion caused by storm water runoff. The Project will apply for coverage under the State's Construction General Permit for storm water discharges from construction activities and will prepare a Storm Water Pollution Prevention Plan (SWPPP) that will include implementation of BMPs erosion-control measures to control storm water runoff. Site-specific BMPs will be designed by the contractor in compliance with regulations and permit conditions. The Project will apply for coverage under the Los Angeles County SUSMP, which also requires the implementation of site-specific BMPs.

2.1.1.1.4 Fire Protection. Fire protection measures will include sprinkler systems in the O&M building, and portable carbon dioxide (CO_2) fire extinguishers will be mounted outside inverter/electrical distribution containers on pads throughout the solar array. A FM200 fire suppression system, or equivalent, will be used in the plant control room and electrical/ control rooms. Fire protection for the solar array and the off-site transmission line will be provided by vegetation management programs. Within the solar array, vegetation will be controlled to minimize fire risk by mechanical methods and use of herbicides. Fire breaks will be installed and maintained within the Project site. For the off-site transmission line, clearances for vegetation will be implemented in accordance with Public Utilities Commission General Order 95 (Rules for Overhead Electric Line Construction).

The Project's fire protection water system would be supplied by the approximately 100,000-gallon water storage tank located adjacent to the O&M building (this tank will include 90,000 gallons for firefighting purposes), and the 10,000 gallon firewater tank located along 170th Street West, south of SR-138. The actual tank sizes will be based on Los Angeles County Fire Department final requirements for firewater storage. Firewater will be delivered by an electric pump, and a diesel-fueled backup pump may be installed so that firewater is available during power outages. Fire protection pump flow rates will be based on applicable requirements. All fire protection system pumps will be designed to be shut off manually.

2.1.1.1.5 Site Security/Fencing. The Project site perimeter will be secured with a 7-foot-tall chain link fence with 1 foot of 3-strand barbed wire on top; additionally, a "slack wire" would be installed on top of the upper strand of barbed wire as an anti-perch device. Controlled access gates will be located at the main site entrance and at other locations to facilitate access for maintenance and emergency response equipment.

Wildlife permeable fencing will be installed at regular intervals around the site perimeter. This fencing would consist of a 1-foot vertical space at ground level to allow for wildlife passage. Other fence designs that will allow as much or greater wildlife movement may be used in certain areas if needed.

The Project's lighting system will provide operation and maintenance personnel with illumination for both normal and emergency conditions. Permanent lighting will be located

only at the O&M building, parking area, and the main plant access. There will be no lighting within the solar array other than a light at each of the inverter building entry doors. These lights will normally be off and will be operated by either manual or motion activated switches to provide safe access if required by workers. If lighting at individual solar panels or other equipment is needed for night maintenance, portable lighting will be used. Lighting will be no brighter than required to meet safety and security requirements, and the lamp fixtures and lumens will be consistent with the recommendations of the local standards.

2.1.1.1.6 Health and Safety Program. Separate health and safety programs will be developed and implemented for construction and operation. The construction contractor will be responsible for the construction phase program and the Project operator will be responsible for the operations program. Both programs will meet all applicable OSHA and other regulatory requirements.

2.1.1.2 Construction

Full-scale project construction is expected to begin in the 3rd quarter of 2011 and be completed by the end of 2013. However, given the modular nature of the PV technology, the Project is expected to become operational in stages, with the first electricity delivered to the grid by the 4th quarter of 2011. The peak construction labor force requirements for the Project are expected to reach 453 workers at the maximum anticipated construction rate.

Construction will generally occur between 7:00 a.m. and 5:00 p.m., Monday through Friday. Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures.

The construction stages are expected to be as follows:

- **Clearing and grading:** Vegetation will be cut to a height of 6 inches or less, or the soil will be tilled and then rolled, to provide an even working surface in advance of construction activities. Areas subject to temporary ground disturbance will be revegetated as necessary with native grasses and wildflower species. Dust suppressants will be applied as necessary to disturbed areas to minimize dust and wind erosion.
- **Parking and laydown:** Parking areas for construction workers and laydown areas for construction materials will be prepared inside the solar field area. Detailed information regarding the location of the laydown and parking areas within the solar field will be developed after a contractor is hired to construct the facility.
- **Access road:** Construction access road beds will typically be 12 feet wide.
- **Module installation:** The solar modules will be assembled and erected on-site.

- **Balance of plant:** The Balance of Plant will consist of the O&M building, the Project substation, and electrical wiring and equipment, and smaller component installations.
- **Testing and commissioning:** Testing of subsystems will be done as they are completed. Modules will be tested once all supporting subsystems are installed and tested.
- **Site stabilization:** Disturbed areas will be stabilized during construction to minimize wind and water erosion and fugitive dust by watering and/or use of dust palliatives. Permanent roads will be either paved, compacted dirt, or graveled.
- **Demobilization:** All temporary fabrication and construction facilities will be removed from the site once construction is complete.

The Project construction contractor will mobilize and develop temporary construction facilities and laydown areas within the Project site. Temporary construction facilities will include:

- Full-length trailer offices or equivalent
- Chemical toilets
- Parking for construction vehicles
- Tool sheds/containers
- Parking construction equipment
- Construction material laydown area
- Solar field equipment laydown area
- Bulk material storage

Construction materials such as concrete, pipe, wire and cable, fuels, reinforcing steel, and small tools and consumables will be delivered to the site by truck. Initial grading work will include the use of excavators, graders, dump trucks, and end loaders, in addition to support pickups, water trucks, and cranes.

2.1.1.3 Operations and Maintenance

O&M activities associated with a PV power plant are minimal. The Project will operate during daylight hours only and will require approximately 16 full-time personnel for operation, maintenance, and security.

Daily operation of the facility will begin when there is sufficient sunlight to begin operation of the solar panels. The PV panels on trackers will be facing east in the morning and rotate on a single axis to follow the sun throughout the day. In the evening, the trackers will be

rotated back to the east using power from the electrical grid so that the panels are once again in position to receive the morning sun the next day.

Typically, the operators will work 9-hour days. Plant management and administrative staff will typically work 8-hour days, Monday through Friday. However, weekend and night shifts may be required depending on maintenance requirements. At times when non-routine maintenance or major repairs are in progress, the maintenance force may work longer hours and contract labor may be utilized as necessary.

Long-term maintenance schedules will be developed to include periodic maintenance and equipment replacement in accordance with manufacturer recommendations. PV panels are warranted for 25 years and are expected to have a life of 30 or more years, with a degradation of electrical output of approximately 0.8 percent per year. Moving parts, such as motors and tracking module drive equipment, motorized circuit breakers and disconnects, and inverter ventilation equipment, will be serviced on a regular basis, and unscheduled maintenance will be conducted as necessary.

No heavy equipment will be used during normal facility operation. Operation and maintenance vehicles will include trucks, forklifts, and loaders for routine and unscheduled maintenance, and water trucks for solar panel washing. Large heavy-haul transport equipment may be brought to the site infrequently for equipment repair or replacement.

The primary waste generated at the facility site during operations will be non-hazardous solid waste. However, varying quantities of liquid non-hazardous waste and solid and liquid hazardous waste will also be generated.

Limited quantities of hazardous materials will be used and stored on-site for operation and maintenance that may require disposal as hazardous waste. These materials will include oils, diesel fuel, lubricants, solvents, janitorial supplies, office supplies, laboratory supplies, paint, degreasers, herbicides, pesticides, air conditioning fluids (chlorofluorocarbons [CFC]), substation insulating gas (sulfur hexafluoride [SF_6]), gasoline, hydraulic fluid, propane, and welding rods. These materials will generally be used in small quantities. The main step-up transformers located in the facility substation would include secondary containment. See Appendix A for further detail.

Any hazardous materials used for the facility will be stored in the O&M building. Flammable materials, such as paints and solvents, will be stored in flammable material storage cabinets with built-in containment sumps. The remainder of the materials will be stored on shelves, as appropriate. Due to the small quantities involved, the controlled environment, and the concrete floor of the O&M building, a spill will be able to be cleaned up without significant environmental consequences.

2.1.1.4 PV Panel Recycling

First Solar will be the supplier of the PV panels used for this Project. First Solar has established the industry's first comprehensive, prefunded module collection and recycling program. The program is designed to maximize the recovery of valuable materials for use in new modules or other new products and minimize the environmental impacts associated with PV system production. Approximately 90 percent of each collected First Solar PV Module is recycled into new products, including new First Solar modules.

Anyone in possession of a First Solar PV Module can participate in the recycling program. First Solar provides packing materials, transportation, and recycling services at no additional cost.

2.1.2 Permits and Authorizations

The permits and authorizations listed below must be acquired prior to the initiation of construction activities for the Project. The County of Los Angeles has the greatest responsibility for review and approval of the Project as a whole.

Approval of the following discretionary actions by Los Angeles County Department of Regional Planning (LACDRP) is required for Project development: 1) a Vesting Tentative Tract Map for a portion of the Project site for a reversion to acreage from 147 parcels to 1 parcel; 2) Conditional Use Permit No. RCUPT200900026 for the construction and operation of a 230-MW solar photovoltaic facility in an agricultural zone, installation of on-site and off-site high-voltage 230-kV transmission lines, and on-site grading in excess of 100,000 cubic yards; and 3) any other necessary discretionary or ministerial permits or approvals as may be required for the construction of the proposed Project.

Los Angeles County final approval of the Project's CUP occurred on December 7, 2010. Subsequent to these approvals, additional agency approvals would need to be obtained. These agency approvals are listed in Table 2.1-1.

The Project does not fall under the jurisdiction of either the California Energy Commission (CEC) or the California Public Utilities Commission (CPUC).

2.1.3 Applicant-committed Measures

The CUP issued by Los Angeles County included environmental conditions to minimize impacts to the environment or avoid them altogether. These measures are included in Appendix B and are incorporated into the Project description. The Applicant has committed to these measures to minimize or avoid environmental impacts if the Project is carried forward.

TABLE 2.1-1
REQUIRED PROJECT PERMITS AND APPROVALS

Permit/Approval	Issuing Agency	Status
Zoning/Conditional Use Permit	Los Angeles County Department of Regional Planning	Issued in December 2010
Franchise agreement for location of transmission line in County road ROW Encroachment Permit(s)	Los Angeles County Department of Public Works	Agreement to be finalized by County in 2011
Encroachment Permit(s)	Kern County Planning Department	Will be applied for in 2011
Finding of Compatibility for Placement of the Transmission Line in Williamson Act Contracted Land	Kern County Board of Supervisors	Will be applied for in 2011
Encroachment Permit for utility crossing of SR-138; Oversize Load Permits	California Department of Transportation	Will be applied for in 2011
General Permits for storm water discharge during construction; approval of the on-site wastewater treatment system	Regional Water Quality Control Board, Lahontan Region	Will be applied for in 2011
Authority to Construct and Permit to Operate for installation and operation of an emergency diesel firewater pump	Antelope Valley Air Quality Management District	Will be applied for in 2011
Water Well Installation Permit	Los Angeles County Department of Public Health	Issued in December 2010
Grading Permits	Los Angeles County Department of Public Works	Will be applied for in r2011
Building Permits	Los Angeles County Department of Public Works	Will be applied for in 2011
Septic System Permit	Los Angeles County Department of Public Health	Will be applied for in 2011

2.2 ALTERNATIVES CONSIDERED BUT ELIMINATED

2.2.1 Site Alternatives

The Applicant conducted a detailed site selection process to systematically identify potential sites where a large solar generating project could be developed.

Key factors in siting the Project included identification of areas with the following characteristics: 1) adequate solar radiation; 2) close proximity to a high-capacity, 230-kV substation with adequate transmission capacity to convey the electrical output of the Project without requiring downstream upgrades to the transmission grid; 3) lack of threatened and/or

endangered biological species on the site; 4) relatively flat site that has been previously disturbed to minimize disturbance to native habitat and to minimize the need for site grading to level the site; 5) existing access to accommodate construction workforce needs; 6) few nearby sensitive receptors and lack of sensitive land uses to minimize potential conflicts with Project development; 7) landowner that controls and is willing to sell a large enough parcel of land at market price (approximately 2,000 acres minimum) to accommodate a 230-MW PV facility; and 8) access to nearby workforce to minimize traffic and socioeconomic impacts.

Factors considered related to the transmission system included the following: 1) the length of the transmission line interconnection to the electrical grid is less than 5 miles to minimize transmission line losses and costs; 2) necessary transmission line ROW can be acquired; 3) lack of threatened and/or endangered biological species along the transmission line route; and 4) co-locate the transmission line route with other linear facilities such as roads and pipelines to minimize new disturbance and potential conflicts with adjacent land uses.

Application of the above siting factors led to the identification of the proposed site. The Applicant did not identify any other available sites in the Antelope Valley within a 5-mile radius of the proposed electrical interconnection point at the planned SCE Whirlwind Substation that could potentially substantially meet the Project objectives and goals with respect to: 1) availability of large parcels (i.e., 2,000 acres or more) of private land for sale at market prices (or below); 2) land with appropriate physical characteristics (e.g., relatively flat and undeveloped); and 3) land lacking major environmental constraints.

There are no unresolved conflicts concerning alternative uses of available resources associated with the Project site that would suggest the need for other alternative sites. Since the proposed 230 MW of solar PV development at the proposed Project site is considered to be capable of meeting all of the Project's goals and objectives and no other suitable, available sites were identified for consideration, no alternative sites are evaluated.

2.2.2 Alternative Sizes

The Applicant considered alternative electrical output ranges for the Project. The output potential of the Project is determined by the size of the developable portion of the site, solar radiation characteristics, and the specific PV panels and mounting systems to be used. The Applicant determined that the output potential of the proposed Project at the 2,100-acre site is 230 MW and the Power Purchase Agreement (PPA) with Pacific Gas and Electric Company (PG&E) is for 230 MW. The Interconnection Request to the California Independent System Operator (CAISO) is for up to 250 MW. Project sizes below 230 MW of output limit the Applicant's ability to meet the Project goals and objectives as well as the terms of the PPA with PG&E. Project sizes above 250 MW would require a modification to

the CAISO Interconnection Request and pending agreement with SCE. Therefore, a Project in the range of 230 to 250 MW is generally set by the PPA and the interconnection request.

No other alternative Project sizes are considered.

2.2.3 Alternative Site Layout

An alternative site layout was evaluated that would result in a reduced Project footprint. This alternative was considered to evaluate potential benefits of further minimizing potential biological resource impacts. Although the proposed Project meets all setback requirements, under the alternative site layout setbacks at various locations were increased to provide additional buffer areas. These additional setbacks reduced the Project site development by approximately 10 percent but would not result in a change in the impact significance findings for biological resources, when compared to the proposed Project. While failing to provide a significant environmental benefit, this alternative layout would reduce the facility's generating capacity by approximately 25 MW. As a result, this alternative would render the Project incapable of meeting its contractual electricity delivery obligation under the PPA. For this reason, combined with no significant benefit to biological resource impacts, the alternative layout is not considered to be capable of meeting the Project goals and objectives and is not further considered.

No other alternative Project site layouts are considered.

2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, DOE would not issue a loan guarantee for the proposed Project. In this case, the Applicant may have greater difficulty obtaining financing for the Project, which may result in a delay in the start of construction, construction in smaller increments over a longer time-period, potentially increased Project cost, or could possibly result in the Project not being built. Although the Applicant may still pursue the Project without the loan guarantee, as defined above, for purposes of this NEPA analysis the No Action Alternative analysis assumes a no Project, or no build scenario. The decision for DOE consideration covered by this NEPA review is whether to approve the loan guarantee for the proposed action.

As detailed above, alternative locations and sizes for the proposed action have been explored and eliminated because they did not meet the requirements of the Project. Therefore, other than no action, there is no alternative to providing a loan to the Applicant for its proposed project. The proposed action and No Action Alternative are considered in this NEPA review.

CHAPTER 3.0
AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter describes the existing social, economic, and environmental conditions of the AV Solar Ranch One Project (Project) area and the environmental effects expected to result from the proposed action and the No Action Alternative described in Chapter 2.0, Proposed Action and Alternatives. This chapter addresses the following resource topics:

- Land Use and Agriculture
- Visual Resources
- Air Quality
- Noise
- Geology and Seismicity
- Water Resources
- Biological Resources
- Cultural Resources
- Socioeconomics and Environmental Justice
- Public Health and Safety
- Transportation

If the Project were not constructed under the No Action Alternative, both adverse and beneficial impacts of the Project would not be realized, including the clean renewable power benefits that the Project could bring to the energy market.

The following sections address the affected environment for each of the environmental resource topics listed above.

3.2 LAND USE AND AGRICULTURE

3.2.1 Regulatory Framework

3.2.1.1 <u>Farmland Protection Policy Act (FPPA) of 1981</u>

The Farmland Protection Policy Act (FPPA), administered by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), is intended to minimize the

impact Federal programs have on the unnecessary and irreversible conversion of farmland to non-agricultural uses. The FPPA assures to the extent possible that Federal programs are administered to be compatible with state and local government, as well as private programs and policies that protect farmland. The FPPA regulates four types of farmland soils; prime farmland, unique farmland, farmland of state-wide importance, and farmland of local importance.

3.2.1.2 Government Code Section 51200 *et seq.*, California Land Conservation Act (Williamson Act)

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space uses in return for reduced property tax assessments. Private land within locally designated agricultural preserve areas is eligible for enrollment under Williamson Act contracts.

The Williamson Act program is administered by the California Department of Conservation (CDOC) in conjunction with local governments, which administer the individual contract arrangements with landowners. The landowner commits the parcel to a 10-year period wherein no conversion out of agricultural use is permitted. Each year the contract automatically renews unless a notice of non-renewal or cancellation is filed. In return, the land is taxed at a rate based on the actual use of the land for agricultural purposes, as opposed to its unrestricted market value. Participation in the Williamson Act program is dependent on county adoption and implementation of the program and is voluntary for landowners (CDOC 2007).

While the Williamson Act requires cancellation for any proposed development that is not agricultural based, the Williamson Act allows electric power transmission as a compatible use (Section 51238).

3.2.1.3 Local Regulations

The proposed solar generation site and southern portion of the 230-kV transmission line are located in Los Angeles County whereas the northern portion of the 230-kV transmission line is located in Kern County. Local planning documents applicable to the Project include the Los Angeles County General Plan land use designations and policies, the Los Angeles County Green Building Code, and the Zoning Ordinance, and applicable provisions of the Kern County General Plan for the northern portion of the transmission line.

The County of Los Angeles General Plan Land Use Element includes policies and land use maps to guide the future development of Los Angeles County. The General Plan includes a series of area plans which address specific policies for each of the identified geographic areas. The Project is located within the Antelope Valley Areawide General Plan.

Development in the Project area is regulated by the County of Los Angeles zoning ordinance (Title 22). This ordinance contains the regulatory framework that specifies allowable uses for real property and development intensities, technical standards for development, and the procedural standards for amending or establishing new zoning regulations, including Conditional Use Permits.

Los Angeles County ordinances applicable to the Project (established under Title 12-Environmental Protection, Title 21-Subdivisions, and Title 22-Planning and Zoning of the Los Angeles County Code) include Low Impact Development (LID), Drought-Tolerant Landscaping, and Green Building Standards. The main objectives for the LID standards are to protect surface and groundwater quality, maintain the integrity of ecosystems, and preserve the physical integrity of receiving waters by controlling rainfall and stormwater runoff at or close to the source. The Drought-Tolerant Landscaping standards are intended to help conserve water resources by requiring landscaping that is appropriate to the region's climate, and to the nature of a project's use. The Green Building Development Standards address energy conservation, outdoor and indoor water conservation, resource conservation, and tree planting.

The Kern County General Plan identifies the community's physical development goals relating to environmental, economic, and other factors. The Kern County General Plan includes Specific Plans and development guidelines that apply to communities. The proposed 230-kV transmission line is located within the Willow Springs Specific Plan area. Private lands are regulated by the Kern County Zoning Ordinance (Title 19). This ordinance sets forth the land uses and land development regulations applicable within the unincorporated areas of Kern County. The Kern County Zoning Ordinance contains lists of "Permitted Uses," "Uses Permitted with a Conditional Use Permit," and "Prohibited Uses" within each of 21 zoning districts (i.e., zones). In addition, the zoning ordinance also contains 12 combining zoning districts (i.e., overlay zones).

3.2.2 Affected Environment

3.2.2.1 Solar Generation Site

The solar generation site is private land previously used for agricultural production located in the Antelope Valley Planning Area, in unincorporated Los Angeles County. The site is located along State Route (SR)-138, west of the community of Antelope Acres, and is approximately 15 miles northwest of downtown Lancaster and approximately 1.5 miles south of Kern County. The Project site is located within the BLM West Mojave Planning Area boundaries; however, no BLM-administered lands are located within the site or in the site vicinity. State and federal lands in the Project vicinity are shown on Figure 3.2-1.

The Project site was formerly used for agricultural production. Areas immediately adjacent to the property are either vacant lands or agricultural fields. The Project site and adjacent

properties are designated Non-Urban 1 (N-1) land use type in the Los Angeles County General Plan (LACDRP 1993) (refer to Figure 3.2-2). The Project site is currently zoned Heavy Agricultural (A-2), and adjacent properties are designated in A-2 and Light Agricultural (A-1) zones (refer to Figure 3.2-3). The Project site vicinity is an area of low residential density. Two existing residences used by the previous landowners are located on the site, and will be removed as part of the proposed Project. The nearest off-site residence (designated R-2) is located approximately 0.4 mile west of the site (refer to Figure 3.2-4).

The site is traversed by SR-138 (east-west oriented) and 170th Street West (north-south), and the site property line is generally bound by unpaved rural roads.

As defined by the Los Angeles County General Plan (LACDRP 1993), Joshua Tree Woodland Habitat (JTWH) Significant Ecological Area (SEA) (SEA #60) is located adjacent to the northern and northeastern portions of the Project site. The LACDRP establishes SEAs to identify areas considered valuable for biological resource conservation; in this case, Joshua tree woodland habitat (refer to Figure 3.8-2 in Section 3.8).

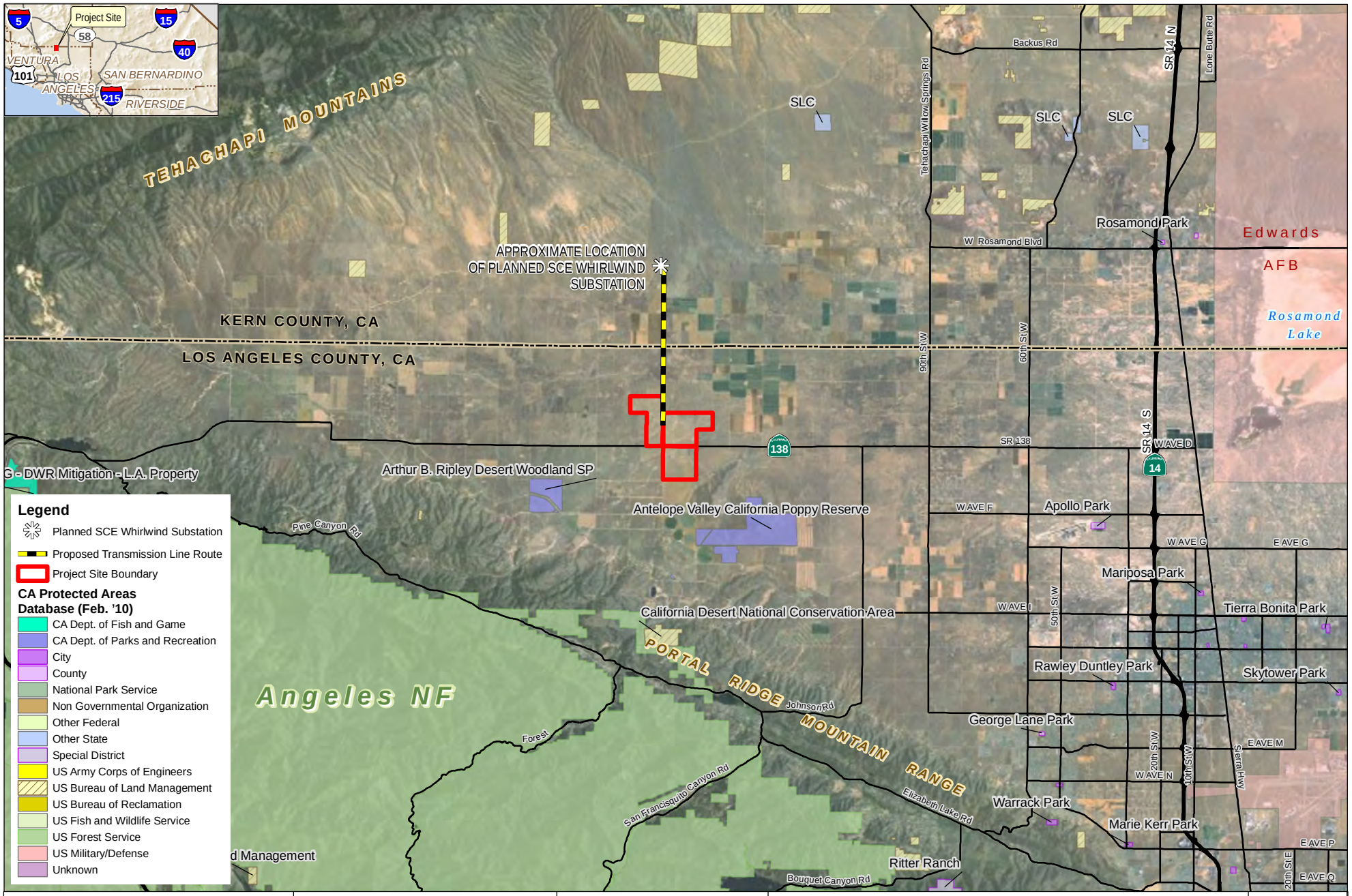
The Project site and adjacent parcels are privately-owned lands and do not contain recreational areas, or uses, such as regional riding or hiking trails, or off-highway vehicle (OHV), camping, or picnicking areas. At the nearest point, the Project site is located approximately 1.5 miles northwest of the Antelope Valley California Poppy Reserve, and more than 2.5 miles northeast of the Arthur B. Ripley Desert Woodland State Park (refer to Figure 3.2-1). The nearest national forest, Angeles National Forest, is located approximately 4 miles south of the Project site, on the south side of the Portal Ridge mountain range.

The majority of the Project site had been historically farmed (primarily dry farming) since the 1950s, and was farmed continuously until 1995. The last irrigated farming activity consisted of an 80-acre crop of onions in 2004. Based on the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) soil mapping data (NRCS 2008), the site consists of: Hanford coarse sandy loam (HbA and HbC), Hanford sandy loam (HcA), Hanford loamy sand (HaB2), Ramona coarse sandy loam (RcA), and Greenfield sandy loam (GsA). As characterized by the NRCS, these units would be considered Prime Farmland, if irrigated.

Currently the Los Angeles County portion of the Antelope Valley does not contain Williamson Act contracted lands.

3.2.2.2 <u>230-kV Transmission Line Route</u>

The proposed off-site portion of the 230-kV transmission line route extends approximately 3.5 miles north from the solar generation site to the planned SCE Whirlwind Substation located in southern Kern County. The proposed transmission line would be located within, or on private land adjacent to, the public ROW of 170th Street West (paved 2-lane collector).



N

1:250,000

0 1 2 3 4 5 Miles

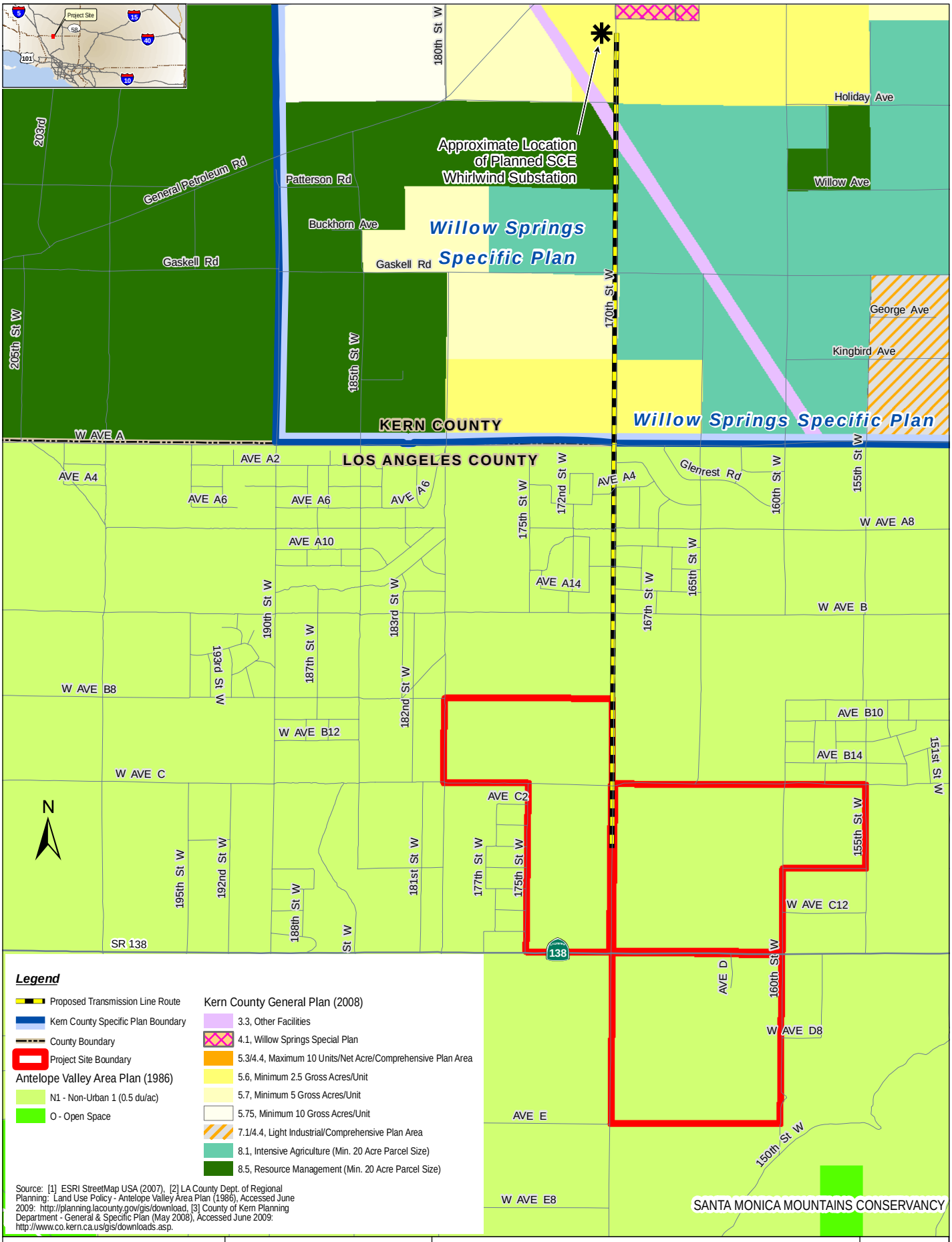
Source:
[1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution),
[3] CALIFORNIA PROTECTED AREAS DATABASE (CPAD) Version 1.4., www.greeninfo.org and cpad@calands.org.

AV Solar Ranch One Environmental Assessment

Figure 3.2-1. STATE AND FEDERAL LANDS IN PROJECT REGION

2011

T:\FirstSolar\AVSR1_DOE_EA\deliverables\Fig3_2-1_StateAndFederalLandsInProjectRegion.mxd



1:48,000

0 2,000 4,000 Feet

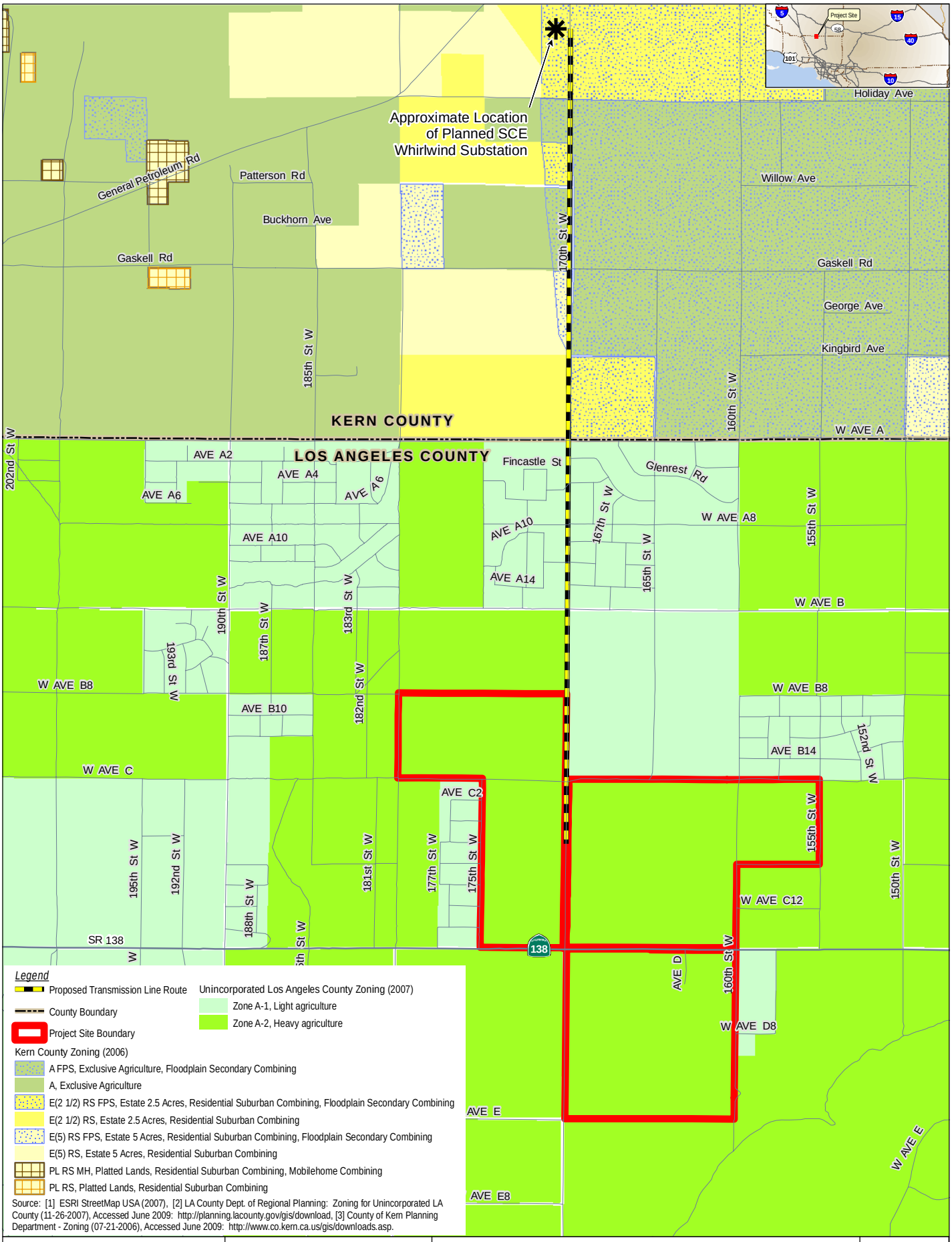
0 0.5 1 Miles

AV Solar Ranch One Environmental Assessment

Figure 3.2-2. EXISTING GENERAL PLAN LAND USE DESIGNATIONS

2011

T:\FirstSolar\AVSR1_DOE_EA\deliverables\Fig3_2-2_ExistingGeneralPlanLandUseDesignations.mxd



1:48,000

0 2,000 4,000 Feet

0 0.5 1 Miles

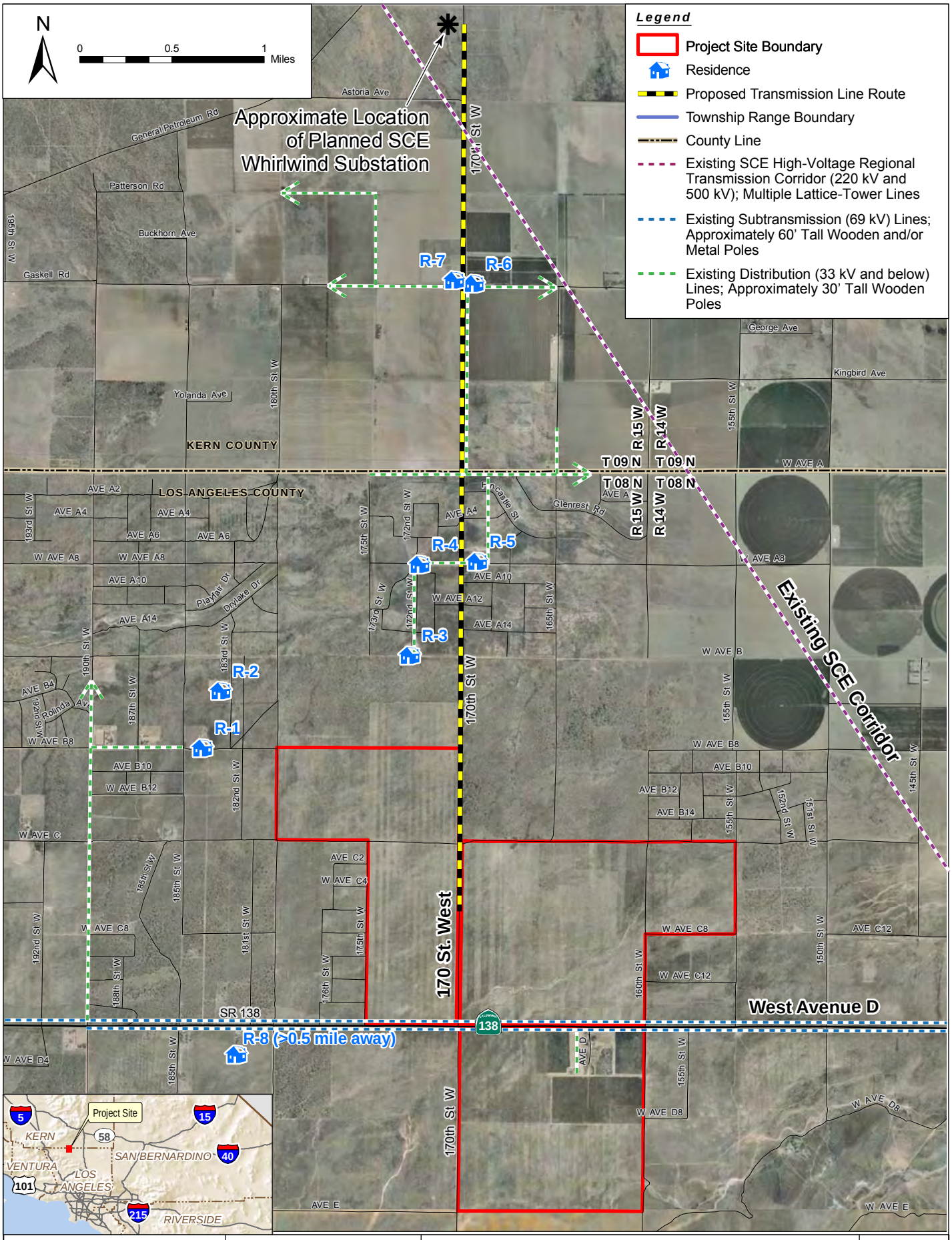
AV Solar Ranch One Environmental Assessment

Figure 3.2-3. EXISTING ZONING

2011

T:\FirstSolar\AVSR1_DOE_EA\deliverables\Fig3_2-3_ExistingZoning.mxd

T/Ladd/AVSR1 EA/1210/85



Source: [1] USGS 1:24,000-scale topographic map created with TOPO!, (c)2007 National Geographic Maps, All Rights Reserved, [2] ESRI StreetMap USA (2007).

AV Solar Ranch One Environmental Assessment

Figure 3.2-4. EXISTING NEARBY POWERLINES

2011

The transmission line route traverses areas of agricultural production, open space, low density residential, and existing infrastructure (i.e., power lines, high-voltage transmission lines, and roads) uses.

The proposed transmission line route traverses multiple land use designations in Los Angeles and Kern County (refer to Figure 3.2-2). Within Los Angeles County, the transmission line route traverses the Non-Urban 1 (N-1) land use designation. In Kern County, the transmission line route traverses land uses consisting of Intensive Agriculture, Residential, and Other Facilities. Current zoning adjacent to the transmission line alignment is Light (A-1) and Heavy Agriculture (A-2) within Los Angeles County. In Kern County, current zoning along private lands potentially traversed are: Exclusive Agriculture with a combined district of Floodplain Secondary (A-FPS); Estate 2.5 Acres, Residential Suburban Combining (E[2½] RS); and Estate 2.5 Acres, Residential Suburban Combining with a combined Floodplain Secondary (E[2 ½] RS FPS) zoning district (refer to Figure 3.2-3).

According to the NRCS, soil mapping units along the 230-kV transmission line route consist of Hanford coarse sandy loam (HbA), Greenfield sandy loam (GsA), Rosamond loamy fine sand (Rm), Rosamond loam (Rp), Rosamond silty clay loam (Rt), Rosamond fine sandy loam (Ro), and Hesperia fine sandy loam (HkA and HkB), which are considered Prime Farmland if irrigated (NRCS 2008). The proposed transmission line route traverses one parcel of land under Williamson Act contract in Kern County for a distance of approximately 0.5 mile. As with the Project site, the transmission line route does not traverse and is not located within the near vicinity of recreational areas. Additionally, no federal- or state-administered lands are located along or within the vicinity of the transmission line route.

3.2.3 Environmental Consequences

3.2.3.1 Solar Generation Site

Development of the Project would result in a change of land use on the Site from vacant, fallow agriculture lands to the solar PV renewable energy production use associated with the Project. Remnants of prior agricultural uses, including residential ranch structures, would be removed from the site. The proposed action would involve covering the majority of the site with solar panels with small areas used for the O&M area, the substation, and site drainage control features. This land use conversion would not be irreversible as the Site could be restored to approximately the current condition at the end of the operational period of the Project.

The proposed action is considered to be a utility installation, and therefore would be consistent with the Los Angeles County N-1 land use designation. The proposed action is a permitted use under the existing zoning (Heavy Agriculture, A-2), and would be allowed with a CUP. A project's implementation of its CUP conditions of approval would maintain the Project's compatibility with the designated zoning district, associated uses, and adjacent

zoning (i.e., Light Agriculture, A-1). The Project's CUP application was submitted on March 17, 2009, and Los Angeles County approved the CUP for the Project on September 15, 2010. Implementation of the Project, resulting in the land use change described above, as conditioned by Los Angeles County, would be consistent with the A-2 zoning designation and the adjacent A-1 zoned areas.

The vicinity of the subject property is an area of low residential density, and the nearest residence is located approximately 0.4 mile from the solar generation site. This residential use, along with the other generally isolated residential uses in the site vicinity, is located on A-1 and A-2 zoned districts. The Project CUP conditions of approval allow for Project compatibility with these uses.

In accordance with the FPPA, the DOE has coordinated with the NRCS, and jointly completed the FPPA Farmland Conversion Impact Rating form (Form 1006) (see Appendix E). Data used to complete the form was obtained from site observations, GIS analysis, and NRCS soils information. Farmland impact is divided into direct and indirect impacts. The solar generation site would result in direct impacts in those areas within the generation facility, and would result in no indirect impacts (i.e., acres not being directly converted but that would no longer be capable of being farmed after the conversion because the conversion would restrict access to them or cause other major change in the ability to use the land for agriculture). As identified on the Form 1006 in Appendix E, land assessment and site assessment criteria were calculated according to FPPA guidelines, and the solar generation site would result in less than 160 total points (threshold). Therefore, under the provisions of 7 CFR 658.4(c)(2), additional consideration for protection is not necessary.

3.2.3.2 230-kV Transmission Line Route

The proposed 230-kV transmission line would be located within, or on private lands adjacent to, the public ROW of 170th Street West (paved 2-lane collector). Current uses along the transmission line route consist of agricultural production, open space, low density residential, and existing infrastructure (i.e., power lines, high-voltage transmission lines, and roads). The off-site 230-kV transmission line would be buried in the Los Angeles County portion of the route within the public road ROW of 170th Street West. Installation of the underground transmission line would affect approximately 1.8 acres of land along the transmission line route, but would be located within the 170th Street West public road ROW, and would not affect or change the existing land use patterns in other parcels. As a result, the proposed transmission line would be considered consistent with land use and zoning designations. There are no established communities that would be divided as a result of the transmission line.

The proposed transmission line route in Kern County would be constructed above ground, and would traverse agricultural and low density residential zoned areas, and agriculture,

utilities, and low-residential designated land uses (see Figures 3.2-2 and 3.2-3). The transmission line would cross in front of residence R-6 on the east side of 170th Street West (see Figure 3.2-4). Residence R-6 is a mobile home (currently has tenants) that would either be moved or demolished under terms of the pending easement prior to completion of the transmission line at this location. The transmission line would not conflict with the land use and zoning designations and, therefore, would not change the overall land use pattern along the route. Agricultural activities would be allowed to continue within the transmission line easement. However, the proposed transmission line route easement(s) in Kern County would limit potential future development (i.e., residential) within the easement.

The average permanent disturbance area per pole (50 square feet per pole), combined with short access pathways connecting the pole location to 170th Street West, would conservatively result in an estimated 2,000 square feet of permanent disturbance. In total, for approximately 18 poles (and access ways), the transmission line's permanent disturbance would be 36,000 square feet (0.83 acre). In accordance with the FPPA, the DOE has coordinated with the NRCS, and jointly completed the FPPA Farmland Conversion Impact Rating for Corridors (Form CPA-106) (see Appendix E). Data used to complete the form was obtained from site observations, GIS analysis, and NRCS soils information. The proposed transmission line route would result in direct impacts to approximately 1 acre (0.83 acre) due to pole foundations, and indirect impacts to approximately 1 acre due to service roads. As identified in Appendix E, land assessment and site assessment criteria were calculated according to FPPA guidelines, and the proposed transmission line route would result in less than 160 total points; therefore, under the provisions of 7 CFR 658.4(c)(2), additional consideration for protection is not necessary.

Approximately 5 poles would be located on a parcel under Williamson Act Contract. As described in Section 3.2.1.1, the Williamson Act allows electric power generation, including electric facilities as compatible uses in contracted lands. Additionally, since placement of the transmission line poles and conductor would result in minimal permanent disturbance and would still allow agricultural use on the parcel in accordance with the Williamson Act (Government Code Section 51238), the placement of the transmission line would not compromise the long-term agricultural capability of the parcel, and would not significantly displace or impair current agricultural operations on the parcel.

3.2.3.3 No Action Alternative

If the Project were not constructed there would be no change to land use at the Project site, and no change to land use and agricultural lands, including Prime Farmland along the transmission line route.

3.3 VISUAL RESOURCES

3.3.1 Affected Environment

3.3.1.1 General Project Area

The topographic characteristics of the solar generation site, transmission line route, and surrounding region allow for open, expansive views of hills and mountains to the north and south of the Project site in the Antelope Valley. These include the Tehachapi Mountain Range to the north, Fairmont Butte to the south-southeast, and the San Gabriel Mountain Range to the south. Agricultural land represents a majority of the land development in the Project area in both Los Angeles County and Kern County.

Major roadway corridors in the Project vicinity include the Antelope Valley Freeway SR-14 and SR-138. No designated scenic highway or scenic corridors are located within the Project viewshed. The nearest national forest, the Angeles National Forest, is located approximately 4 miles south of the Project site, on the south side of the Portal Ridge mountain range (refer to Figure 3.2-1). The solar generation site and transmission line route are not expected to be visible from the National Forest as a result of the distance and topographic screening from the intervening mountain range. Two California State Parks are located within the vicinity of the Project: the Antelope Valley California Poppy Reserve (1.5 miles south of the Project site, at the nearest distance); and the Arthur B. Ripley Desert Woodland State Park (2.5 miles southwest of the Project site). Existing power/transmission lines cross through the Project site along SR-138.

3.3.1.2 230-kV Transmission Line Route

The land use along the Project transmission line route generally consists of agricultural or undeveloped land with occasional residences and farm-related structures, and includes existing powerlines (located along 170th Street West). A major regional SCE transmission corridor containing multiple 500-kV and 230-kV lines with lattice towers traverses the proposed transmission line route area in Kern County (refer to Figure 3.2-4).

3.3.2 Environmental Consequences

3.3.2.1 Proposed Action

Nearly all of the Project site would be developed with PV solar panels and there would be a 4.25-mile-long 230-kV transmission line to connect the Project with the planned SCE Whirlwind substation. Effects to visual resources from the development of the Project would result in changed views from viewpoints in the immediate vicinity. The proposed Project and associated transmission line would introduce new elements into the landscape.

Analysis of visual factors was conducted from key observation points (KOPs) that are representative of the visual conditions around the Project area, and are generally selected to be representative of the most critical or common locations from which the Project will be seen. KOPs are selected in an effort to evaluate existing landscapes and potential impacts on visual resources with various levels of sensitivity, in different landscape types and terrain, and from various vantage points.

The KOP locations selected for this analysis are presented on Figure 3.3-1. As shown, KOP 1 would be representative of a motorist's view of the proposed solar generation site while traveling along SR-138. KOP 2 is located in the Antelope Valley California Poppy Reserve, along a trail that based on topographic review of elevations, would allow a recreational user a direct and representative view of the western portion of the Project site. KOP 3 provides a view from the closest trail area in the Arthur B. Ripley Desert Woodland State Park. KOP 4 provides a representative view of the Project site from a nearby residence.

3.3.2.1.1 <u>Solar Generation Site</u>. The Project solar generation facility would be designed to be compatible with the intensity and design parameters (land use, bulk, lighting standards, height, architectural coatings, etc.) required and conditioned by the County of Los Angeles. The types and degree of visual changes that would be caused by the Project are shown in computer-generated photographic simulations on photographs taken from the KOPs that are depicted on Figures 3.3-2 through 3.3-5. Major features of the solar generation facility that could be visible depending on the vantage point include rows of solar arrays (maximum height of 15 feet), an internal road network, a 20,000 square foot O&M building (peak height of approximately 28 feet), substation (peak height of approximately 60 feet for associated microwave tower), perimeter fencing (height of approximately 8 feet), and above ground segments of the Project's 34.5-kV power lines. The 34.5-kV power lines would be installed on wooden poles that would be up to approximately 60 feet tall for the crossing of Drainage A (state jurisdictional drainage) and the crossing of 170th Street West. The O&M building and other appropriate equipment would be painted with non-reflective paint and neutral colors (e.g., tan colors) selected in coordination with Los Angeles County. The Project would not include uses that would produce new sources of substantial light or glare.

Changes to the viewshed from the Project development would result in the highest degree of change from viewpoints in the foreground views (i.e., 0 to 0.5 mile from the observer's position). Locations adjacent to the solar generation site along SR-138 and 170th Street West, which traverse the property, would provide foreground views of the facility site to motorists. KOPs 1 and 4 provide representative views of the Project site from foreground viewing locations as shown on Figures 3.3-2 and 3.3-5. The presence of existing powerlines on both sides of SR-138 (see Figure 3.3-2, upper frame) has already altered the respective viewsheds.

Motorists traveling along SR-138 would experience a brief duration of view (approximately 2-3 minutes) of the Project site. As shown on Figure 2-4 (Conceptual Facility Site Plan) and

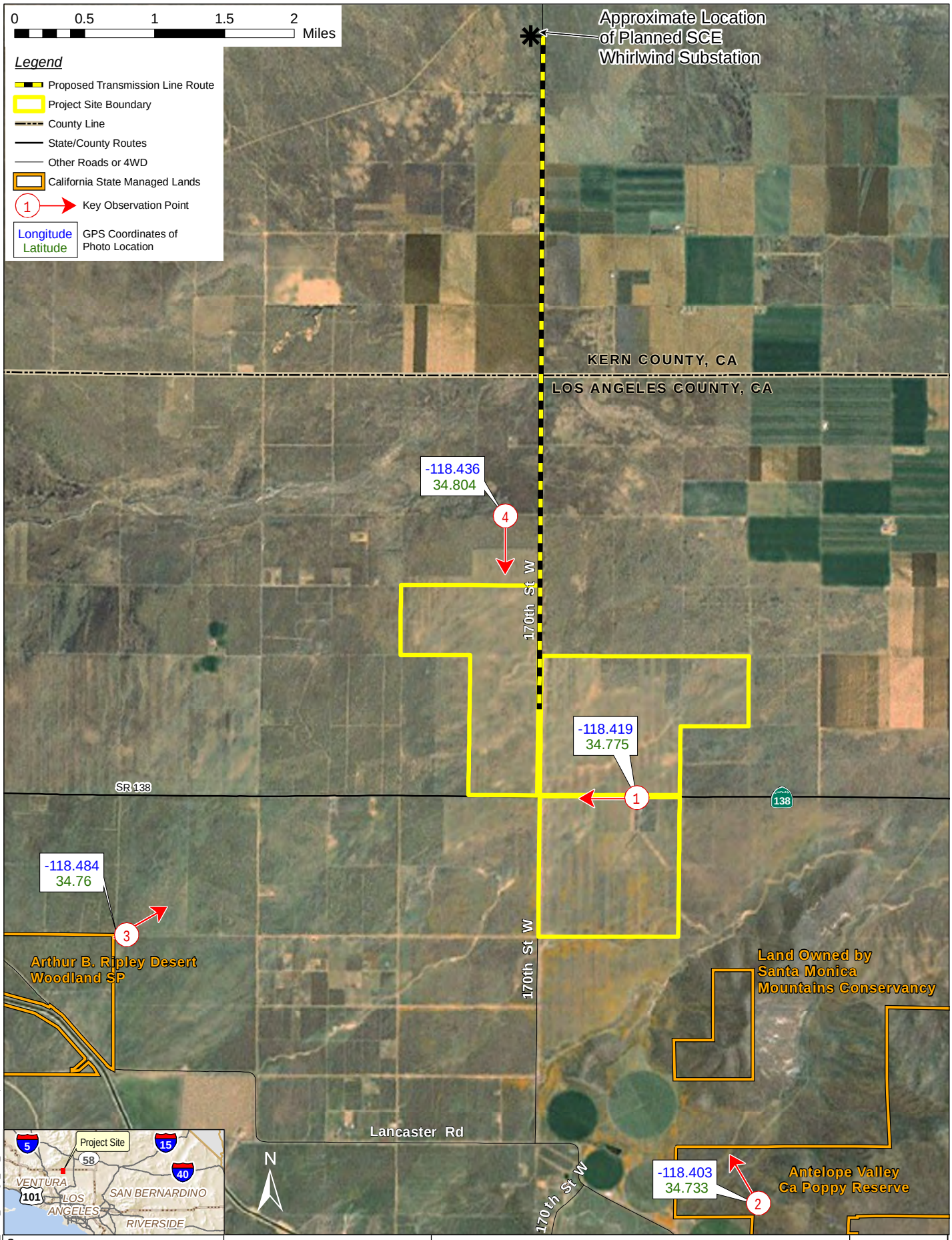
Figure 3.3-2 (KOP 1 bottom panel), the proposed arrays would be set back from the centerline of SR-138 by a minimum of 150 feet to the north and south, such that the motorists' temporary view of the facility would not be dominated with the PV arrays. The proposed landscaping using drought tolerant native species on the roadway side of the facility fenceline north and south of SR-138 (see Figure 3.3-2, KOP 1, bottom panel) combined with the use of low profile (10 feet maximum height above ground level) PV panels north and south of SR-138 for approximately 1,000 feet (see Figure 2-4) would help screen and further minimize visual impacts.

Approximately four residential locations (shown as residences R-1, R-2, R-3, and R-8, on Figure 3.5-1 in Section 3.5) are located in the vicinity of the solar generation site, with the nearest residence (R-1) being 0.4 mile from the site. KOP 4, which is a nearby residential location selected based on its proximity to the solar generation facility and transmission line (Figure 3.3-1), is approximately 0.5 mile from the Project site, and is a representative view of the Project from the nearby residential locations. The existing and simulated Project views from KOP 4 are presented on Figure 3.3-5. As shown, the Project site is obscured due to distance and intervening vegetation.

The nearest scenic recreational areas to the Project site are the Antelope Valley California Poppy Reserve, which is approximately 1.5 miles southeast of the facility site property line, and Arthur B. Ripley Desert Woodland State Park, which is approximately 2.5 miles southwest of the facility site property line (Figure 3.3-1). As shown on KOP 2 from the Antelope Valley California Poppy Reserve (Figure 3.3-3) and KOP 3 from the Arthur B. Ripley Desert Woodland State Park (Figure 3.3-4), the Project would contribute to middleground views (i.e., >0.5 to 5 miles from the observer's position); however, these changes are minor, and would not dominate perspectives. The Project is not expected to be visible from the Angeles National Forest, which is 4 miles south of the property and located south of the Portal Ridge mountain range (Figure 3.2-1).

Foreground views of the Project site would experience the greatest effect; however, the viewer exposure along these areas would be moderate to low due to the brief duration of view and low to moderate number of observers exposed to the views. Middleground views of the proposed Project, as shown on Figures 3.3-3 and 3.3-4, demonstrate that the Project would have minimal changes to the viewshed from these viewing locations.

Implementation of the proposed action would involve a shift in land use from rural open space to solar energy generation. While the proposed action would cover a relatively large area, the solar generation portion of the proposed action would not be readily visible from middleground or more distant locations, and would only have a moderate effect to foreground views. The solar generation portion would constitute a moderate level of change in the visual environment, based on the low profile design of the proposed structures (which would not obstruct or block views into the distance), the inclusion of screening landscaping



T:\FirstSolar\AVSR1_DOE_EA\Fig3_3-1_KOPLocationMap.mxd

Source:
[1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [3] LA County General Plan(1986), [4] Antelope Valley Area Wide General Plan (1986), Accessed February 2009: http://planning.lacounty.gov/gis/data.

AV Solar Ranch One Environmental Assessment

Figure 3.3-1. KOP LOCATION AERIAL MAP

2011

T/Ladd/AVSR1/NEPA EA/.../709-130B

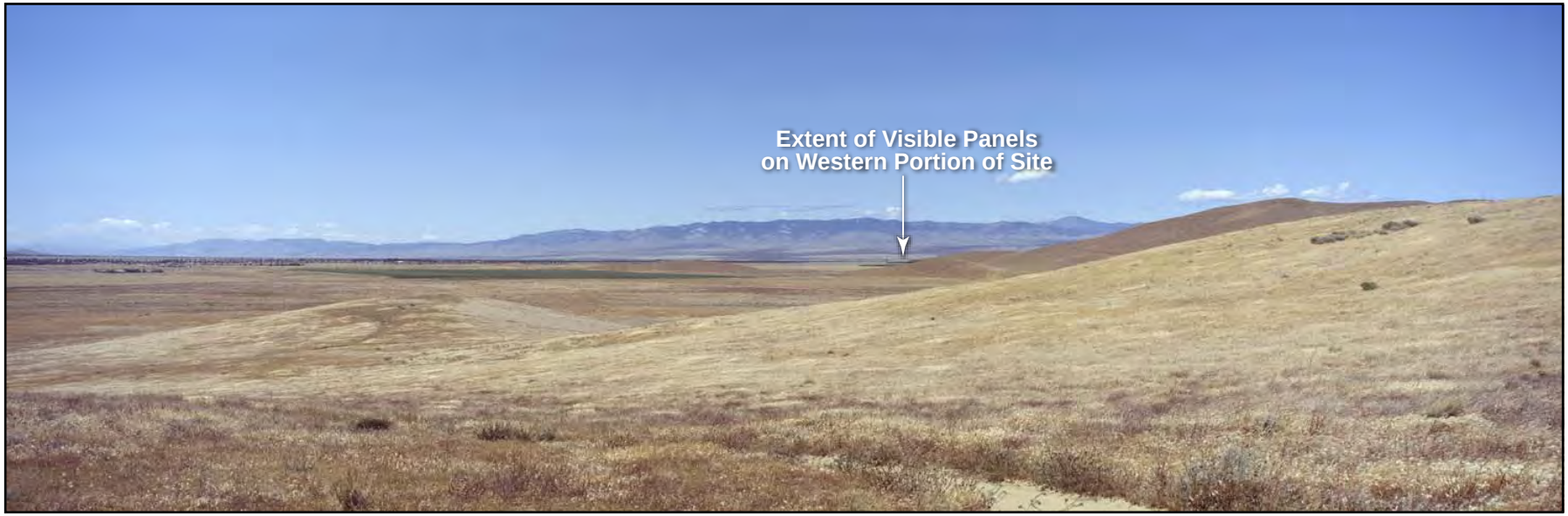
KOP #1 - Existing view of traveler moving west along State Highway 138

KOP #1 - Simulated view of traveler moving west along State Highway 138

Source: Digital Preview 2010	**AV Solar Ranch One Environmental Assessment**	**Figure 3.3-2.** KOP #1–EXISTING AND SIMULATED VIEW	2011

T/Ladd/AVSR1/NEPA EA/.../709-134C

KOP #2 - Existing view of recreational user at Antelope Valley California Poppy Reserve



KOP #2 - Simulated view of recreational user at Antelope Valley California Poppy Reserve

Source: Digital Preview 2009	**AV Solar Ranch One Environmental Assessment**	**Figure 3.3-3.** KOP #2–EXISTING AND SIMULATED VIEW	2011

T/Ladd/AVSR1/NEPA EA/.../709-136C

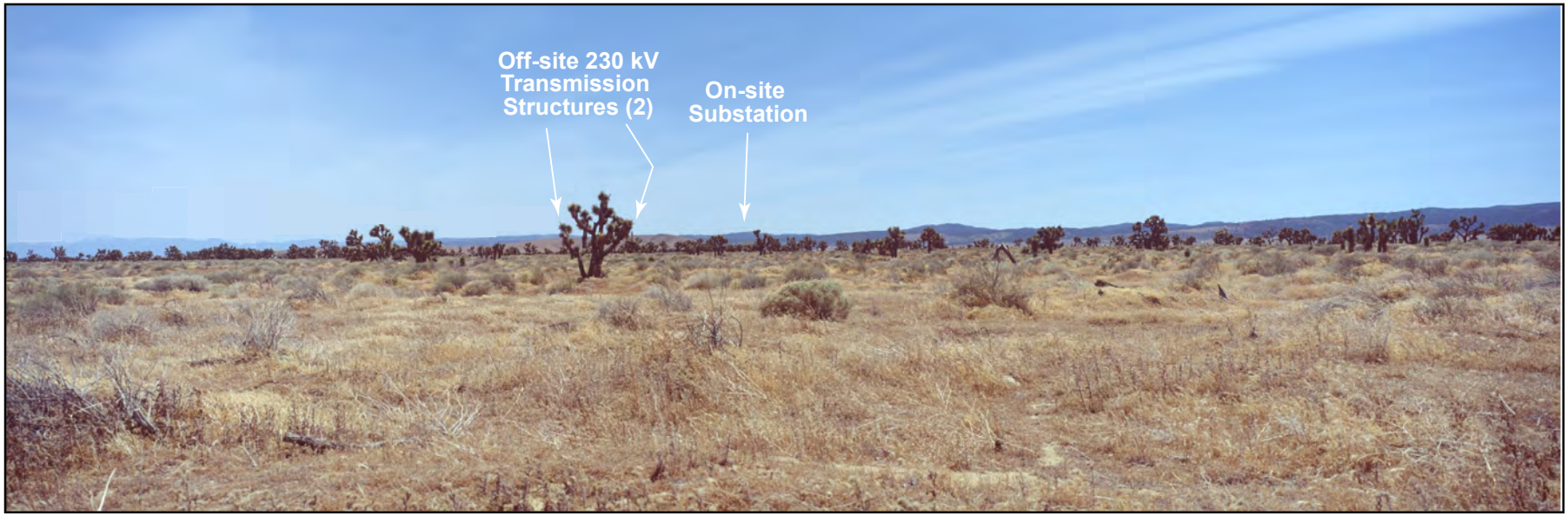
KOP #3 - Existing view of recreational user at Arthur B. Ripley Desert Woodland State Park

KOP #3 - Simulated view of recreational user at Arthur B. Ripley Desert Woodland State Park

Source: Digital Preview 2009	**AV Solar Ranch One Environmental Assessment**	**Figure 3.3-4.** KOP #3–EXISTING AND SIMULATED VIEW	2011

T/Ladd/AVSR1/NEPA EA/.../709-138C

KOP #4 - Existing view from representative residence location at 50800 172nd Street West



KOP #4 - Simulated view from representative residence location at 50800 172nd Street West

Source: Digital Preview 2010	**AV Solar Ranch One Environmental Assessment**	**Figure 3.3-5.** KOP #4–EXISTING AND SIMULATED VIEW	2011

north and south of SR-138, and the existing moderate level of visual sensitivity in the solar generation area. Further, most viewers will be motorists travelling on SR-138, generally travelling at high speeds and focused on the road ahead.

3.3.2.1.2 <u>230-kV Transmission Line Route</u>. The off-site 230-kV transmission line would be located within or adjacent to the public road right-of-way of 170th Street West. The transmission line would be buried along the portion of the route within Los Angeles County, except for two crossings of 170th Street West. The transmission line would be entirely above ground within Kern County. The aboveground portions of the 230-kV transmission line would be constructed using tubular steel poles (85 to 125 feet tall), and transmission line wires (conductors) would be made of non-reflective material.

Views along 170th Street West north of the Project site would provide motorists with foreground views of the 230-kV transmission line at its crossings of 170th Street West within Los Angeles County, and along the aboveground transmission line segment within Kern County. The presence of existing power lines along portions of 170th Street West, including the existing SCE regional transmission corridor, in the vicinity of the proposed 230-kV transmission line route (refer to Figure 3.2-4), have already altered the respective viewsheds.

Views from residences along the transmission line route within Los Angeles County would be unaffected as the transmission line would be buried within the views from the residences. Two residences (identified as R-6 and R-7 on Figure 3.2-4) in Kern County are located near the route of the aboveground portion of the transmission line. In this area, the proposed transmission line route is located approximately 30 feet outside the eastern edge of the 170th Street West ROW. The transmission line would cross in front of residence R-6 on the east side of 170th Street West. The Applicant would need to obtain an easement from the property owner for the transmission line route in this area. The terms of the pending easement would include provisions for moving, vacating, or demolishing residence R-6, as appropriate. Residence R-6 is a mobile home that currently has tenants that would be required to move under terms of the pending easement prior to completion of the transmission line at this location. The residence R-7, on the west side of 170th Street West would be on the opposite side of the street from the transmission line. As mentioned previously, the transmission line would also be an additional 30 feet outside of the 170th Street West ROW on the east. The proposed transmission line would be visible from residence R-7; however, the poles would be spaced substantially apart (700 feet on average), and would not be located directly in front of R-7. Additionally, the surroundings in this area have been affected by the presence of existing power poles along and around 170th Street West, and the SCE transmission corridor, which consists of several high voltage lines mounted on lattice structures (refer to Figure 3.2-4). As a result, the Project's proposed transmission line structures would not result in substantial changes to the existing visual setting of the area.

3.3.2.2 No Action Alternative

Under the No Action Alternative (i.e., no build scenario), the proposed Project would not be implemented, and there would be no change to the visual setting and no impact on visual resources.

3.4 AIR QUALITY

3.4.1 Regulatory Framework

The Clean Air Act (CAA) of 1970, as amended (42 United States Code [USC] § 7401 et seq.), regulates emissions from stationary, mobile, and area sources and establishes National Ambient Air Quality Standards (NAAQS) for air pollutants that can harm human health or the environment. Under the CAA, the U.S. Environmental Protection Agency (USEPA) is responsible for revising these standards when necessary as new air quality data and related impacts on the human environment become available.

3.4.1.1 National Ambient Air Quality Standards

NAAQS have been adopted for six criteria pollutants—ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) and with an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$), and airborne lead. The NAAQS are presented on Table 3.4-1. The NAAQS may include primary or secondary standards. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. Averaging periods when emission levels are measured vary by criteria pollutant based on potential health and welfare effects of each pollutant. The NAAQS are enforced by the states via local air quality agencies. States may choose to adopt their own air quality standards, but state standards must be at least as stringent as federal standards. USEPA evaluates whether the criteria air pollutant levels within a geographic area meet NAAQS. Areas that violate air quality standards are designated as nonattainment areas for the relevant pollutants. Nonattainment areas are sometimes further classified by degree (marginal, moderate, serious, severe, and extreme for O_3, and moderate and serious for CO and PM_{10}). Areas that comply with air quality standards are designated as attainment areas for the relevant pollutants. Areas that have been redesignated from nonattainment to attainment are considered maintenance areas. Areas of uncertain status are generally designated as unclassifiable but are treated as attainment areas for regulatory purposes. Federal law requires states to develop plans, known as state implementation plans, describing how they would attain NAAQS. State implementation plans are approved by the USEPA and are federally enforceable.

TABLE 3.4-1
NATIONAL AMBIENT AIR QUALITY STANDARDS

Air Constituent	Averaging Time	NAAQS Primary	NAAQS Secondary
Carbon monoxide (CO)	1 hour	35 ppm	None
	8 hours	9 ppm	None
Lead (elemental) (Pb)	Rolling 3-month average	0.15 µg/m^3	Same as Primary
Nitrogen dioxide (NO_2)	1 hour	100 ppb	None
	Annual (arithmetic average)	53 ppb[1]	Same as Primary
Ozone (O_3)	8 hours[2]	0.08 ppm	Same as Primary
	8 hours[3]	0.075 ppm	Same as Primary
Particulate matter (PM_{10})	24 hours	150 µg/m^3	Same as Primary
Particulate matter ($PM_{2.5}$)	24 hours	35 µg/m^3	Same as Primary
	Annual	15.0 µg/m^3	Same as Primary
Sulfur dioxide (SO_2)[4]	1 hour	75 ppb	None
	3 hours	None	0.5 ppm
	24 hours	0.14 ppm	None
	Annual	0.030 ppm	None

Source: 40 CFR Part 50, National Primary and Secondary Ambient Air Quality Standards.
ppm = parts per million.
ppb = parts per billion.
µg/m^3= micrograms per cubic meter.

1 The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here in ppb units for the purpose of clearer comparison to the 1-hour standard.

2 Revoked in 2008 by EPA.

3 EPA proposes that the level of the 8-hour primary standard, which was set at 0.075 ppm in the 2008 final rule, should instead be set at a lower level within the range of 0.060 to 0.070 parts per million (ppm).

4 Notwithstanding the promulgation of a single 1-hour 75 ppb SO_2 NAAQS in 40 CFR 50.17 and listed here, the older 3-hour, 24-hour, and annual SO_2 also listed here, will remain applicable. They will no longer apply to an area one year after designation of an area.

3.4.1.2 Clean Air Act Conformity Guidelines

Section 176(c) of the federal CAA contains requirements that apply specifically to federal agency actions, including actions receiving federal funding. This section of the CAA requires federal agencies to ensure that their actions are consistent with the CAA and applicable state air quality management plans. Federal agencies are required to evaluate their proposed actions to ensure that they would not cause or contribute to new violations of any federal ambient air quality standards, that they would not increase the frequency or severity of any existing violations of federal ambient air quality standards, and that they would not delay the timely attainment of federal ambient air quality standards. USEPA has promulgated separate

rules that establish conformity analysis procedures for transportation-related actions and for other (general) federal agency actions.

A conformity determination is required for each criteria pollutant or precursor where the total of direct and indirect emissions of the criteria pollutant or precursor in a nonattainment or maintenance area[3] caused by a federal action would equal or exceed *de minimis* thresholds (40 CFR 93.153(b)). The relevant CAA conformity *de minimis* thresholds for federal actions in the ozone moderate nonattainment area (see Table 3.4-3) for the Project area are 100 tons per year for nitrogen oxides and 100 tons per year for volatile organic compounds (40 CFR Part 93.153). The proposed Project would not exceed these *de minimis* thresholds during construction and operations (see Tables 3.4-2, 3.4-3, 3.4-4, and 3.4-5) and hence the provisions of the general conformity rule would not apply to the proposed Project.

3.4.1.3 Local Regulations

The USEPA has delegated the State of California responsibility for protecting California's air quality. The California Air Resources Board (CARB) is responsible for interpreting and implementing statutes pertaining to the control of air pollution and for monitoring the regulatory activity of California's 35 local air districts. The proposed Project is required to comply with the applicable provisions of the Antelope Valley Air Quality Management District (AVAQMD), CARB, and USEPA. The northern portion of the proposed off-site 230-kV transmission line is located in southern Kern County; thus the applicable provisions of the Kern County Air Pollution Control District (KCAPCD) are also applicable to the transmission line. The local air districts are responsible for planning, implementing, and enforcing federal and State ambient standards (Tables 3.4-1 and 3.4-2, respectively) within their jurisdictions. The regulations of these agencies are focused on stationary sources and, therefore, generally are not relevant to this Project. The AVAQMD and CARB are the responsible agencies for developing attainment plans to achieve attainment with the NAAQS, and the USEPA reviews and approves these plans. USEPA has a number of other regulations under the authority of the federal Clean Air Act (such as New Source Review [NSR], and Prevention of Significant Deterioration [PSD], Title V permitting program, etc.). However, none of these regulations apply to this Project because the Project would have no major operational stationary emission sources. Therefore, a PSD air quality impact analysis of the proposed Project's impacts to the nearest mandatory Class I area is not required.

CARB has issued a number of California Ambient Air Quality Standards (CAAQS). These standards include pollutants not covered under the NAAQS and also control some pollutants to more stringent levels than in the corresponding NAAQS. Pollutants regulated under these

[3] A maintenance area is an area that a state has redesignated from nonattainment to attainment. The state thereby submits to the EPA a plan for maintaining NAAQS in the maintenance area as a revision to the SIP. The maintenance plan must show that the NAAQS will be maintained for at least 10 years after redesignation and also include contingency measures to address any violation of the NAAQS.

TABLE 3.4-2
CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards for Concentrations
Ozone	1 hour	0.09 ppm
	8 hours	0.070 ppm
Respirable particulate matter (PM_{10})	24 hours	50 µg/m^3
	Annual arithmetic mean	20 µg/m^3
Fine particulate matter ($PM_{2.5}$)	24 hours	No separate California standard
	Annual arithmetic mean	20 µg/m^3
Carbon monoxide	8 hours	9.0 ppm
	1 hour	20 ppm
	8 hours (Lake Tahoe)	6 ppm
Nitrogen dioxide	Annual arithmetic mean	0.030 ppm
	1 hour	0.18 ppm
Sulfur dioxide	Annual arithmetic mean	-
	24 hours	0.04 ppm
	3 hours	-
	1 hour	0.25 ppm
Lead	30-day average	1.5 µg/m^3
	Calendar quarter	-
	Rolling 3-month average	-
Visibility-reducing particles	8 hours	Extinction coefficient of 0.23 per kilometer visibility of 10 miles or more (0.07 to 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent.
Sulfates	24 hours	25 µg/m^3
Hydrogen sulfide	1 hour	0.03 ppm
Vinyl chloride	24 hours	0.01 ppm

standards include O_3, NO_2, CO, PM_{10}, $PM_{2.5}$, SO_2, lead, sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles.

AVAQMD identified that for a multi-year continuous non-phased construction project, total emissions of the construction project should be compared to cumulative emissions thresholds based on a prorated annual emissions threshold for the project duration. In other words, the AVAQMD significance threshold for a 38-month construction project is the annual emissions threshold summed for three years (36 months) plus the daily significance threshold

TABLE 3.4-3
ATTAINMENT STATUS FOR THE AVAQMD AND KCAPCD[1]

	AVAQMD		KCAPCD	
Pollutant	Federal	State	Federal	State
Ozone – 1 hr	N/A	Extreme non-attainment	N/A	Moderate non-attainment
Ozone – 8 hr	Non-attainment-moderate	Non-attainment	Non-attainment	Not yet designated
$PM_{2.5}$	Unclassifiable/ attainment	Unclassified	Unclassifiable/ attainment	Unclassified
PM_{10}	Unclassified	Non-attainment	Unclassifiable/ attainment	Non-attainment
CO	Unclassifiable/ attainment	Attainment	Unclassifiable/ attainment	Unclassified
NO_2	Unclassifiable/ attainment	Attainment	Unclassifiable/ attainment	Attainment
SO_2	Unclassifiable	Attainment	Unclassifiable	Attainment
Sulfates	N/A	Attainment	N/A	Attainment
Lead	N/A	Attainment	No designation	Attainment
Hydrogen sulfide	N/A	Unclassified	N/A	Unclassified

1 Source: CARB 2009, KCAPCD 2009.

2 N/A = not applicable.

for the number of working days in the remaining 2 months. The proposed Project is a non-phased construction project, therefore, maximum daily emissions thresholds are not applicable.

3.4.2 Affected Environment

3.4.2.1 Solar Generation Site and 230-kV Transmission Line Route

The proposed Project consists of the solar generation site (approximately 2,100 acres) in northern Los Angeles County and the 230-kV transmission line route (approximately 4.25 miles long). The 230-kV transmission line route is located in northern Los Angeles County and southern Kern County. The solar generation site and the portion of the 230-kV transmission line route in northern Los Angeles County are under the jurisdiction of the AVAQMD, while the northern portion of the 230-kV transmission line in southern Kern County is under the jurisdiction of the KCAPCD. The following discussions of regional air quality and greenhouse gases and climate change address both the solar generation site and the 230-kV transmission line since both are in the Mojave Desert Air Basin and approximately 0.75 mile of the 230-kV transmission line is on the solar site. Where

TABLE 3.4-4
ESTIMATED MAXIMUM TOTAL CONSTRUCTION EMISSIONS OF CRITERIA POLLUTANTS (TONS) DURING MAXIMUM 38-MONTH CONSTRUCTION PERIOD

	Pollutant						
Activity	PM_{10}	$PM_{2.5}$	CO	VOC[1]	NO_X	SO_X	CO_2e[2]
On-site construction emissions							
On-site combustion emissions (consisting of construction equipment and construction trucks)	3.62	3.31	31.85	8.22	59.36	0.07	6,102
On-site fugitive dust emissions (from disturbed area)	17.06	3.55	--	--	--	--	--
On-site fugitive dust emissions (from cut/fill)	6.22	1.29	--	--	--	--	--
Total on-site emissions	26.90	8.16	31.85	8.22	59.36	0.07	6,102
Off-site on-road emissions							
Off-site combustion emissions (consisting of worker vehicles and delivery trucks)	0.87	0.54	36.18	1.33	12.21	0.07	7,060
Total off-site emissions	0.87	0.54	36.18	1.33	12.21	0.07	7,060
Transmission line (entire length) (230 kV)	0.34	0.14	1.12	0.35	2.72	0.00	352
Total emissions, all sources	28.11	8.84	69.15	9.89	74.29	0.14	13,514
AVAQMD significance thresholds[3]	46.80	--	312.06	78.01	78.01	78.01	--

1 The term ROG (Reactive Organic Gas) is used predominantly in California, broadly refers to organic compounds that are regulated because they lead to ozone formation, and is essentially synonymous with the federal terminology VOC (Volatile Organic Compound).

2 Emissions of greenhouse gases are typically expressed in a common metric, so that their impacts can be directly compared, as some gases are more potent (i.e., have a higher global warming potential [GWP]) than others. The international standard practice is to express greenhouse gases in carbon dioxide (CO_2) equivalents. Emissions of gases other than CO_2 are translated into CO_2 equivalents (CO_2e) using global warming potentials. The Intergovernmental Panel on Climate Change (IPCC) recommends using 100-year potentials.

3 AVAQMD significance thresholds have been prorated for the proposed 38-month construction schedule for AV Solar Ranch One Project.

appropriate, distinctions are drawn between the AVAQMD and KCAPCD jurisdictional areas.

3.4.2.1.1 <u>Regional Air Quality</u>. The proposed Project is located in the Mojave Desert Air Basin (MDAB) under the jurisdiction of the AVAQMD and the KCAPCD. The MDAB covers more than 20,000 square miles and encompasses the majority of California's high desert with typical hot, dry summers and cold winters with little precipitation. It is bounded by the San Gabriel and San Bernardino mountains to the south, which serves as a boundary separating the MDAB from the South Coast Air Basin (SCAB). The Tehachapi Mountains constitute the northwest boundary separating the MDAB from the San Joaquin Air Basin

TABLE 3.4-5
ESTIMATED DAILY MAXIMUM CONSTRUCTION EMISSIONS OF CRITERIA POLLUTANTS (LBS/DAY) FOR TRANSMISSION LINE INSTALLATION IN KERN COUNTY

	Pollutant						
Activity	PM_{10}	$PM_{2.5}$	CO	VOC	NO_X	SO_X	CO_2e
On-site construction emissions							
On-site combustion emissions (consisting of construction equipment and construction trucks)							
Subtotal of on-site combustion emissions	2.04	1.87	17.74	7.57	54.45	0.07	6,018
On-site fugitive dust emissions (from disturbed area)	1.55	0.32	--	--	--	--	--
On-site fugitive dust emissions (from cut/fill)	2.66	0.56	--	--	--	--	--
Subtotal of on-site fugitive dust emissions	4.21	0.88	--	--	--	--	--
Total on-site emissions	6.25	2.75	17.74	7.57	54.45	0.07	6,018
Off-site on-road emissions							
Off-site combustion emissions (consisting of worker vehicles and delivery trucks)[1]	0.56	0.44	8.99	0.73	12.39	0.03	2,604
Total off-site emissions	0.56	0.44	8.99	0.73	12.39	0.03	2,604
Total maximum daily emissions[2]	6.81	3.19	26.73	8.30	66.84	0.09	8,622
KCAPCD significance thresholds	--	--	--	137(2)	137(3)	--	--

1 These mobile source emissions are in AVAQMD but provided in the table for completeness.

2 Construction of the transmission line facilities is expected to take less than 6 months.

3 Motor vehicle sources only.

(SJAB). There are approximately 494,000 persons residing within the MDAB (U.S. Census Bureau 2003). Because it is a desert environment consisting of flat terrain, high wind conditions can cause the generation of a substantial amount of fugitive dust (i.e., particulate matter). Air quality in the MDAB is also heavily influenced by airborne pollutants transported into the region from the much more heavily populated and industrial areas within the SCAB under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

The federal and state attainment status for criteria pollutants for the AVAQMD and the KCAPCD is summarized in Table 3.4-3. Conformity with the air quality management plans for each local air basin/district is discussed below. The proposed Project site is located in the AVAQMD while the proposed off-site transmission line is located in AVAQMD and KCAPCD jurisdictional areas. The local air districts are responsible for planning, implementing, and enforcing federal and State ambient standards within their jurisdictions. The regulations of these agencies are focused on stationary sources and, therefore, are generally not relevant to this Project. Based on the current O_3 nonattainment status for the

areas overseen by the AVAQMD and the KCAPCD, Air Quality Management Plans (AQMP) and air quality attainment plans (AQAP) were developed by both air districts. The AVAQMD developed a 2008 O_3 Attainment Plan (state and federal attainment) and has prepared a list of measures to reduce PM emissions to meet state planning requirements. The KCAPCD developed a 1993 O_3 Attainment Plan (state and federal attainment) and submits implementation progress reports to CARB on an annual basis.

3.4.2.1.2 Greenhouse Gases and Climate Change. Greenhouse gases are chemical compounds in the Earth's atmosphere that "trap heat." They do so because they are transparent to incoming short-wave solar radiation, but absorb outgoing long wave infrared radiation re-emitted from the Earth's surface. Over time, the amount of energy sent from the sun to the Earth's surface should be about the same as the amount of energy radiated back into space, leaving the temperature of the Earth's surface roughly constant. Most studies, however, indicate that the Earth's climate has warmed over the past century and that human activity affecting the atmosphere is likely an important contributing factor. Computer-based modeling suggests that rising greenhouse gas concentrations generally produce an increase in the average temperature of the Earth, which may produce changes in sea levels, rainfall patterns, and intensity and frequency of extreme weather events. Collectively, these effects are referred to as "climate change." The Intergovernmental Panel on Climate Change (IPCC), in its Fourth Assessment Report, stated that warming of the Earth's climate system is unequivocal, and that warming is very likely due to anthropogenic greenhouse gas (GHG) concentrations (Intergovernmental Panel on Climate Change 2007).

Gases exhibiting greenhouse properties come from both natural and human sources. Water vapor, carbon dioxide, methane, and nitrous oxide are examples of greenhouse gases that have both natural and manmade sources, while other gases such as chlorofluorocarbons are exclusively manmade. In the United States, greenhouse gas emissions come mostly from energy use. Ever increasing emissions are driven largely by the demands of economic growth as a primary result of the combustion of fossil fuel for electricity generation, transport, and other needs. Energy-related CO_2 emissions resulting from petroleum, coal, and natural gas represent 82 percent of total U.S. manmade greenhouse gas emissions (NEIC 2008).

The Project site area currently generates a small amount of GHG from internal combustion engine emissions associated with: 1) motor vehicle use of roadways that traverse the site, including State Route 138 and 170th Street West; and 2) incidental residential/agricultural activities.

The environmental setting for the AV Solar Ranch One Project includes the regional high desert area and the regulatory context of the state, Los Angeles County, AVAQMD, and KCAPCD. A review of the databases of the California Energy Commission, CARB, and the AVAQMD determined that there is currently no GHG emissions inventory for the Project region.

3.4.3 Environmental Consequences

3.4.3.1 Quantification of Emissions

Project impacts to air quality are assessed based on criteria pollutant emission estimates for the construction and operational phases. This allows direct comparisons of these emissions to the aforementioned numerical thresholds presented in Table 3.4-1. Emissions estimates are based on construction and operation activity details for the proposed action (URS 2010b), as well as established emission factors approved by regulatory agencies.

The primary Project component construction activities considered are as follows:

- 230-kV transmission line
- High voltage substation
- Medium voltage substation/infrastructure
- Operations and maintenance facility
- Drainage sheet pile
- Raw water supply pipeline
- Solar fields

Each of these Project components requires a different set of specialized construction equipment.

Operational phase emission sources would include stationary sources and mobile sources. Mobile sources would include workforce commuting and material deliveries.

3.4.3.1.1 Development of Construction Emissions. The four source categories included in the construction emissions estimates are non-road engine exhaust (i.e., on-site construction equipment), construction-related fugitive dust, and mobile sources both on-site and off-site. Emissions from on-site non-road equipment were quantified for each month of the construction effort based on the monthly activity schedule and the non-road equipment to be utilized Maximum daily emissions for each month were based on the construction schedule (URS 2010b). Exhaust emission factors for this equipment were obtained from the CARB OFFROAD and EMFAC software. The estimates for off-site mobile sources were based on the estimated workforce for each month and the peak number of daily truck deliveries for construction. On-site mobile sources include non-road construction equipment (such as backhoes and cranes) and on-road vehicles (pickup trucks and flatbed trucks) that work on the construction site. The OFFROAD software provides emission factors for both types of sources. The factors are combined activity levels of each piece of equipment to quantify emissions on an average daily basis for every month of construction.

The emissions calculated for the non-road equipment in the construction phase were based on an assumed 2011 equipment fleet mix for the AVAQMD. The construction contractor would be required to replace older diesel equipment with newer equipment over time, as necessary for compliance with the specifications of USEPA's Tiers 1 through 4 rules for diesel internal combustion engines.

The fugitive dust emissions were estimated from the monthly disturbed acreages per activity and maximum estimated cut-and-fill volumes. Emission factors from the URBEMIS 2007 software (Jones and Stokes 2008) based on USEPA studies were applied to the disturbance acreages and cut-and-fill volumes in order to quantify fugitive dust emissions. The disturbed acreage is estimated to be approximately 980 acres for both the pile and ballast foundation construction scenarios. Cut-and-fill volumes (grading, excavations, trenching, etc.) were assumed to be proportional and constant across 36 months out of the overall 38-month construction schedule.

As part of its fugitive dust control plan development, the Project would incorporate watering (e.g., three times a day or as necessary to prevent off-site dust plumes), operational controls, and/or the use of soil palliatives/dust suppressants. The Project would utilize up to 150 acre feet of water per year from on-site wells during construction, primarily for dust control (water for dust control estimated at 114 AFY). The quantification has assumed that such watering and palliatives would provide 84 percent control of PM_{10} and $PM_{2.5}$ emissions from fugitive dust sources. This control efficiency was derived from specific factors within the environmental management software URBEMIS 2007 (Version 9.2.4). This factor is an input to the software only and is used in conjunction with the monthly disturbed acreage estimates to calculate PM emissions. Control efficiency of cut-and-fill activities was estimated at 61 percent based on watering three times per day (URS 2010b).

The emissions for all source categories were summed for each month of the construction period, which in turn were summed to obtain total construction-phase emissions.

3.4.3.1.2 <u>Development of Operational Emissions</u>. The direct operational emissions of the solar PV facility would consist of periodic testing of the standby emergency diesel-fired firewater pump; use of maintenance vehicles; and use of water trucks for dust control and for solar panel washing. Vehicle emissions were calculated based on estimated mileage per day and CARB emission factors for various truck categories. Indirect off-site emissions were calculated for employee commuting and for use of grid-supplied energy for station service power. Indirect emissions from employee commuting are based on the number of employees commuting to the site each day (16 workers) and assumed commute trip lengths consisting of an assumed round trip distance of 75 miles, which is a conservative distance based on the expected regional workforce serving the Project area from the Palmdale/Lancaster area and greater Los Angeles and Kern county areas.

The principal assumptions underlying the development of criteria pollutant emissions estimates for Project operations include the following:

- Panel washing would occur twice per year over a 3- to 4-week period (approximately 21 working days) for each event. Four diesel-fueled water wash trucks would be used for the washing operation with one of the trucks used for temporary access road watering where needed for dust control.
- Periodic testing of the standby emergency fire water pump (diesel engine); assumed once per week for one hour (actual test time is likely 15 minutes).
- Maintenance of solar PV units and inverter stations would utilize on-road pickup trucks.
- Fugitive dust generation on unpaved roads would be based on distance travelled and watering of roads; there are approximately 130 miles of proposed unpaved pathways on the site between rows of solar panels that would be periodically used for maintenance including panel-washing events. Assumed general maintenance activities would involve 2 pickup trucks, each driving 24 miles per day on the site over the life of the Project.
- The permanent on-site access roads (all 30-foot-wide and selected 20-foot-wide roads) would have a compacted soil base, which would help limit dust generation. Watering on the other access roads and work areas during operation is estimated to require up to several acre feet per year. Approved dust palliatives would be applied where needed. The palliatives to be used on operational-phase roads and/or other exposed work areas will be identified after construction based on the soil characteristics.
- Vegetation maintenance would be performed primarily using a combination of heavy duty (e.g., hogger) and medium duty mowers as well as weed whackers for selective cutting and trimming. In addition, approved herbicides would be used to control vegetation along fire breaks and around equipment, and to control noxious weeds in applicable locations. It is expected that vegetation maintenance using mowers would occur for approximately 60 to 90 days out of the year while weed whackers or other hand held tools would be used on an as needed basis to control vegetation in selected locations in accordance with Los Angeles County Fire Department requirements, as applicable. This activity would not coincide with the aforementioned panel washing.
- Grid-supplied energy consumption for station service power would total an estimated 5,000 MWh annually. Indirect emissions rates associated with this energy use are assumed to be proportional to emissions from the average California energy mix (Wolff 2005 and USEPA 2009a).

Operation of the facility would begin before the end of the 38-month construction period. Hence, it is likely that initial operation described above (i.e., maintenance of completed portions of the overall facility) would be concurrent with ongoing solar field assembly beginning in 2011 until the facility is completed.

3.4.3.2 Proposed Action

3.4.3.2.1 Construction.

Solar Generation Site. Construction of the proposed Project is planned to require up to 38 months to complete. Air quality impacts resulting from construction activities at the proposed site would be temporary and localized. Increases in ambient concentrations of nitrogen oxides, CO, SO_2, PM_{10}, $PM_{2.5}$, and volatile organic compounds would result from exhaust emissions of vehicles, heavy construction equipment, diesel generators, and other machinery and tools. In addition, fugitive dust emissions would result from vehicular travel on unpaved ground and from excavation and earthmoving activity. Areas surrounding the proposed Project site, including access roads, would experience temporary emissions associated with requirements for equipment access, material deliveries, and employee traffic. In addition, earthmoving activities would increase the potential exposure of soils to accelerated erosion by wind and water.

The potential impacts resulting from construction activities would occur for a limited time and over a limited geographic area as ground-level emissions of fugitive dust tend to settle within a few miles. The locations of active work areas would be temporary, with work activities typically moving to new locations within the site based on the construction schedule. Fugitive dust emissions would also be temporary, primarily occurring during Project construction.

The proposed solar generation site is located in the AVAQMD. The construction and operation of the facility would be subject to the prohibitory rules governing dust generation and nuisance. In addition, some equipment (operations) may require construction and operating permits from AVAQMD. At this time, only an emergency firewater pump with diesel engine driver would require an air permit to construct. The applicable AVAQMD permits (authority to construct/permit to operate) would require compliance with permit conditions intended to limit emissions and protect air quality. The AVAQMD permit would limit the non-emergency (testing) hours of operation. The Applicant plans to apply for and obtain this permit prior to commercial operation. The AVAQMD prepared a list of measures to reduce PM_{10} emissions in 2005 in response to a legislative mandate. Within the published list, the only applicable measures for this Project are fugitive dust control measures, which would be integrated into a fugitive dust control plan for construction and operation of the Project.

The proposed Project would include grading, cut and fill, and pile driving activities during construction that would result in emissions of PM_{10} and oxides of nitrogen (NO_X), as well as other criteria pollutants. The Project emissions would be less than the AVAQMD significance thresholds for all criteria pollutants. A comparison of the total Project emissions and AVAQMD thresholds is presented in Table 3.4-4. The emissions were calculated for the

entire 38-month construction period (refer to URS 2010b for more detail regarding emissions calculations). The construction emission estimates presented in Table 3.4-4 include the Project site and the off-site transmission line in Los Angeles and Kern counties.

230-kV Transmission Line Route. Construction of the proposed 230-kV transmission line would require up to approximately 6 months to complete, including the underground portions in Los Angeles and the overhead portion in Kern County. Air quality impacts resulting from transmission line construction activities would be similar to those discussed previously for the solar generation site, including applicable AVAQMD requirements for the portion of the transmission line route in Los Angeles County.

During the construction of the northern portion of the off-site 230-kV transmission line in Kern County, construction activities would be subject to KCAPCD rules covering visible emissions, fugitive dust, and nuisance. The KCAPCD has a list of measures to reduce PM emissions similar to the AVAQMD, to address legislative mandates of the control measures listed. The only applicable measures are fugitive dust control measures that would need to be included in a dust control plan for compliance with existing Rule 402 – Fugitive Dust Emissions. Kern County has also published a list of suggested mitigation measures for controlling emissions at construction sites. The total estimated construction emissions for the 230-kV transmission line route are presented in Table 3.4-4 for the combined Los Angeles (AVAQMD) and Kern County (KCAPCD) portions. Construction of the approximately 2.0-mile segment of the proposed overhead transmission line in Kern County would occur over a period of less than 6 months. Estimated maximum daily emissions and applicable KCAPCD significance thresholds, are provided in Table 3.4-5 (note: subset of emissions presented for the off-site transmission line in Table 3.4-4 to allow comparison to KCAPCD standards). Applicant-committed measures for reducing construction emissions would be implemented to reduce air quality impacts (refer to Appendix B for applicable ACMs).

3.4.3.2.2 Operation.

Solar Generation Site. Direct operational emissions of criteria pollutants would occur from on-site maintenance activities including vegetation management, solar panel washing, equipment maintenance, and security patrols. Operational phase emissions would also result from periodic testing of the diesel-fueled emergency firewater pump engine. Estimated maximum annual direct operational emissions of criteria pollutants are presented in Table 3.4-6. Facility emissions from maintenance activities and testing of the diesel-fueled emergency firewater pump equipment near the Operations and Maintenance Building within the interior of the 2,100-acre site would be very low and would not adversely impact air quality in the Project area. The Project would not exceed applicable emission thresholds or the conformity *de minimis* levels during operation. Table 3.4-6 also includes estimates of indirect emissions attributable to use of grid-supplied electricity for station service power (e.g., night lighting, heat for transformers, tracker reset at night, etc.).

TABLE 3.4-6
ESTIMATED MAXIMUM ANNUAL OPERATIONAL EMISSIONS OF CRITERIA POLLUTANTS (TONS/YEAR)

	Pollutant						
Activity	PM_{10}	$PM_{2.5}$	CO	VOC	NO_X	SO_X	CO_2e
On-site Emissions							
On-site combustion emissions							
Emergency firewater pump	0.00	0.00	0.03	0.00	0.02	0.00	4.64
Water trucks	0.019	0.017	0.148	0.082	0.319	0.000	37.11
Pickup trucks	0.002	0.001	0.042	0.006	0.731	0.000	10.99
Hogger	0.025	0.023	0.220	0.058	0.439	0.000	33.99
Subtotal of on-site combustion emissions	0.05	0.04	0.44	0.15	1.51	0.00	33.99
On-site fugitive dust emissions							86.73
Water trucks	0.711	0.356	--	--	--	--	--
Pickup trucks	0.008	0.0006	--	--	--	--	--
Subtotal of on-site fugitive dust emissions	0.72	0.36	--	--	--	--	--
SF_6 leakage	--	--	--	--	--	--	101.34
Total on-site emissions	0.76	0.19	0.22	0.09	1.08	0.00	188.06
Off-site Emissions							
Off-site combustion emissions							
Worker vehicles	0.01	0.01	0.77	0.02	0.09	0.00	133.16
Total off-site emissions[1]	0.01	0.01	0.77	0.02	0.09	0.00	133.16
Indirect Emissions							
Use of grid-supplied electricity for power station service, including water pumping	0.10		1.22	0.08	0.57	0.05	1,818.15
Total Indirect Emissions	0.10		1.22	0.08	0.57	0.05	1,818.15
Total Maximum Annual Emissions	0.88	0.41	2.43	0.25	2.16	0.06	2,058.31
AVAQMD Significance Thresholds	82	--	548	137	137	137	--

[1] Note: Off-site emissions during the operational phase would also include periodic truck deliveries. Truck deliveries would be minimal and associated emissions would be *de minimis*.

230-kV Transmission Line Route. Operation and maintenance of the 230-kV transmission line would result in minimal emissions of criteria pollutants associated with annual visual inspections via pick-up truck, infrequent washing of insulators at pole locations in Kern County, and infrequent vegetation maintenance. No appreciable impacts to air quality from these infrequent operational activities would occur.

3.4.3.2.3 Greenhouse Gases and Global Climate Change.

Solar Generation Site. The proposed solar generation facility would result in a decrease in emissions of GHG and criteria pollutants during the operational phase relative to emissions from traditional fossil fuel generation for an equivalent electrical output. Estimates of criteria pollutant and GHG emissions that would be displaced by the proposed Project relative to traditional electrical grid supply sources are presented in Tables 3.4-7 and 3.4-8. The proposed 230-MW renewable energy Project would decrease GHG emissions over the expected 30-year life of the Project compared to a fossil fuel power plant and thereby would help California and CARB meet GHG emission reduction goals in accordance with Executive Orders S-3-05 and S-14-08, state Assembly Bill (AB) 32 – Global Warming Solutions Act of 2006 (chaptered September 27, 2006), and Senate Bill (SB) 1368 – Emissions Performance Standards (chaptered September 29, 2006). In addition, the Project would support the current and near-term greenhouse gas reduction initiatives of the USEPA.

TABLE 3.4-7
ESTIMATED CRITERIA POLLUTANT EMISSIONS FOR CALIFORNIA GRID MIX POWER GENERATION EQUIVALENT TO AV SOLAR RANCH ONE[1]

Air Pollutant	California Grid Mix Emission Factor (Lb/Mohr)	Annual Emissions Displaced (Tons/Year)[2]
CO	0.487	145.37
NO_X	0.227	67.78
PM_{10}	0.040	11.94
VOC	0.032	9.68
SO_2	0.022	6.46
CO_2	724.12	216,005
CH_4	0.0324	9.02
N_20	0.00808	2.41
CO_2e	727.26	216,942

1 Source: Wolff, G. 2005.

2 Numbers indicate emissions in tons/year, by pollutant that would not be emitted by the proposed AV Solar Ranch One Project relative to California Grid Mix (average emissions from all sources) emissions that would be produced for an equivalent electrical generation output.

The Project itself would have direct GHG emissions at the solar generation facility from SF_6 leaks (estimated 8.84 lbs per year) from equipment leaks at the on-site electrical substation, emergency fire pump diesel engine testing, and vehicles used for operations and maintenance activities on-site. The Project would also have indirect GHG emissions related to water use. GHGs would also be emitted as a result of facility construction and transportation activities. GHG emissions generated by construction and construction-related transportation activities

TABLE 3.4-8
DIRECT AND INDIRECT GREENHOUSE GAS EMISSION ESTIMATES (METRIC TONS CO_2e/YEAR)

Emissions	GHG Emissions[1,2]
Operational-phase emissions	
SF_6 leaks[3]	92
O&M vehicles	75
Fire water pump	4
Employee commuting vehicles	121
Total direct	292
Indirect emissions (use of grid-supplied electricity for station service power including water pumping)	1,651
Total direct and indirect emissions	1,943
Amortized construction emissions (pile)[4]	411
Estimated displaced grid power emissions	196,983
Net difference[5]	194,629

1 URS 2010b.

2 Based on grid information (USEPA 2009a).

3 The Global Warming Potential (100-year) for SF6 is approximately 23,900 CO_2e (IPCC 2001 as cited on the EPA website: www.epa.gov/highgwp/scientific.html).

4 Represents worst-case emissions scenario from URS 2010b.

5 Estimated net Project-related reduction in annual GHG emissions (CO_2e) in metric tons over 30-year Project life (i.e., estimated displacement of 5,838,870 metric tons of CO_2e over 30 years).

would be short-term (occurring over the 38-month construction period). Amortized over the entire Project life span, construction and construction-related transportation GHG emissions are estimated to amount to 411 metric tons of CO_2e per year. Direct and indirect sources of GHG emissions are summarized in Table 3.4-8 and compared to estimated GHG avoidance from the Project resulting in displacement of conventional grid-supplied energy. The calculations and assumptions used for GHG emissions from the Project are provided in URS 2010b.

Table 3.4-8 indicates that the proposed Project would displace an estimated net 5,838,870 metric tons of CO_2e over the anticipated 30-year Project life. This estimate is based on EPA eGrid information (USEPA 2009a) which considers greenhouse gas emissions associated with various generation sources that supply energy to the electrical grid in California. It is worth noting that the California electricity generation mix is less GHG intensive than the average GHG emission rate for the United States. California's GHG emission rate for electricity production is 1,085.56 lbs CO_2e/MWh for peak load generation and 727.26 lbs

CO_2e/MWh overall. In comparison, the United States average GHG emission rate is 1,590.22 lbs CO_2e/MWh for peak load generation and 1,336.31 lbs CO_2e/MWh overall (USEPA 2009b). Therefore, the estimated GHG displacement is conservative compared to the national average.

Assuming that the energy produced by the Project displaced electricity produced by all power generation sources in the U.S. (average), it is estimated that the proposed Project would avoid up to 12,600,000 tons of CO_2 emissions over the life of the Project. This estimate assumes: 30-year Project life; 18,800 GWh of electricity produced under peak conditions, and U.S. power plant emissions of 1.341 lbs of CO_2 per kWh (DOE 2000)[4]. This factor is an average based on an aggregate total of all U.S. sources of actual electricity generated (coal, oil, natural gas, nuclear, and renewables) and the calculated total CO_2 emissions.

230-kV Transmission Line. The 230-kV transmission line is a necessary component of the proposed Project and as such, would contribute to the reduction in GHG and criteria pollutants during the operational phase of the Project relative to emissions from traditional fossil fuel generation for an equivalent electrical output (refer to previous discussion for solar generation site). Estimated GHG emissions associated with construction of the transmission line are included in Tables 3.4-4 and 3.4-5 and would be minimal, constituting less than 3 percent of overall Project GHG emissions (CO_2e). GHG emissions associated with operation and maintenance of the 230-kV transmission line would be minimal due to the low intensity and intermittent nature of required transmission line maintenance activities.

3.4.3.3 No Action Alternative

Under the No Action Alternative, no Project-related construction would occur and there would be no new Project-related emissions or changes in air quality over current conditions. Not constructing the Project would decrease the potential for replacing energy sources that burn fossil fuels and emit criteria pollutants and greenhouse gases with clean renewable solar power. The air quality and global climate change benefits from reduced emissions of greenhouse gases and other air pollutants would not occur. The estimated displacement of criteria pollutant and greenhouse gas emissions that could occur as a result of the proposed Project on an annual basis over the Project life (Tables 3.4-7 and 3.4-8) would not be realized. Additionally, the No Action Alternative would also not allow the substantial renewable energy produced by the proposed Project to help the DOE and the State of California meet various renewable energy goals.

[4] This emissions factor (DOE 2000) differs from the EPA eGrid factor for California (USEPA 2009a) because it takes into account generation sources that supply power to California (e.g., importation of electricity from out-of-state coal generation in Arizona, New Mexico, and Utah), but that are not accounted for in the EPA eGrid factor for California.

3.5 NOISE

3.5.1 Regulatory Framework

Local noise regulations are applicable to construction and operation of the Project. These include noise ordinances and noise elements of General Plans and Area Plans in Los Angeles and Kern counties. Applicable noise criteria for Project construction and operations are provided in Tables 3.5-1 and 3.5-2, respectively.

TABLE 3.5-1
NOISE IMPACT CRITERIA – PROJECT CONSTRUCTION

Jurisdiction	Criteria	Noise Metric	Noise Level	Notes
Los Angeles County	Noise ordinance	L_{eq}	50 dBA Night 60 dBA Day	Construction-stationary sources 5-dBA reduction for impact devices
Kern County	None	N/A	Exempt	

TABLE 3.5-2
NOISE IMPACT CRITERIA – PROJECT OPERATION

Jurisdiction	Criteria	Noise Metric	Noise Level	Notes
State of California	CEQA	CNEL[1]	3 dBA increase in "normally unacceptable" or "clearly unacceptable" noise/land use compatibility categories	
State of California	CEQA	CNEL	5 dBA increase	
Los Angeles County	Noise ordinance	L_{eq}	45 dBA Night 50 dBA Day	Zone II Residential
Kern County	Noise element	L_{50}	50 dBA Night 55 dBA Day	Residential

[1] CNEL: Community Noise Equivalent Level.

Los Angeles County noise requirements apply to the solar generation facility and the portion of the 230-kV transmission line in Los Angeles County. Kern County requirements only apply to the portion of the off-site transmission line in Kern County.

3.5.2 Affected Environment

3.5.2.1 <u>Solar Generation Site</u>

The Project vicinity, including the solar generation site and the southern portion of the off-site 230-kV transmission line in Los Angeles County, generally consists of agricultural or undeveloped land with occasional residential or farm-related structures. Other land uses

include the Antelope Valley Poppy Reserve (Poppy Reserve), Arthur B. Ripley Desert Woodland State Park, and lands designated as Sensitive Ecological Areas by Los Angeles County.

Noise levels associated with these land uses are relatively low, and are generally in the range of 40 to 50 dBA. Higher noise levels can be expected from agricultural equipment operation and traffic on local roadways, particularly SR-138 that crosses the Project solar generation site.

There are three noise-sensitive receptors (R-1, R-2, and R-3) within approximately 0.5 mile of the solar generation site, one residence within approximately 0.7 mile (R-8), and additional residences within 1 mile. All of the identified noise-sensitive receptors within 1 mile of the site are single-family residences located in Los Angeles County. Distances from the nearest Project boundary and the nearest proposed solar array are listed in Table 3.5-3 and depicted on Figure 3.5-1. As shown in Table 3.5-3, the closest residence (R-1) to the solar generation site boundary is located approximately 2,000 feet away.

TABLE 3.5-3
DISTANCES (IN FEET) TO PROJECT SITE FROM NOISE-SENSITIVE RECEPTOR LOCATIONS

Site ID	Latitude	Longitude	Project Boundary	Solar Array	Proposed Transmission Line[1]
R-1	34º47.798' N	118º27.365' W	1,999	2,122	7,241
R-2	34º48.069' N	118º27.266' W	2,043	2,300	6,620
R-3	34º48.250' N	118º26.186' W	2,668	2,908	1,310
R-4	34º48.679' N	118º26.136' W	5,206	5,444	1,065
R-5	34º48.698' N	118º25.807' W	5,570	5,780	330
R-6[2,3]	34º50.008' N	118º25.850' W	13,275	13,500	65[4]
R-7[2]	34º50.023' N	118º25.963' W	13,180	13,406	210[5]
R-8	34º46.354' N	118º27.146' W	3,666	3,812	7,192

1 Distances from transmission line are subject to change based on easements obtained.

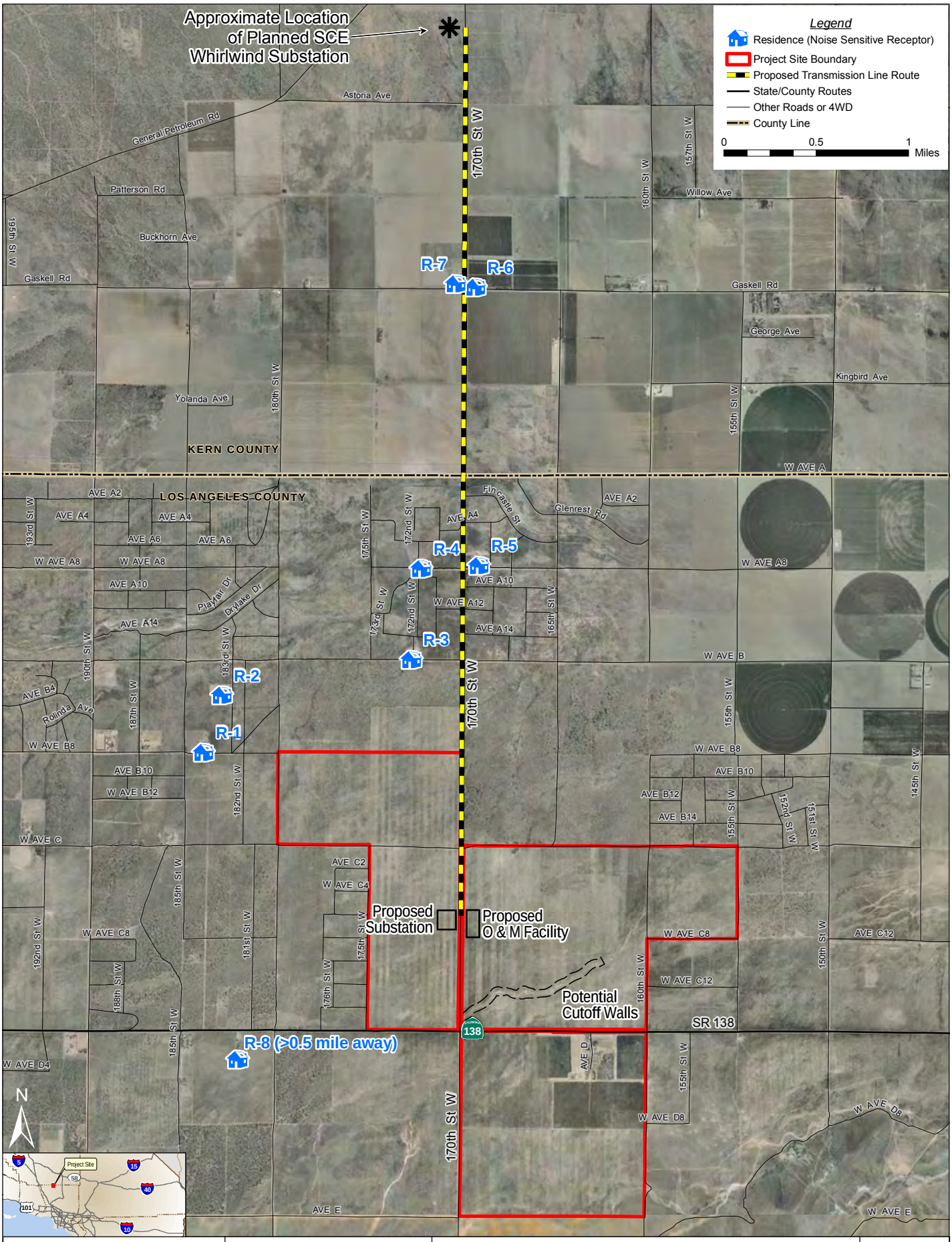
2 R-6 and R-7 are residences located along 170th Street West near the off-site transmission line in Kern County.

3 R-6 is a residence (mobile home) located on the east side of 170th Street West near the off-site transmission line north of the intersection with Gaskell Road. The pending easement agreement between the Applicant and the private landowner would require this residence to be moved, vacated, or demolished if the transmission line is located adjacent to the east side of 170th Street West near this residence (versus the public road ROW).

4 Residence R-6 is located approximately 65 feet from the proposed transmission line alignment; however, the closest transmission pole is located approximately 125 feet south.

5 Residence R-7 is located approximately 210 feet from the proposed transmission line alignment and approximately 360 feet from the closest transmission pole.

T/Ladd/AVSR1 EA/1210/82



Source:
[1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [2] ESRI StreetMap USA (2007), [3] URS Corporation.

AV Solar Ranch One Environmental Assessment

Figure 3.5-1. AV SOLAR RANCH ONE NEARBY RESIDENCES

2011

3.5.2.2 230-kV Transmission Line Route

The vicinity of the proposed off-site 230-kV transmission line route consists of agricultural and undeveloped land with occasional residential or farm-related structures. Other land uses include lands designated as Sensitive Ecological Areas by Los Angeles County, and the Antelope Valley Water Bank property and an SCE transmission corridor in Kern County.

Noise levels associated with these land uses are relatively low and are generally in the range of 40 to 50 dBA. Higher noise levels can be expected from agricultural equipment operation and traffic on local roadways, particularly 170th Street West that parallels the proposed transmission line route over its length from the solar generation site to near the proposed interconnection at the planned SCE Whirlwind Substation, in Kern County.

There are five noise-sensitive receptors in the proximity (within 0.5 mile) of the off-site transmission line route in Los Angeles and Kern counties. All five of these noise-sensitive receptors are single-family residences (one is a mobile home) and are as shown on Figure 3.5-1 and listed by distance from the proposed transmission line route in Table 3.5-3. As shown in Table 3.5-3, residences R-6 and R-7 are located within approximately 65 and 210 feet, respectively, of the proposed transmission line route. The closest proposed transmission poles to residences R-6 and R-7 are located approximately 125 and 360 feet away, respectively.

3.5.3 Environmental Consequences

3.5.3.1 Construction

3.5.3.1.1 Solar Generation Site. The Federal Highway Administration's (FHWA) Roadway Construction Noise Model (RCNM) User's Guide (FHWA RCNM, Version 1.0 User's Guide) was used to evaluate Project construction noise levels. Noise levels for the hydraulic vibratory pile driver, for installation of solar tracker foundation supports, were not available in this database, and instead were collected at a comparable solar project construction site that utilized this type of equipment. Noise modeling conducted for the Project is provided in the Noise Technical Report (URS 2010c).

Noise generated during the construction phase of the Project would result from the operation of construction equipment and vehicles. Typical noise levels for construction equipment at a distance of 15 meters (50 feet) are provided in Table 3.5-4 (Crocker 1982). These values assume the equipment is operating at full power. Sound levels for typical noise sources and noise environments are presented in Table 3.5-5 for reference purposes relative to the predicted Project noise levels in this analysis.

TABLE 3.5-4
TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS[1]

Equipment Category	Noise Level at 50 ft (dBA)
Vertical hydraulic vibratory pile driver (front-facing)[2]	88
Dump truck	88
Portable rock drill	88
Concrete mixer truck	85
Pneumatic tool	85
Grader	85
Front-end loader	84
Mobile crane	83
Excavator	82
Backhoe	81
Vertical hydraulic vibratory pile driver (rear-facing)[2]	81
Dozer	78
Generator	78
Vertical hydraulic pile driver	81

1 Source: Crocker 1982.

2 Source: URS 2010c.

Using the typical noise levels for construction equipment, noise levels associated with the construction of the Project substation, O&M building, and associated facilities at the solar generation site are calculated to be a maximum of 89 dBA L_{eq} at a distance of 50 feet. These facilities would be constructed near the center of the proposed solar generation site, as shown on Figure 3.5-1. The nearest sensitive receptor to these facilities in the central portion of the site is R-8, which is located approximately 7,050 feet from this location. Noise levels from these construction activities are predicted to be 46 dBA at R-8, which is below the daytime construction noise standard of 60 dBA that is established by the County of Los Angeles.

Noise levels associated with the installation of the sheet piles using a pile driver for the potential cutoff walls along Drainage A (see Figure 3.5-1) are expected to be approximately 95 dBA maximum at a distance of 50 feet. The nearest noise sensitive receptor is R-8. The closest distance from the sheet pile installation to R-8 is approximately 6,550 feet. Noise levels at R-8 from the installation of the sheet piles are estimated to be 52.7 dBA. Pile drivers are classified as impact devices in the Los Angeles County Noise Ordinance, and the applicable noise standard for impact devices used during construction is 55 dBA.

TABLE 3.5-5
SOUND LEVELS OF TYPICAL NOISE SOURCES AND NOISE ENVIRONMENTS (A-WEIGHTED SOUND LEVELS)[1]

Noise Source (at Given Distance)	Scale of A-Weighted Sound Level in Decibels	Noise Environment	Human Judgment of Noise Loudness (Relative to a Reference Loudness of 70 Decibels)
Military jet take-off with after-burner (50 ft)	140	Carrier flight deck	–
Civil defense siren (100 ft)	130	–	–
Commercial jet take-off (200 ft)	120	–	Threshold of Pain 32 times as loud
Ambulance siren (100 ft) Newspaper press (5 ft) Power lawn mower (3 ft)	100		Very Loud 8 times as loud
Propeller plane flyover (1,000 ft) Diesel truck, 40 mph (50 ft) Motorcycle (25 ft)	90	Boiler room Printing press plant	4 times as loud
Garbage disposal (3 ft)	80	High urban ambient sound	2 times as loud
Passenger car, 65 mph (25 ft) Living room stereo (15 ft) Vacuum cleaner (3 ft)	70	–	Moderately Loud 70 decibels (Reference Loudness)
Air conditioning unit (100 ft) Normal conversation (5 ft)	60	Data processing center Department store	1/2 as loud
Light traffic (100 ft)	50	Private business office	1/4 as loud
Bird calls (distant)	40	Lower limit of urban ambient sound	Quiet 1/8 as loud
Soft whisper (5 ft)	30	Quiet bedroom	Very Quiet
	20	Recording studio	
	10	–	Extremely Quiet
	0	–	Threshold of Hearing

[1] Source: Compiled by URS Corporation from various published sources and widely used references such as The Handbook of Acoustical Measurements and Noise Control, Third Edition, edited by C.M. Harris, 1991; and Noise and Vibration Control Engineering Principles and Applications, Second Edition, edited by L.L. Beranek et al., 2006.

Installation of driven piles is proposed for solar tracker foundations. Noise modeling analysis indicates that noise levels from pile driving operations at the closest noise receptor, R-1, at approximately 2,122 feet, are predicted to be 61 dBA, which exceeds the applicable 55-dBA standard for impact devices. Noise analysis indicates that the minimum distance from pile

driving operations to a noise sensitive receptor needed to comply with the 55 dBA standard is 3,000 feet unless the orientation of the pile driver is modified relative to the receptor. Orientation of the pile driver such that the rear of the pile driver is facing the noise receptor would reduce the noise level at receptor R-1 to be 48.4 dBA. The Applicant has committed to installing piles within 3,000 feet of the noise receptors such that the rear of the pile driver is facing the receptor. Therefore, noise levels from pile driving activities would be below the applicable standard.

Project-related traffic would use existing routes along I-5, SR-14, SR-138, and finally 170th Street West to the Project solar generation site and the 230-kV transmission line route north of the site. Maximum Project traffic-related increases in existing Community Noise Equivalent Levels (CNEL) along these roadway segments during construction are calculated to be less than 1 dBA with the exception of 170th Street West, approximately 0.5 mile north and south of SR-138, where the predicted increase would be up to approximately 5.1 and 9.0 dBA, respectively (URS 2010c). The closest sensitive receptor (R-8) to the temporary construction traffic noise level increase (up to 9.0 dBA at a distance of 50 feet from the roadway) along 170th Street West south of SR-138 is located approximately 6,400 feet to the west. The CNEL from Project construction traffic along 170th Street West is anticipated to be 52.6 dBA at a distance of 50 feet. Over a distance of approximately 6,400 feet, the CNEL would be attenuated approximately 21 dBA. Solar generation site construction traffic noise along 170th Street West would not be heard at R-8, or any other noise-sensitive receptor due to its remote distance and existing ambient noise levels.

3.5.3.1.2 <u>230-kV Transmission Line Route</u>. The construction equipment associated with the construction of the 230-kV overhead transmission line is considered mobile construction equipment and is subject to different noise standards in Los Angeles County than the noise standards used for the stationary construction standards. For mobile construction equipment, the Los Angeles County Noise Ordinance states that noise levels cannot exceed 75 dBA at single-family residences between the hours of 7:00 a.m. and 8:00 p.m. on weekdays. This standard is applicable to noise sensitive receptors located in Los Angeles County. These include R-1, R-2, R-3, R-4, R-5, and R-8. Sensitive receptors R-6 and R-7 are located in Kern County. Construction noise occurring between 6:00 a.m. to 9:00 p.m. during weekdays and 8:00 a.m. to 9:00 p.m. on Saturday and Sunday is exempt from noise regulation in Kern County. Table 3.5-5 lists the expected noise levels at each noise-sensitive receiver as the result of construction of the off-site 230-kV transmission line. Equipment used for transmission line construction is expected to generate maximum noise levels of 84 dBA at a distance of 50 feet from underground trenching and excavation locations in Los Angeles County and borings for installation of poles in Kern County. As shown in Table 3.5-6, temporary construction noise levels at residences in Los Angeles County would all be well below the 75 dBA limit established by the County to avoid adverse noise impacts and nuisance. Temporary construction noise levels associated with transmission line construction in Kern County near sensitive receptors R-6 and R-7 are expected to reach levels of up to

TABLE 3.5-6
TRANSMISSION LINE CONSTRUCTION NOISE LEVELS

Residential Location	Approximate Distance to Proposed Transmission Line (feet)	Noise Level (dBA)
R-1	7,241	40.8
R-2	6,620	41.6
R-3	1,310	55.6
R-4	1,065	57.4
R-5	330	67.6
R-6[1]	125[2]	76[2]
R-7[1]	360[2]	66.9[2]
R-8	7,192	40.8

[1] R-6 and R-7 are residences in Kern County; all other residences are located in Los Angeles County.

[2] Distances and construction noise levels are based on distance to closest pole where the noise-generating activity would occur.

approximately 76 and 66.9 dBA, respectively, for less than a week total. This temporary noise impact would not exceed any Kern County noise standards, but would increase noise levels well above typical ambient levels and potentially create a short-term noise impact assuming residents were present.

Increased noise from Project 230-kV transmission line construction traffic, including construction deliveries and employee vehicles, was also evaluated. The transmission line construction period is expected to be less than 6 months and to involve a workforce of approximately 25 workers. Truck deliveries are expected to average approximately 5 per day. Because of the distance from Project traffic noise to the nearest noise receptors in Los Angeles County (see Table 3.5-3) and the short-term, transient nature of the construction activities, adverse impacts from increased traffic noise would not be expected to occur. Construction traffic and truck deliveries for the overhead 230-kV transmission line portion in Kern County would temporarily raise noise above ambient levels at residences R-6 and R-7 (see Figure 3.5-1), which are located along 170th Street West. Due to the low intensity and transient, short-term nature of the construction traffic near residence R-6 and R-7, adverse impacts would not be expected to occur.

3.5.3.2 Operation

3.5.3.2.1 Solar Generation Site. On-site equipment operational noise would be minimal and would consist of noise from the electric tracking drive motors (50 dBA or less at 10 feet), inverters and medium voltage transformers (maximum 70 dBA at 3 feet), and substation

transformers (85 dBA at 6 feet). Noise from the tracking drive motors, and the inverters/transformers would not be audible at any noise sensitive receivers. Additionally, the combined sound pressure levels from all operational equipment, including the two transformers at the on-site substation, would be less than existing ambient noise levels at a distance of 2,000 feet from the property boundary (approximately 37.5 dBA). Therefore, operation of the solar facility would not be expected to result in noise impacts at any noise sensitive receivers, including the closest receptor (R-1 at 2,000 feet from the western property boundary).

Additionally, general maintenance activities, including periodic vegetation cutting and infiltration basin maintenance, would generate noise during the operation phase. These activities would occur during daylight hours. Vegetation cutting would include use of mowing equipment with an expected maximum noise level of 82 dBA at 50 feet. Periodic infiltration basin maintenance would involve use of a backhoe or dozer, with an expected maximum noise level of 81 dBA at 50 feet. Vegetation cutting and infiltration basin maintenance during daylight hours would be expected to result in maximum noise levels of 50 dBA at R-1, the nearest noise receptor. This level meets the applicable Los Angeles County Noise Standards, which are designed to avoid noise-related impacts and nuisance. Maintenance activities during nighttime hours would include the use of a pick-up truck, and a power washer to clean solar panels. Noise levels from the pick-up truck and power washer are 55 dBA and 74 dBA, respectively, from a distance of 50 feet. The noise level at R-1, the nearest noise-sensitive receiver, is expected to be 41.4 dBA as the result of nighttime maintenance activities. During the nighttime maintenance activities (i.e., panel washing), the Applicant has committed to avoiding these activities within 3,000 feet of residences after 10:00 p.m. In summary, all noise levels from typical routine on-site operations would be considered low or moderate, and would not exceed Los Angeles County noise standards or create a nuisance, including sleep disturbance. In summary, noise levels and impacts from operation and maintenance of the solar facility would be below applicable standards.

For Project operational traffic noise, there will be 32 daily trips made by 16 workers at the Project site, plus minimal, intermittent truck deliveries. The calculated increase in CNEL from “No Project” to “proposed action” is less than or equal to 0.1 dBA for all of the road segments evaluated (i.e., I-5, SR-14, SR-138, and 170th Street West) (URS 2010c), except for 170th Street West north of SR-138 where the calculated increase in CNEL is 0.5 dBA. Operational phase traffic related noise impacts would be minimal.

3.5.3.2.2 <u>230-kV Transmission Line</u>. Operational noise along the off-site transmission line would result from corona noise. The Project corona noise levels were calculated using methodology provided in Chapter 8 of the *Transmission Line Reference Book, 345-kV and Above* (EPRI 1987). These methods are considered industry-accepted methods for calculating corona noise levels for transmission lines 115 kV and greater. The maximum noise levels occur directly under the transmission line. The maximum noise levels during typical “fair

weather" conditions were calculated to be approximately 18 dBA, and 43 dBA during typical "rain" conditions. During rainy conditions when corona noise is typically more prevalent, ambient noise levels are also typically higher, thereby masking the corona noise. Under most conditions corona discharge noise would not be audible; however, regardless of weather conditions, potential corona discharge noise, even at locations directly under the transmission line, were calculated to be below the nighttime noise standards established by Los Angeles and Kern counties of 45 and 50 dBA, respectively. The nighttime noise standards are designed to avoid noise impacts and nuisance. The portion of the transmission line in Los Angeles County would be installed almost completely below ground, and corona noise in the primarily underground segments would not occur.

Operational phase noise impacts associated with the 230-kV transmission line would be minimal, intermittent, and short-term.

3.5.3.3 No Action Alternative

If the Project were not constructed, there would be no impact on noise levels in the Project area. The noise levels associated with existing land use would continue.

3.6 GEOLOGY AND SEISMICITY

3.6.1 Affected Environment

3.6.1.1 Solar Generation Site

3.6.1.1.1 Site Topography. The proposed Project site lies within the Antelope Valley, which is bound by the Transverse Ranges and San Gabriel Mountains to the southwest and southeast, respectively, and the Tehachapi Mountains to the northwest. The Project site is relatively flat (ranging from approximately 1 to 2 percent gradient), sloping gently to the northeast from approximately 2,720 to 2,600 feet above mean sea level.

3.6.1.1.2 Geologic Setting. The proposed Project solar generation site is situated within the westernmost portion of the Mojave Desert Geomorphic Province in Southern California. Geologic structures within the Mojave Desert primarily consist of isolated mountain ranges separated by vast expanses of desert plains, with a predominately northwest-southeast faulting trend, and a secondary trend of east-west (parallel to the Transverse Ranges Province).

The Antelope Valley is a large, undrained topographic basin characterized by relatively flat lying topography and extensive valley fill deposits. In the Project area, these deposits consist primarily of Quaternary alluvium (Qal) over most of the Project area, with Pleistocene non-marine (Qc) deposits to the southeast.

Based on the Soil Survey for Antelope Valley Area, California (NRCS 2008) approximately 6 soil types occur in the Project facility site area, which fall into 4 soil series: Greenfield, Hanford, Hesperia, and Ramona. The soils of the Project area consist primarily of the Hanford-Greenfield association. In general, the soils consist of fine to coarse grained sandy loams and loamy sands that are well drained with moderately rapid subsoil permeability. These soils have a moderate susceptibility to wind and water erosion.

3.6.1.1.3 Seismicity. The proposed Project site is located in a seismically active area (Seismic Zone 4). There are approximately 10 faults located about 20 to 30 miles from the Project site as identified by the Terracon Geotechnical Engineering Report prepared for the Project in 2009 (Terracon 2009). However, the closest faults with the primary potential to affect the Project include the San Andreas Fault located approximately 6.1 miles to the southwest (Maximum Credible Earthquake Magnitude of 7.8), and the Garlock Fault located approximately 16 miles to the northwest (Maximum Credible Earthquake Magnitude of 7.1). The proximity of the Project site to regional faults is provided on Figure 3.6-1.

3.6.1.1.4 Geologic Hazards.

Ground Motion. Based on a review of seismic map information and performance of a probabilistic analysis using the FRISKSP computer program and associated attenuation curves, the calculated peak ground acceleration at the Project area for a 10 percent Probability of Exceedance in 50 years is approximately 0.7 g (gravitational acceleration) (Terracon 2009).

Fault Rupture/Fault Displacement. The Project area boundaries are not within an Alquist-Priolo Earthquake Fault Zone (as defined by the Earthquake Fault Zoning Act, California Public Resources Code 25523[a]: 20 CCR § 1252 [b] and [c]). In addition, due to the distance from the San Andreas and Garlock fault systems, and the lack of evidence of other faults in the immediate Project vicinity, the potential for surface rupture at the Project area is considered to be “low” during an earthquake event. This information is supported by the Los Angeles County General Plan, Safety Element (LACDRP 1990).

Liquefaction and High Groundwater Level. Liquefaction is the phenomenon whereby saturated soils develop high pore water pressures during seismic shaking and lose their strength characteristics. This phenomenon generally occurs in areas of high seismic activity, where ground water is shallow (within 50 feet of the ground surface) and loose granular soils or hydraulic fill soils are present. The Los Angeles County General Plan, Safety Element (LACDRP 1990) does not identify the site as being in an area subject to liquefaction or in an area of high groundwater. Groundwater depths in the Project area are reported to range from approximately 130 feet to over 200 feet below ground surface (bgs) (Terracon 2009). A pump test performed on an existing on-site irrigation well in 2009 identified a water depth of

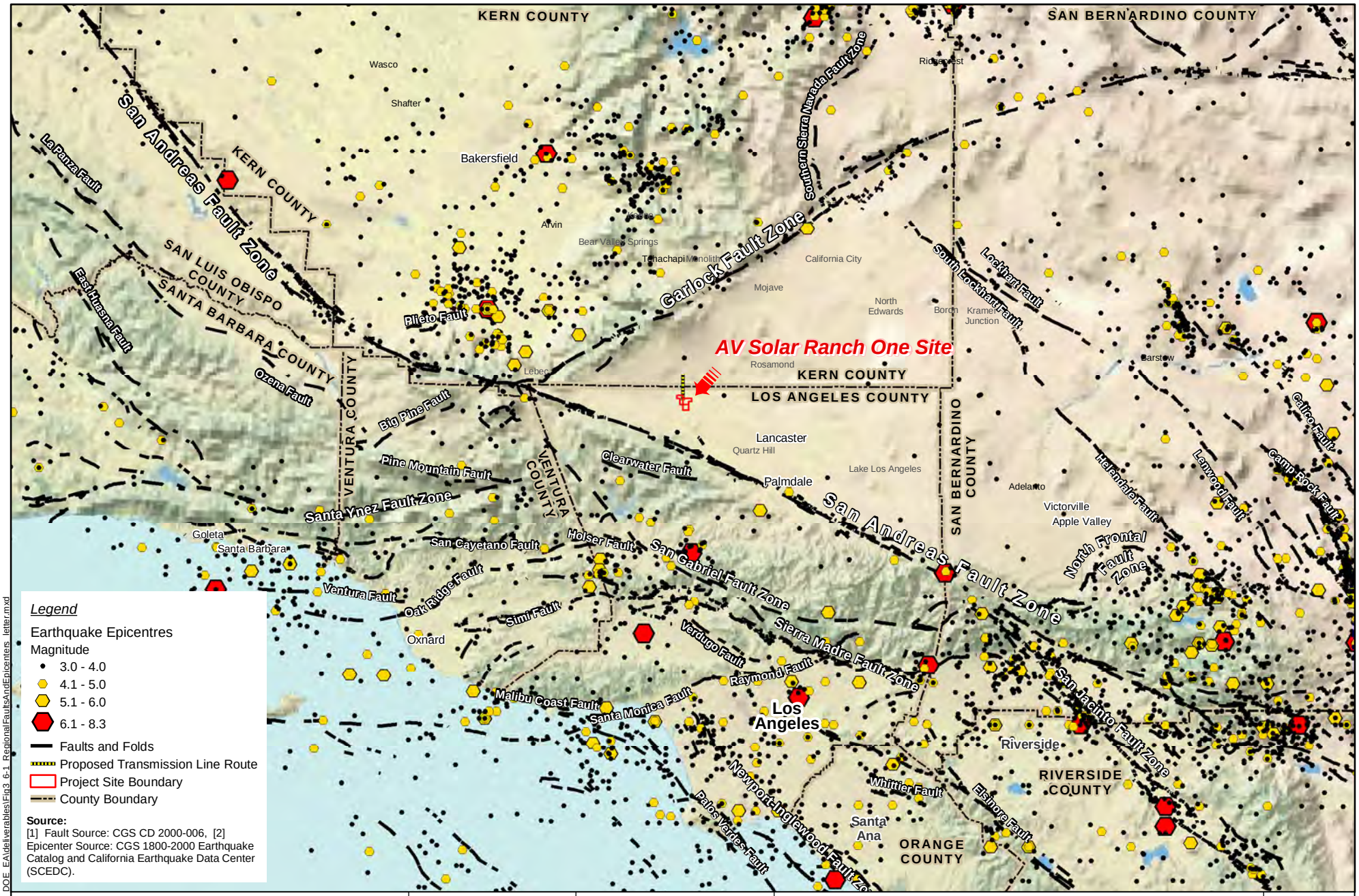


Image Source:
ArcGIS Map Service:
US National Park Service
NPS_Physical_World_2D.

AV Solar Ranch One Environmental Assessment

Figure 3.6-1. REGIONAL FAULT AND EPICENTER MAP

2011

T:\FirstSolar\AVSR1_DOE_EA\deliverables\Fig3_6-1_RegionalFaultsAndEpicenters_letter.mxd

approximately 140 feet bgs. Based on this information, the potential for liquefaction is considered to be low.

Hydrocompaction and Subsidence. Hydrocompaction is a condition where dry or moist soils undergo settlement upon being wetted. Subsidence is the result of fluid withdrawal from compressible sediments, and may also be a liquefaction-related phenomenon triggered by seismic events. The geotechnical engineering investigation determined that the Project soils are not susceptible to hydrocompaction or subsidence.

Landslides and Slope Stability. The Project area is located on a relatively flat (1 to 2 percent slope) alluvial fan and is not subject to landslides or slope failures. Additionally, the County of Los Angeles General Plan (LACDRP 1990) identifies the Project to be in a stable region. As a result, the potential for landslides or slope failures in the Project area is considered to be low.

3.6.1.2 230-kV Transmission Line Route

The 230-kV transmission line route is also located within the Antelope Valley in an area with relatively flat topography and slope. Soil survey data indicates that the transmission line route traverses 8 soil types, which fall into 4 soil series: Greenfield, Hanford, Hesperia, and Rosamond (USDA-NRCS SSURGO 2008). These soils largely consist of fine to coarse grained sandy loams and loamy sands that are well drained with moderately rapid subsoil permeability. These soils have a moderate susceptibility to wind and water erosion.

The 230-kV transmission line route is located within the westernmost portion of the Mojave Desert Geomorphic Province, and has a similar geologic setting as described in Section 3.6.1.1.2. Additionally, the transmission line is located in a seismically active area (Seismic Zone 4), and is subject to comparatively similar geologic hazard and seismic conditions described in Section 3.6.1.1.4.

3.6.2 Environmental Consequences

3.6.2.1 Proposed Action

3.6.2.1.1 Solar Generation Site. The Project solar generation site is located on flat terrain and is not in a landslide-prone area; thus, potential impacts related to landslides or slope stability would not occur. Additionally, due to the physical properties and location of the solar generation site (i.e., soil and groundwater conditions and distance from faults), the risk to the facility site from fault rupture/displacement, liquefaction, and hydrocompaction and subsidence is considered to be nonexistent to low, and the potential for impacts is considered to be insignificant. Ground motion and seismicity in the area may potentially affect the proposed facility site. However, all Project structures would employ appropriate engineering designs that are in conformance with the geotechnical/seismic standards and

recommendations of the: 1) Project-specific 2009 Terracon Geotechnical Engineering Report; 2) the 2007 California Building Code (CBC 2007); and 3) the applicable requirements of the Los Angeles County General Plan Safety Element (LACDRP 1990).

As discussed in Section 2.1.1.1, the proposed PV modules include solar panels with CdTe. Studies have shown that CdTe releases are unlikely to occur during accidental panel breakage or when exposed to fire (discussed further in Section 3.11.3.1), and therefore it is very unlikely that any environmental impacts from potential CdTe releases would occur due to earthquake or other natural disaster.

It is estimated that the Project would require approximately 180,000 cubic yards of grading associated with facility site construction over the 2,100-acre site. Project grading would consist of balanced cut and fill (i.e., no imported or exported material) and would be performed in accordance with a Grading Plan approved by the Los Angeles County Department of Public Works (LACDPW). Approval of a grading plan is expected by mid-2011. In addition, grading and excavations would be performed in conjunction with an approved SWPPP and SUSMP that would include BMPs to control erosion and runoff, and minimize the potential for stormwater pollution.

3.6.2.1.2 230-kV Transmission Line Route. The 230-kV transmission line route traverses flat terrain that is not within a landslide-prone area; thus, potential impacts related to landslides or slope stability would not occur. Additionally, due to the physical properties and location of the transmission line (i.e., soil and groundwater conditions and distance from faults), the risk to the transmission line from fault rupture/displacement, liquefaction, and hydrocompaction and subsidence is considered to be nonexistent to low, and the potential for impacts is considered to be insignificant. Ground motion and seismicity in the area may potentially affect the proposed transmission line. However, all transmission line structures would employ appropriate engineering designs that are in conformance with the geotechnical/seismic standards and recommendations of the: 1) Project-specific 2009 Terracon Geotechnical Engineering Report; 2) the 2007 California Building Code (CBC 2007); and 3) the applicable requirements of the Los Angeles and Kern County General Plans, Safety Element (LACDRP 1990, Kern County Planning Department [KCPD] 2004).

No significant grading would be required for the off-site transmission line; however, underground transmission line construction and transmission pole foundations would require excavation. Construction of the off-site 230-kV transmission line would require up to an estimated 7,000 cubic yards of excavations for subsurface utility installations. Excavations would be performed in accordance with applicable engineering standards and regulations, and no adverse geologic impacts would occur.

3.6.2.2 No Action Alternative

If the Project were not constructed, there would be no impacts to local geology or soils, and no exposure of people or structures to geologic/seismicity-related risks associated with Project development.

3.7 WATER RESOURCES

3.7.1 Regulatory Framework

The Clean Water Act (CWA) (33 U.S.C. Section 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. Perennial and intermittent drainages, creeks, and streams that are tributary to navigable waters are generally subject to jurisdiction of the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA. Based on the assessment of jurisdictional waters and wetlands performed for this Project and described in the Biota Report (URS 2009b), the four drainages on-site are not tributary to navigable waters. Therefore, no "waters of the United States" are present on the Project site and Section 404 of the CWA is not applicable to the proposed Project. The USACE issued an Approved Jurisdictional Determination and No Permit Required letter for the Project in November 2010.

The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). In California, NPDES permitting authority is delegated to, and administered by, the nine Regional Water Quality Control Boards (RWQCBs). For the proposed Project, the Lahontan Regional Water Quality Control Board (LRWQCB) has NPDES General Permit enforcement authority.

California's primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Water Code, §13000 et seq.) (Porter-Cologne Act). It is the primary vehicle for implementation of California's responsibilities under the federal Clean Water Act. The Porter-Cologne Act grants the State Water Resources Control Board (SWRCB) and the RWQCBs authority and responsibility to adopt plans and policies, to regulate discharges of waste to surface and groundwater, to regulate waste disposal sites and to require cleanup of discharges of hazardous materials and other pollutants. Each RWQCB must formulate and adopt a water quality control plan (regional plan) for its region.

Local water quality control plans applicable to the proposed Project include the LRWQCB Water Quality Control Plan (Basin Plan). This plan defines water quality objectives for the jurisdiction. The Regional Board regulates the sources of water quality problems which could

result in the impairment of beneficial uses or degradation of water quality, including both point sources of pollution and non-point sources of pollution (LRWQCB 1995).

Within Los Angeles County, surface water and groundwater quality and use are regulated by the Los Angeles County Department of Public Works (LACDPW). The LACDPW has Master Plans for many of its large flood control facilities. Water quality in the Project area within Los Angeles County is also under the jurisdiction of the LRWQCB. Within Kern County, surface water and groundwater quality and use are regulated by the Kern County Engineering and Survey Service (KCESS). Water quality in Kern County is also under the jurisdiction of the LRWQCB.

A municipal stormwater National Pollutant Discharge Elimination System (NPDES) permit issued to Los Angeles County and 85 cities by the Los Angeles County Regional Water Quality Control Board (RWQCB) on July 15, 1996, required the development and implementation of a program addressing stormwater pollution issues in development planning for private projects. On December 13, 2001, the RWQCB issued a new NPDES permit (Los Angeles County MS4 Permit), updating these program requirements. The Standardized Urban Stormwater Mitigation Plan (SUSMP) was developed as part of the municipal stormwater program to address stormwater pollution as required by the NPDES permit. The SUSMP contains the BMPs that must be used at a minimum for a designated project.

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP). FEMA has completed Flood Insurance Rate Maps that identify Special Flood Hazard Areas. To comply with the NFIP, communities must adopt a floodplain management ordinance addressing construction and habitation in flood zones. In California, the Department of Water Resources provides and encourages communities to adopt the California Model Floodplain Management Ordinance.

3.7.2 Affected Environment

3.7.2.1 Solar Generation Site

3.7.2.1.1 Groundwater.

***Groundwater Supply*.** The proposed Project solar generation site is located within the Lancaster subunit of the Antelope Valley Groundwater Basin. The main source of recharge to the Lancaster subunit is stream flow from the Big and Little Rock Creeks off the San Gabriel Mountains. The total storage capacity of the Antelope Valley Groundwater Basin has been reported at 68 million acre-feet (MAF) (Planert and Williams 1995 as cited in DWR 2004) to 70 MAF (DWR 1975 as cited in DWR 2004). Agricultural and urban uses have been the primary sources of extractions from the ground-water system. According to the USGS (USGS 2003), groundwater extractions have exceeded the estimated natural recharge of the

basin since the 1920s. This overdraft has caused declining water levels and land subsidence in some areas (primarily urban), as simulated by the USGS (USGS 2003).

Estimates of groundwater natural recharge rates for the Antelope Valley Groundwater Basin vary depending on the calculation method and assumptions utilized (USGS 2003, USGS 1993). The average annual native recharge plus local return flows is currently estimated as approximately 82,300 AFY (LACDPW 2010). Coupled with return flows from imported water, the total sustainable yield of the Basin is estimated to be approximately 110,000 AFY (LACDPW 2010). The exact groundwater budget for the Antelope Valley Basin is not available; however, estimates pertaining to groundwater production are available from the early 1900s through 1995. The most recent estimates from the USGS indicate that during the period from 1991 through 1995, groundwater pumpage averaged 81,700 AFY (USGS 2003). More current groundwater extraction rates are estimated to be approximately 160,000 AFY in 2008 (LACDPW 2010). Additionally, the demand for water is projected to increase (Antelope Valley Water Group 2007). However, according to the Antelope Valley Integrated Regional Water Management Plan (Antelope Valley Water Group 2007), long-term natural recharge of the Antelope Valley Groundwater Basin is expected to be stable, and when supplemented with imported water, it is anticipated that ground water pumping, and hence supply, will be reliable even in short-term and multiple year droughts. Thus, groundwater is considered a reliable water source in the Antelope Valley Region (Antelope Valley Water Group 2007).

The proposed Project site is not served by a public domestic water supply system (or reclaimed water supply), and would rely on groundwater. A pump test performed by URS in November 2009 on an on-site irrigation well (URS 2009a) indicates that the maximum recommended continuous pumping rate (i.e., the rate at which the well would retain a minimum, adequate water column thickness[5]) was 250 gallons per minute (gpm) (403 AFY). Additional data show that the average yield (or pumping rate) for wells within approximately a 5-mile radius of Well 8N/15W-24B3 on the Project site is about 1,100 gpm (1,773 AFY) (URS 2009a).

***Groundwater Quality*.** Water quality in the Antelope Valley Groundwater Basin is reportedly excellent near the boundaries of the basin, and deteriorates with proximity to the dry lakes located in the east-central portion of the Antelope Valley (within Edwards Air Force Base). Groundwater is typically calcium bicarbonate in character near the surrounding mountains

[5] The adequate water thickness is the recommended long-term drawdown limits in a groundwater production well that maintains about 80 percent of the aquifer thickness. This recommendation is based, in part, on the fact that drawdown in an unconfined aquifer beyond 25 percent of the original saturated thickness reflects transient (unstable) discharge rates that compromise the transmissivity of the aquifer (see ASTM standard D5472-93 "Standard Test Method for Determining Specific Capacity and Estimating Transmissivity at the Control Well). The URS recommendation is reduced to 20 percent (a 5 percent factor of safety) to avoid transient pumping conditions that could potentially result in unstable basin yield as described by Freeze and Cherry (1979).

and is sodium bicarbonate or sodium sulfate character in the central part of the basin. Data from 213 public supply wells across the basin shows an average total dissolved solid (TDS) content of 374 milligrams per liter (mg/L), and range from 123 to 1,790 mg/L (DWR 2004).

Natural water quality in the Antelope Buttes Recharge Triangle (i.e., in the Project area) is excellent and does not appear to have changed significantly over time. The historic water quality analyses for the wells within the Antelope Buttes Recharge Triangle indicate total dissolved solids concentrations from 174 to 476 mg/L averaging about 249 mg/L for 9 wells sampled between 1949 and 2008.

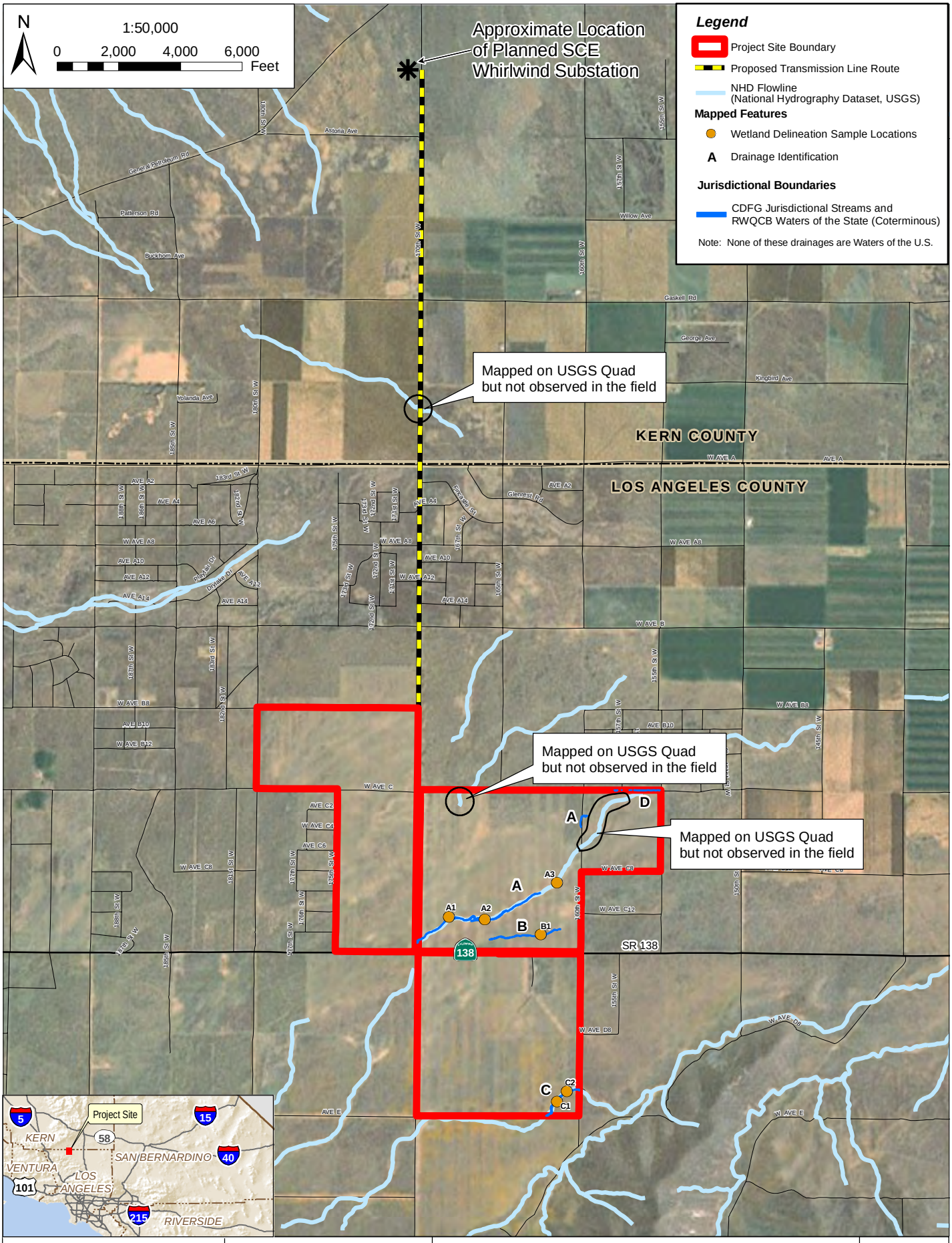
Water quality testing of the on-site irrigation Well 8N/15W-24B3 was performed in 2009 (URS 2009a). The water quality testing concluded that the water is of high quality, as indicated by: 1) its low TDS of 226 mg/l; 2) detection of only one organic chemical (chloromethane at 1.7 micrograms per liter [µg/l] that was well below the Lifetime Health Advisory of 30 µg/l and Drinking Water Equivalent Level Advisory of 100 µg/l); and 3) radiological levels that are below state Maximum Contaminant Levels or Action Levels (USEPA 2006).

***Groundwater Rights*.** The Antelope Valley groundwater basin is not currently adjudicated; however, an adjudication process has been initiated and is in the early stages of development. Several property owners and public water suppliers initiated legal proceedings asking the Superior Court of California to determine the relative rights of users and potential users of the Antelope Valley Groundwater Basin (1-05-CV-049053: Antelope Valley Groundwater Cases, Consolidated Proceeding 4408). The case involves many complex legal issues, hundreds of parties, and may take years to be resolved. Although there are no existing restrictions on groundwater pumping, pumping may be altered or reduced as part of the adjudication process (Antelope Valley Water Group 2007).

3.7.2.1.2 Surface Water/Floodplains.

***Surface Water*.** The proposed Project is located in the Antelope Valley Hydrologic Unit, which includes desert, localized mountains, and dry lake beds. This Unit receives runoff from Big Rock and Little Rock Creeks from the San Gabriel Mountains and from Oak Creek and Cottonwood Creek in the Tehachapi Mountains. The surface water drains toward the closed basin of Rosamond Lake within the boundaries of Edwards Air Force Base.

The solar generation site is traversed by three primary ephemeral drainages (identified herein as Drainages A, B, and C), as shown on Figure 3.7-1. A fourth ephemeral drainage (Drainage D) is located at the northeastern property boundary and only a small portion of the southern bank of the drainage is on Project site. Sections 401 and 404 of the Clean Water Act (CWA) regulate discharges of dredge, fill, and other material into the waters of the U.S. Waters of the U.S. are generally defined to include navigable waterways and their tributaries and adjacent wetlands. Intrastate waters that are not tributary to navigable waterways are



Source:
[1] I-cubed Nationwide Prime - Aerials Express (2009-04-15) image date, 0.3m resolution), [2] ESRI StreetMap USA (2007), [3] National Hydrography Dataset, US Geological Survey Flowline (2007).

AV Solar Ranch One Environmental Assessment

Figure 3.7-1. CDFG JURISDICTIONAL STREAMBEDS ON THE PROJECT SITE

2011

T:\FirstSolar\AVSR1_DOE_EA\deliverables\Fig3_7-1_CDFG_Jurisdictional_Streambeds.mxd

generally not waters of the U.S. As confirmed by the USACE (USACE 2010), the ephemeral drainages within the Project site are not tributary to any navigable waters, and thus, are not waters of the U.S. subject to the provisions of the CWA. However, portions of these drainages are within the jurisdiction of the California Department of Fish and Game and the Lahontan Regional Water Quality Control Board (see Figure 3.7-1).

***Floodplains*.** The Project site includes FEMA-designated Flood Hazard Areas (FEMA 2008). The majority of the Project site is mapped as Zone X Unshaded (above the 500-year floodplain, an area of minimal flood hazard), or Zone X Shaded (between the limits of the 100-year and 500-year floods, an area of lesser to moderate flood hazards) (see Figures 3.7-2 and 3.7-3). Drainage C (Broad Canyon Creek) is mapped by FEMA as Zone A (100-year floodplain, an area with a 1 percent annual chance of flooding or a 26 percent chance of flooding over 30 years).

3.7.2.2 230-kV Transmission Line Route

3.7.2.2.1 Groundwater. The proposed 230-kV transmission line overlays the Antelope Valley Groundwater Basin, as described in Section 3.7.2.1.

3.7.2.2.2 Surface Water/Floodplains.

***Surface Water*.** Similar to the facility site, the 230-kV transmission line is located in the Antelope Valley Hydrologic Unit and, therefore, has similar surface water hydrologic conditions.

A drainage course along the proposed transmission line route is identified on the USGS Fairmont Butte quadrangle. However, during URS field surveys performed in 2009, no indicators of established or historic drainage channels along the transmission route were observed (see Figure 3.7-1) and no drainages traverse the route.

***Floodplains*.** The off-site transmission line includes FEMA-designated Flood Hazard Areas (FEMA 2008). Approximately 2 miles of the off-site transmission line route are located within the western edge of a 100-year floodplain (FEMA Zone A) in northern Los Angeles County and Kern County. The remainder of the transmission line (2.25 miles) is located in Zone X Unshaded (refer to Figure 3.7-3).

3.7.3 Environmental Consequences

3.7.3.1 Proposed Action

3.7.3.1.1 Solar Generation Site.

***Groundwater Supply*.** The primary water supply for the Project would be from on-site wells (see Figure 2-4). Currently, two operational wells exist on the Project site: 1) a domestic well

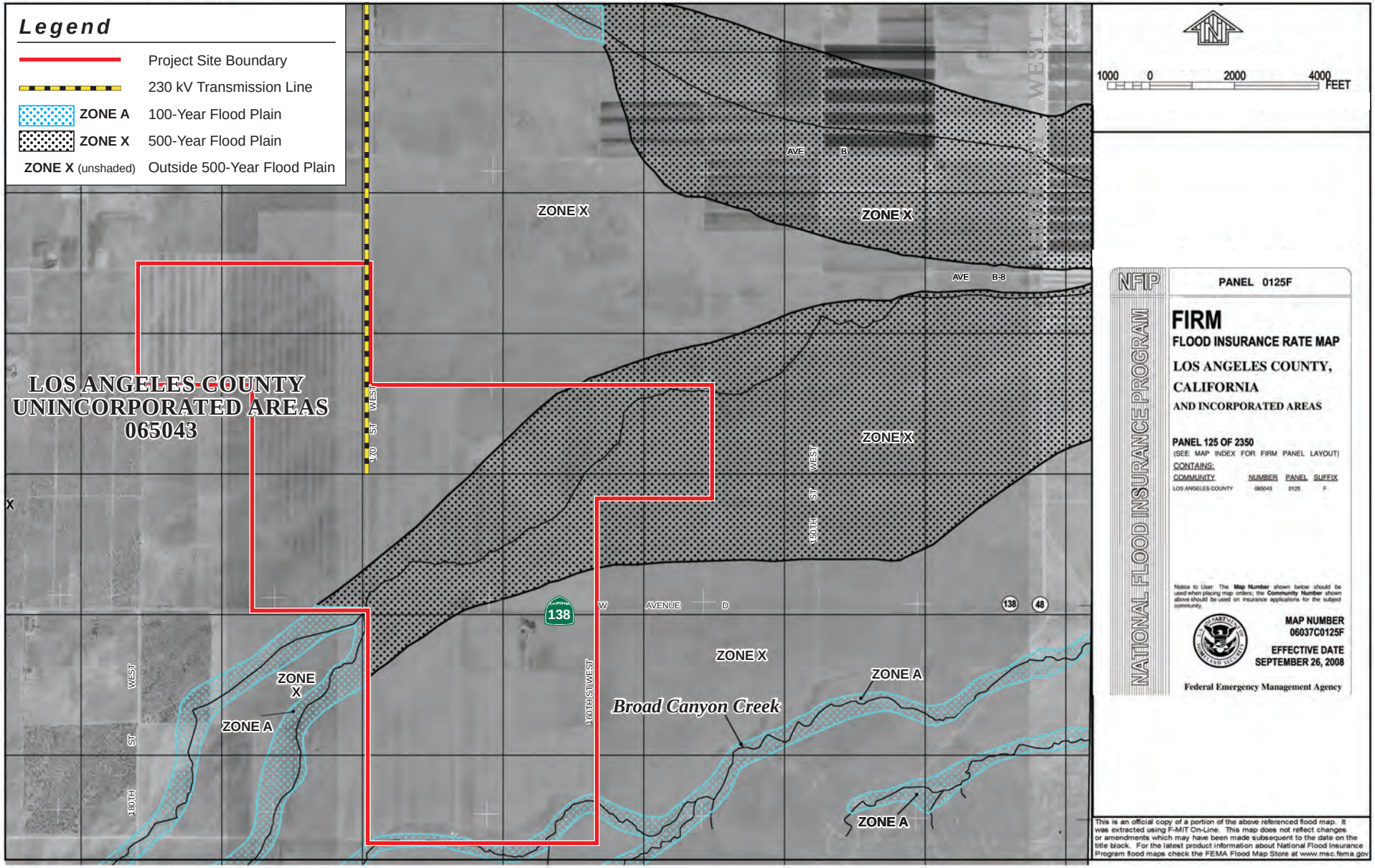
that supplies the existing ranch houses; and 2) an agricultural well formerly used for irrigation (Well 15W/8N-24B3). One or both of these existing wells are planned to be used for process water for construction and operations, but not for domestic purposes. Any new wells drilled for domestic purposes would be developed as per Los Angeles County Department of Public Health Standards.

It is estimated that approximately 150 AFY of water would be required during Project construction and approximately 12 AFY during operations. The results of a pump test performed by URS on Well 8N/15W-24B3 (URS 2009a) showed that pumping the well at the desired yields of 150 and 12 AFY would retain a water column thickness of about 94 percent or greater of the non-pumping water column thickness (assuming continuous pumping and no interference from boundary conditions). These rates are well below the maximum recommended continuous well pumping rate of 250 gpm (403 AFY) as determined from the pump test, which would retain at least 80 percent of the non-pumping water column thickness.

On the basis of the pump test results and data from nearby wells, the desired yield of 150 AFY for the estimated 3-year construction phase and 12 AFY for the long-term operations phase are feasible for Well 8N/15W-24B3 or a new well anywhere within the Project site. Additionally, based on the estimates of overall groundwater basin extraction (i.e., 160,000 AFY [LACDPW 2010]) discussed in Section 3.7.1.1, the Project's temporary water use during construction (150 AFY) would represent 0.09 percent of this amount, and operation of the Project (i.e., 12 AFY) would represent 0.008 percent. Thus, based on this data and the above pump test results, the Project's water demand during construction and operation would be considered negligible. The Project site has been farmed since the 1950s, and was irrigated from the 1950s through 2004. During approximately the late 1960s through the early 1990s, the agricultural well was typically used to irrigate crops (primarily alfalfa) on parcels of land that were approximately 100 acres in size (Larsen 2010). Based on current estimates of irrigation water requirements of 7.76 AF per acre per year for alfalfa in the Antelope Valley (Antelope Valley Water Group 2007), the historic agricultural water use for alfalfa on the Project site between the late 1960s through the early-1990s was approximately 776 AFY. As recently as 2004, the irrigation well was used to irrigate onions on approximately 80 acres of land (Larsen 2010). Based on current estimates of irrigation water requirements of 4.89 AF per acre per year for onions in the Antelope Valley (Antelope Valley Water Group 2007), the agricultural water use on the Project site as recently as 2004 for onions was approximately 392 AFY. In late 2009, the prior landowner vacated the property; therefore, no water is currently used at the site.

***Groundwater Quality*.** Neither stormwater nor non-stormwater discharges that may potentially occur during Project construction and operations are expected to impact groundwater due to its depth (130 to 200 feet below ground surface). The Project proposes to pump groundwater within the recommended long-term drawdown limits, such that the

T/Ladd/AVSR1/NEPA EA/.../709-120C



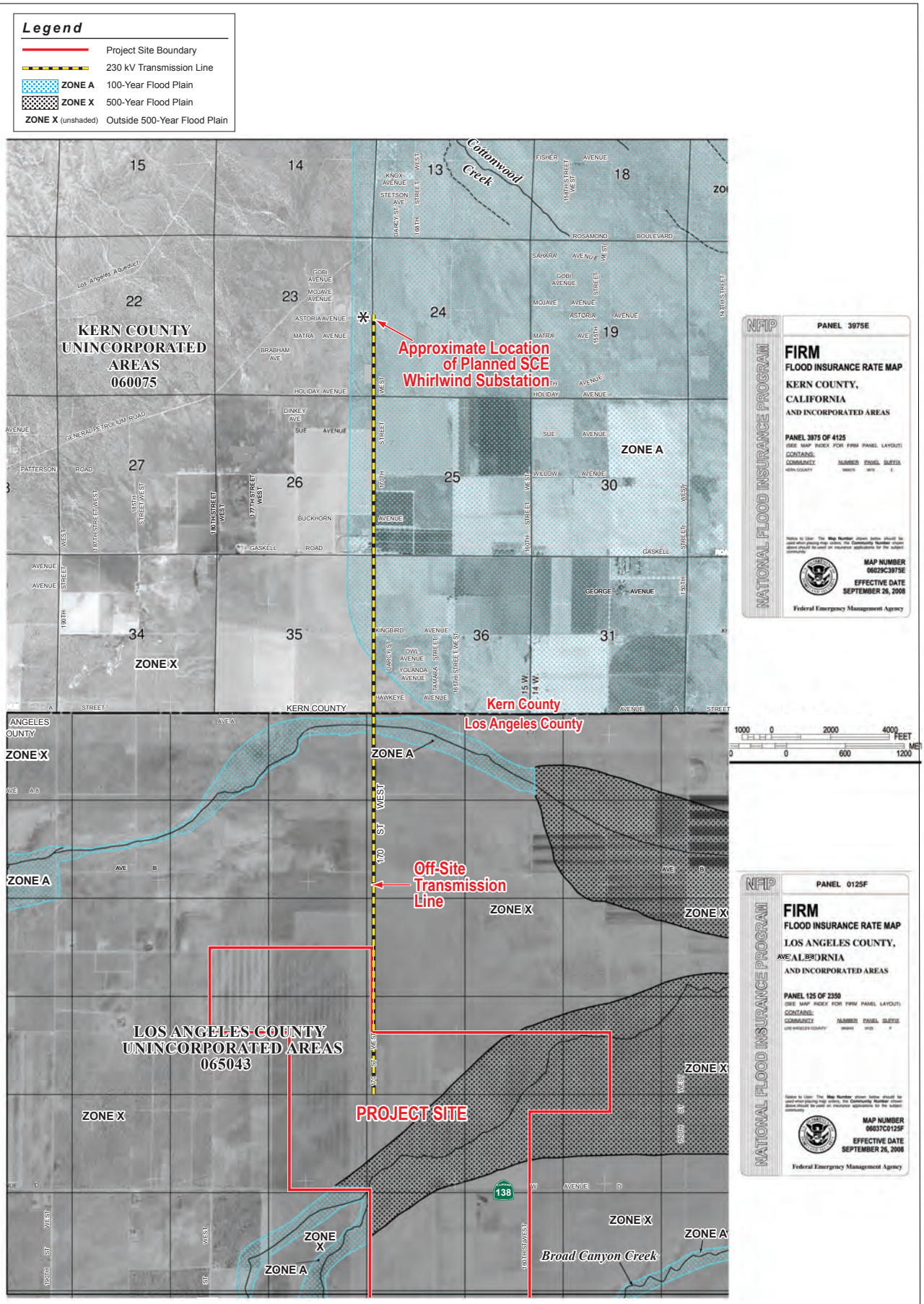
Source:
FEMA
Map Number 06037C0125F
Dated 9/26/08

AV Solar Ranch One Environmental Assessment

Figure 3.7-2. FEMA FLOOD INSURANCE RATE MAP FOR PROJECT SITE AREA

2011

T/Ladd/NextLight/AVSR3/FloodHazards/.../709-122B



Source:
FEMA
Map NumberS 06037C0125F and 06029C3975E
Dated 9/26/08

AV Solar Ranch One Environmental Assessment

Figure 3.7-3. FEMA FLOOD INSURANCE RATE MAP FOR OFF-SITE TRANSMISSION LINE ROUTE

2011

Project is not expected to result in decreased groundwater quality due to extraction. Potential Project-related impacts to surface water and stormwater would be minimized via implementation of required BMPs, which would also protect groundwater quality.

***Surface Water*.** Surface water from the facility site drains toward the closed basin of Rosamond Lake within the boundaries of Edwards Air Force Base, which is located approximately 15 miles east of the facility site. During construction, Project activities would involve earth disturbance, clearing of existing vegetation, and use of construction equipment and vehicles, which would potentially result in erosion and sedimentation, and release of chemicals, liquid products, and petroleum products into storm water. The potential Project-related construction impacts to surface water and stormwater would be minimized through the implementation of a Project NPDES Construction SWPPP and SUSMP, which would include BMPs to control erosion and minimize the potential for stormwater pollution during the construction and operational phases of the Project.

The primary discharges during Project operation would be sanitary wastewater and solar panel wash water. Sanitary wastewater would be discharged to an underground septic tank/leach field system, and no significant surface water quality impacts would be expected to occur. It is expected that panel washing would occur approximately twice per year, and an estimated 9 AFY of water would be required. No detergents, surfactants, or other additives would be used; panel wash water would contain only windblown dirt or dust and would be allowed to drain to the ground surface where it would be absorbed and/or evaporated. As such, no impacts to surface water due to these washings are expected to occur.

The potential for impacts to surface and stormwater quality due to Project site and off-site transmission line operation would be minimized through implementation of BMPs as well as Project design and applicant-committed stormwater management measures. As required by Title 12, Section 12.80.520 of the Los Angeles County Code, BMPs for spill and erosion control would be implemented during Project operations to minimize the potential for impacts to stormwater runoff. These BMPs would also ensure compliance with the Lahontan Regional Water Quality Control Board (LRWQCB) Basin Plan (LRWQCB 1995).

Infiltration basins would be installed in accordance with the Los Angeles County LID Standards, as well as the LACDPW requirements. The infiltration basins would balance pre- and post-development runoff, and serve as an erosion and debris control BMP.

Based on the implementation of the above Project BMPs, design measures, and applicant-committed stormwater management procedures (refer to Section 2.1.1.1.3 and Appendix B), operation of the facility site and off-site transmission line are not expected to degrade the quality of surface water or stormwater runoff.

***Floodplains*.** As described in Section 3.7.2.2, the majority of the Project site is mapped as Zone X Unshaded (above the 500-year floodplain) or Zone X Shaded (between 500 and 100

year flood) (see Figure 3.7-2). While a Zone A (100-year floodplain) area exists in the vicinity of Drainage C, it is of minor extent and would not be developed. As shown on Figure 2-4, proposed site development is set back from Drainage C to avoid both the drainage and the Zone A area.

As requested by Los Angeles County, a 100-foot-wide and a 65-foot-wide easement will be dedicated to the County along Drainage A and Drainage C, respectively, for future flood control purposes. Additionally, a development setback is shown parallel to the Los Angeles County easement along Drainage A. The development setback is 100 feet from either side of the natural incised channel bank. The Project facility would be set back from the Drainage C Zone A (100-year floodplain) by at least 100 feet.

As recommended in the Drainage Concept Report prepared by Psomas (Psomas 2009), foundations for the tracker and fixed tilt solar panel support units would be designed to withstand scoring or undermining of foundations in areas that may be subject to periodic inundation. However, site development would only occur in the lower flood risk areas (Zone X Unshaded or Zone X Shaded) and facility structures would avoid all areas in the 100-year floodplain.

3.7.3.1.2 230-kV Transmission Line Route. Approximately 0.15 mile of the proposed off-site transmission line route is located in a mapped 100-year floodplain (Zone A) in northern Los Angeles County and over the majority of the transmission line route in Kern County (FEMA 2008) (refer to Figure 3.7-3). The portion of the transmission line route in Los Angeles County would be primarily underground and designed to withstand inundation and not be affected by flooding. The proposed tubular steel poles primarily within the Kern County portion of the route would be designed to withstand flooding and would include 20- to 30-foot-deep, concrete reinforced foundations. Additionally, each pole would be spaced approximately 700 feet apart and would occupy less that 0.001 acre.

The design and construction of the underground portion of the transmission line in Los Angeles County would require the finished grade above the conduit bank to be the same as pre-construction conditions, therefore, surface hydrology, drainage, and flood hazards would remain the same as current conditions. The proposed tubular steel structures of the aboveground portions of the transmission line would not be placed within any drainages or flow paths, and would occupy a small permanent footprint of approximately 50 square feet each, (for a total of approximately 1,250 square feet, or 0.03 acre) within the 100-year floodplain. It would be unlikely that the tubular steel structures would impede or redirect flood flows or result in measurably different flows compared to existing conditions because the structures have a small footprint. It is also unlikely that waters within the floodplain in this area would have a significant velocity due to the flat gradient and no short-term or long-term adverse effects to the 100-year floodplain would be anticipated. Thus, based on the analysis for this floodplain assessment, and pursuant to the DOE floodplain environmental

review regulations at 10 CFR 1022, DOE has determined that the proposed Project would not adversely affect the 100-year floodplain.

3.7.3.2 No Action Alternative

If the Project were not constructed under the No Action Alternative, water resources impacts of the Project would not occur.

3.8 BIOLOGICAL RESOURCES

3.8.1 Regulatory Framework

Biological resources, including sensitive habitats, special-status species, and streams and waterways, are protected by a variety of federal and state laws and regulations.

3.8.1.1 Federal

The principal federal statute pertaining to the protection of plants and animals is the Endangered Species Act (ESA) of 1973, which establishes protection and conservation of threatened and endangered species and the ecosystems upon which they depend. With regard to plants and non-marine animals, the U.S. Fish and Wildlife Service (USFWS) administers this Act. Section 9 of the ESA prohibits the unauthorized "take" (e.g., harm, harass, pursue, hunt, shoot, wound, kill, trap, capture, or collect) of federally listed threatened and endangered species, and Section 7 of the ESA requires federal agencies to consult with the USFWS prior to funding, authorizing, or carrying out any activity that would potentially affect ESA-listed species or designated critical habitat. Because no federally listed species, species proposed for listing, or candidates for listing are known or suspected to occur on the Project site or along the off-site transmission line route, and because no critical habitat has been designated in these areas, it is expected that formal consultation between the DOE and USFWS will not be required.

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) prohibits the take of bald and golden eagles (*Haliaeetus leucocephalus* and *Aquila chrysaetos*, respectively) unless authorized by the Secretary of the Interior. Activities that interfere substantially with an eagle's normal breeding, feeding, or sheltering behavior, including interference caused by habitat modifications, may result in take of bald or golden eagles. The USFWS is responsible for administering this statute, and may issue permits allowing the incidental take of bald and golden eagles associated with constructing and operating energy projects where the take is: 1) unavoidable; and, 2) compatible with preservation of the bald/golden eagle.

The proposed Project would also be subject to the requirements of the Migratory Bird Treaty Act (MBTA). This statute protects all migratory birds and their nests and makes it unlawful to "take" any migratory birds, or their eggs or active nests.

3.8.1.2 State

The California Endangered Species Act (CESA) establishes a state-level process for designating and protecting threatened and endangered species, and prohibits the unauthorized "take" (hunt, pursue, catch, capture, or kill, or attempt to do so) of state-listed species. In addition, Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code list certain native birds, mammals, reptiles and amphibians, and fishes, respectively, as "fully protected," and specify that these species may not be taken or possessed at any time. The California Department of Fish and Game (CDFG) administers these laws. However, because no state-listed threatened or endangered species, candidates for listing, or fully-protected species are known or suspected to occur on the Project site or along the off-site transmission line route, these statutes do not apply to the Project.

The proposed Project would be subject to the requirements of Sections 3503 and 3513 of the California Fish and Game Code. These regulations protect all native birds and their nests and make it unlawful to "take" any migratory bird and their active nests. Within Los Angeles County, CDFG Region 5 has responsibility for administering these requirements.

Pursuant to Sections 1600–1616 of the California Fish and Game Code, any entity proposing to divert, obstruct, or substantially alter the bed, bank, or channel of a stream or lake must first obtain a Streambed Alteration Agreement from the CDFG. As described in Section 3.8.2.4 below, the proposed Project would not impact any stream or lake and therefore, this statute is not applicable to the proposed Project.

3.8.2 Affected Environment

Biological field investigations for the proposed Project began on June 27, 2008 and were completed on June 10, 2009. These investigations included vegetation mapping, focused floristic surveys, wildlife surveys, and an assessment of the site's ephemeral streambeds to determine federal and state jurisdictional boundaries. Several supplemental biological surveys of the portion of the off-site transmission line route in Kern County were performed in 2010 to encompass an expanded study area (generally 200 feet wide) for this portion of the transmission line route. The expanded study area was included to allow flexibility in final route siting to account for issues related to land ownership constraints and Kern County requirements as well as final SCE Whirlwind Substation interconnection routing requirements.

Where appropriate, the biological surveys conducted for the Project followed protocols approved by state and federal resource agencies. Surveys for the burrowing owl (*Athene cunicularia*) followed the CDFG protocol for that species; the focused floristic surveys were compliant with USFWS, CDFG, and CNPS protocols; and the jurisdictional determination was prepared in accordance with the USACE's Wetland Delineation Manual and appropriate supplements. Vegetation mapping within the Project site and along the proposed transmission

line route was conducted using the communities identified in Sawyer and Keeler-Wolf's *A Manual of California Vegetation*, the modern standard for this type of work. For more information regarding the biological field investigations, including methods, results, and citations for survey protocols, refer to the Biota Report for the Project (URS 2009b).

3.8.2.1 Solar Generation Site

3.8.2.1.1 Vegetation Communities. As described previously, the majority of the proposed solar generation site was used for agricultural production between the 1940s and 1990s, and the vegetation on-site is in the process of recovering from this chronic disturbance. Four natural vegetation communities currently occur on the Project site (Figure 3.8-1), including rabbitbrush scrub, California annual grassland, Joshua tree recruitment area, and wildflower field. In addition, four disturbed or human-converted land cover types occur on the Project site including orchard (abandoned), agricultural, ruderal, and ornamental vegetation.

Of the four natural vegetation types occurring within the Project site, two are considered to be sensitive natural communities: wildflower fields and Joshua tree recruitment area. Wildflower fields are designated as a sensitive natural community by the CDFG. Joshua tree recruitment area has no formal sensitivity designation, but is considered to be sensitive natural community for purposes of this analysis because of Los Angeles County's expressed concern regarding the continuing loss and degradation of Joshua tree woodlands in the Antelope Valley. Successful recruitment of Joshua trees into adjacent habitat is relatively rare in the Project region, and indicates that the yucca moth (*Tegeticula synthetica*) that pollinates these trees is present in the vicinity. The wildflower field area is in the southernmost portion of the Project site (see Figure 3.8-1), and totals approximately 236 acres. One mature Joshua tree and two adjacent seedlings occur along 170th Street West, about 3/4 mile north of SR-138 (West Avenue D). The 7.3-acre Joshua tree recruitment area is located in the northern portion of the site. Fifty Joshua tree seedlings are located in this recruitment area, although the area does not contain any mature Joshua trees.

3.8.2.1.2 Common Plants and Wildlife. The majority of the Project site north of SR-138 contains abundant rubber rabbitbrush (*Ericameria nauseosa*), with patches of Davidson buckwheat (*Eriogonum davidsonii*), Kellogg's tarweed (*Deinandra kelloggii*), fiddleneck (*Amsinckia tesselata*), goldfields (*Lasthenia californica*), and slender comb seed (*Pectocarya linearis* ssp. *ferocula*), interspersed with small wirelettuce (*Stephanomeria exigua*), Lemmon's lessingia (*Lessingia lemmonii*), and annual bursage (*Ambrosia acanthicarpa*) in the more disturbed areas, particularly along road edges. Red-stem filaree (*Erodium cicutarium*) and cheatgrass (*Bromus tectorum*) are widespread throughout the site, especially between the more established grassland and scrub habitat areas. The Project site south of SR-138 is dominated by annual native and non-native grasses and forbs consisting mostly of cheatgrass, small fescue (*Vulpia microstachys*), fiddleneck, bicolored lupine (*Lupinus bicolor*), goldfields (*Lasthenia californica*), and California poppy (*Eschschlozia californica*).

Seven common species of reptiles, comprised of 4 lizard species, and 3 snake species were observed during field surveys. Lizard species observed included desert horned lizard (*Phyrnosoma platyrhinos*), Great Basin whiptail (*Aspidoscelis tigris* ssp. *tigris*), side-blotched lizard (*Uta stansburiana*), and long-nosed leopard lizard (*Gambelia wislizenii*). Snake species observed included Mojave rattlesnake (*Crotalus scutulatus*), gopher snake (*Pituophis catenifer*), and coachwhip (*Masticophis flagellum*). Additional common reptile species expected to occur, but not observed on the Project site include the yellow-backed desert spiny lizard (*Sceloporus magister uniformis*), Great Basin collared lizard (*Crotaphytus bicinctores*), and California kingsnake (*Lampropeltis getula*).

Within the Project site, 48 bird species were observed during field surveys. The most common species found on the site during surveys was the horned lark (*Eremophila alpestris*).

Common mammal species observed or detected via sign (tracks, scat, burrows) on the Project site include Botta's pocket gopher (*Thomomys bottae*) (mounds), white-tailed antelope squirrel (*Ammospermophilius leucurus*) (numerous burrows and individual sightings), abundant sightings of black-tailed jackrabbits (*Lepus californicus*), several desert cottontails (*Sylvilagus audubonii*), several coyotes (*Canis latrans*) (including two dens with young, and abundant tracks and scat), and an unidentified rodent (assumed kangaroo rat [*Dipodomys* sp.] based on hind feet and tail drag tracks). Several bat species (order Chiroptera) may forage over the site, as they have ranges which include the vicinity of the Project site, and are known to make use of desert type habitats.

Invertebrates observed during field surveys included the red harvester ant (*Pogonomyrmex barbatus*), velvet ant (*Dasymutilla occidentalis*), grasshoppers (family Acrididae), and bombardier beetles (family Carabidae). Harvester ant hills, both active and inactive, were observed scattered throughout the Project site.

3.8.2.1.3 <u>Protected and Special-status Species</u>. As stated previously, there are a number of federal and state statutes that confer special status and protection upon particular plant and animal species. As used in the assessment of the Project's effects on biological resources, the term "special-status species" includes the following:

- Those plants and wildlife listed, proposed for listing, or candidates for listing as threatened or endangered under the ESA (evaluated separately from other special-status species in this analysis)
- Those plants and wildlife listed or candidates for listing as threatened or endangered under the CESA
- Those birds, mammals, reptiles and amphibians, and fishes listed as "fully protected" by the California Fish and Game Code (Sections 3511, 4700, 5050, and 5515, respectively)

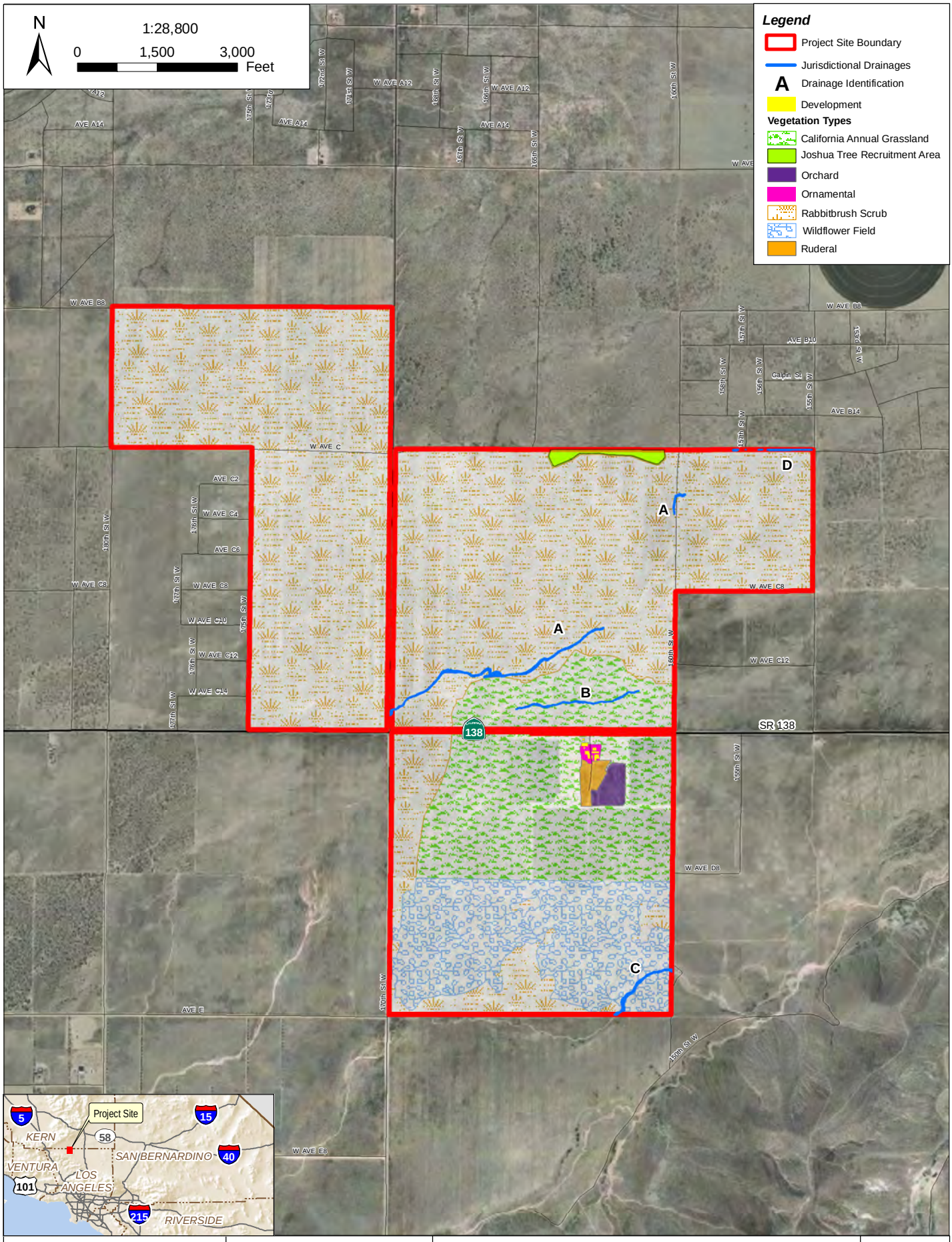


Image Source:
[1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [2] ESRI StreetMap USA (2007), [3] URS Field Surveys, (2009).

AV Solar Ranch One Environmental Assessment

Figure 3.8-1. VEGETATION COMMUNITIES WITHIN THE PROJECT SITE

2011

T:\FirstSolar\AVSR1_DOE_EA\deliverables\Fig3. 8-1_Vegetation_Communities.mxd

- Those species identified by the CDFG as California Species of Special Concern (CSC), Special Plants (SP), or Special Animals (SA)
- Birds designated as Sensitive Bird Species (SBS) by the Los Angeles County Sensitive Bird Species Working Group
- Plants occurring on Lists 1, 2, and 4 of the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants and the on-line Inventory

Common avian species identified under the Migratory Bird Treaty Act that receive protection during the nesting season but otherwise maintain no sensitivity designation are not treated as special-status species in this analysis.

No state- or federally- listed threatened or endangered species were identified on the Project site or off-site transmission line route during field surveys for the Project.

The full-coverage, protocol floristic surveys conducted for the Project (URS 2009b) did not detect the presence of any special-status plants. Twelve special-status plant species that were not observed during biological surveys, including one species listed as endangered by the State, have some potential to occur on the Project site, based on literature review (CDFG 2008a). A list of these species and their potential for occurrence on-site is presented in Table 3.8-1.

The biological field investigations detected a total of 16 special-status wildlife species on the Project solar generation site. These species are listed in Table 3.8-1, and further details of their occurrence are discussed in Appendix D. No special-status mammals, amphibians, fishes, or invertebrates were observed within the Project site. Special-status wildlife species detected included one reptile and 15 bird species.

In addition to the special-status species described above, 14 special-status wildlife species that were not observed during biological surveys, including three species listed as threatened or endangered under the ESA and/or CESA, were identified as having a potential to occur on the Project site based on the species' geographic ranges and the availability of suitable habitat. These species include two reptiles, seven birds, and five mammals, and are listed in Table 3.8-1.

Although not observed during biological field investigations, the proposed solar generation site contains open habitats with scattered shrubs that are suitable for use by the desert kit fox (*Vulpes macrotis arsipus*). The desert kit fox maintains no formal federal, state, or local sensitivity designation, and is therefore not considered to be a special-status species. However, CDFG regulations prohibit the take of this species at any time (see 14 CCR 460).

Federal Special-status Species. As stated previously, and as shown in Table 3.8-1, the biological field investigations conducted for the Project did not detect any federally-listed

TABLE 3.8-1
SENSITIVE SPECIES THAT COULD OCCUR IN THE PROJECT REGION AND THEIR POTENTIAL TO OCCUR ON THE PROJECT SITE

Species		Protection Status[1]			
Common Name	Scientific Name	ESA[2]	CA[2]	Other[3,4]	Potential to Occur at Project Site
Plants					
San Fernando Valley spineflower	*Chorizanthe parryi* var. *fernandina*	C	E	CNPS List 1B	Not detected. Occurrence unlikely due to known range.
Chaparral sand-verbena	*Abronia villosa* var. *aurita*	--	--	CNPS List 1B	Not detected. Occurrence unlikely due to habitat and soils.
Kusche's sandwort	*Arenaria macradenia* var. *kuschei*	--	--	CNPS List 1B	Not detected. Occurrence unlikely due to habitat.
Horn's milk-vetch	*Astragalus hornii* var. *hornii*	--	--	CNPS List 1B	Not detected. Occurrence unlikely due to marginal habitat.
Round-leaved filaree	*California macrophylla*	--	--	CNPS List 1B	Not detected. Occurrence unlikely due to habitat.
Alkali mariposa lily	*Calochortus striatus*	--	--	CNPS List 1B	Not detected. Occurrence unlikely due to known range and absence of wetlands.
Pale-yellow layia	*Layia heterotricha*	--	--	CNPS List 1B	Not detected. Occurrence unlikely due to known distribution.
Short-joint beavertail	*Opuntia basilaris* var. *brachyclada*	--	--	CNPS List 1B	Not detected. Suitable habitat occurs along transmission line route.
Greata's aster	*Symphyotrichum greatae*	--	--	CNPS List 1B	Not detected. Occurrence unlikely due to habitat.
Peirson's morning-glory	*Calystegia peirsonii*	--	--	CNPS List 4	Not detected. However, the Project site contains suitable habitat for this species.
White pygmy-poppy	*Canbya candida*	--	--	CNPS List 4	Not detected. However, the Project site contains suitable habitat for this species.
Palmer's grappling hook	*Harpagonella palmeri*	--	--	CNPS List 4	Not detected. Occurrence unlikely due to soil conditions.
Fishes					
None					Aquatic habitat is absent.
Amphibians					
None					Aquatic habitat is absent.

TABLE 3.8-1 (CONTINUED)
SENSITIVE SPECIES THAT COULD OCCUR IN THE PROJECT REGION AND THEIR POTENTIAL TO OCCUR ON THE PROJECT SITE

Species		Protection Status[1]			
Common Name	Scientific Name	ESA[2]	CA[2]	Other[3,4]	Potential to Occur at Project Site
Reptiles					
Desert tortoise	*Gopherus agassizii*	T	T	--	Not detected. Very low potential due to marginal habitat and distance from known range.
Blainville's horned lizard	*Phrynosoma blainvillii*	--	SC	--	Detected in southeastern corner of Project site.
Birds					
California condor	*Gymnogyps californianus*	E	E, FP	SBS	Not detected. No nesting habitat, site suitable for overflights only.
Mountain plover	*Charadrius montanus*	PT[1]	SC	SBS	Not detected. Does not nest in California, unlikely to overwinter on site due to habitat.
Swainson's hawk	*Buteo swainsoni*	--	T	SBS	Not detected. Foraging potential only.
Golden eagle	*Aquila chrysaetos*	--	FP	SBS	Not detected. Foraging potential only.
White-tailed kite	*Elanus leucurus*	--	FP	SBS	Not detected. Foraging potential only.
Tricolored blackbird	*Agelaius tricolor*	--	SC	SBS	Detected (foraging only).
Burrowing owl	*Athene cunicularia*	--	SC	SBS	Detected (nesting).
Short-eared owl	*Asio flammeus*	--	SC	SBS	Not detected. Unlikely to occur due to habitat and known distribution.
Long-eared owl	*Asio otus*	--	SC	SBS	Detected by sign, suitable nesting and foraging habitat on-site.
Northern harrier	*Circus cyaneus*	--	SC	SBS	Detected (migrant). Foraging potential only.
Loggerhead shrike	*Lanius ludovicianus*	--	SC	SBS	Detected (nesting).
Vaux's swift	*Chaetura vauxi*	--	SC	--	Detected (migrant).
Vesper sparrow	*Pooecetes gramineus*	--	SC	SBS	Detected (wintering). Foraging potential only.
Yellow warbler	*Dendroica petechia*	--	SC	SBS	Detected (migrant). No suitable habitat present.
Yellow-breasted chat	*Icteria virens*	--	SC	SBS	Detected (migrant). No suitable habitat present.

TABLE 3.8-1 (CONTINUED)
SENSITIVE SPECIES THAT COULD OCCUR IN THE PROJECT REGION AND THEIR POTENTIAL TO OCCUR ON THE PROJECT SITE

Species		Protection Status[1]			
Common Name	Scientific Name	ESA[2]	CA[2]	Other[3,4]	Potential to Occur at Project Site
Ferruginous hawk	*Buteo regalis*	--	SA	SBS	Not detected, but presumed to occur due to recent historical records and suitable habitat.
Le Conte's thrasher	*Toxostoma lecontei*	--	SA	SBS	Not detected. Unlikely due to marginal habitat.
Brewer's sparrow	*Spizella breweri*	--	SA	--	Detected (wintering). Not known to nest on valley floor, although habitat may be suitable.
Chipping sparrow	*Spizella passerina*	--	SA	--	Detected (migrant). No suitable habitat present.
Lark sparrow	*Chondestes grammacus*	--	SA	--	Detected (likely nesting).
Lawrence's goldfinch	*Carduelis lawrencei*	--	SA	--	Detected (suitable habitat on T-line route only, likely nesting).
Prairie falcon	*Falco mexicanus*	--	WL	SBS	Detected. Foraging potential only.
Merlin	*Falco columbarius*	--	WL	--	Detected (wintering). No nesting potential, site is outside breeding range.
Greater roadrunner	*Geococcyx californianus*	--	--	SBS	Detected. Foraging potential only.
Mountain bluebird	*Sialia currucoides*	--	--	SBS	Detected (wintering). Nesting unlikely due to breeding range and marginal habitat.
Western meadowlark	*Sturnella neglecta*	--	--	SBS	Detected (nesting).
Mammals					
Mohave ground squirrel	*Spermophilus mohavensis*	--	T	--	Not detected. Very low potential, believed extirpated west of Lancaster.
American badger	*Texidea taxus*	--	SC	--	Not detected. Species has potential to occur, habitat is suitable.
Tehachapi pocket mouse	*Perognathus alticolus inexpectatus*	--	SC	--	Very low potential, site is outside known elevation range.
Pallid bat	*Antrozous pallidus*	--	SC	--	Unlikely to occur due to habitat; foraging potential only.
Townsend's big-eared bat	*Corynorhinus townsendii*	--	SC	--	Unlikely to occur due to habitat; foraging potential only.

TABLE 3.8-1 (CONTINUED)
SENSITIVE SPECIES THAT COULD OCCUR IN THE PROJECT REGION AND THEIR POTENTIAL TO OCCUR ON THE PROJECT SITE

[1] E = Endangered; T = Threatened; C = Candidate; D = Delisted; FP = Fully Protected; PT = Proposed Threatened; SC = Species of Special Concern; SA = Special Animal; WL = CDFG Watch List Species; SBS = Los Angeles County Sensitive Bird Species; CNPS [#] = California Native Plant Society List.

[2] CDFG. 2009. Special Animals; CDFG Biogeography Data Branch.

[3] Los Angeles County Sensitive Bird Species Working Group. 2009. Los Angeles County's Sensitive Bird Species.

[4] California Invasive Plan Council. 2009. The California Invasive Plant Inventory Database.

plants or wildlife species. A list of federally listed species with potential to occur was provided to the USFWS for review, and the USFWS has expressed concurrence with the assessment presented (Bransfield 2010) (refer to Appendix F of this EA). Federally listed species are not likely to occur due to lack of suitable habitat. Additional information on each of the federally listed or candidate species shown in Table 3.8-1 is provided below.

Desert Tortoise (Gopherus agassizii, ESA-threatened, CESA-threatened). The desert tortoise is an uncommon but widespread resident in the Mojave Desert in locations where soils are suitable for burrow construction and herbaceous desert plants provide sufficient food. Although the western antelope valley was once within this species' range, agricultural practices in the 1940s have made the Project vicinity unsuitable for this species. Soils have been disked and ripped, and possibly compacted, and may no longer exhibit characteristics suitable for burrow construction. Current range maps show the geographic distribution of the desert tortoise terminating several miles east of the Project site. Creosote bush (*Larrea tridentata*), the dominant shrub in tortoise's preferred habitat, is absent from the Project site and surrounding area. The USFWS was contacted regarding the potential for the desert tortoise to occur within the Project site, and the USFWS response indicated that such presence was "very unlikely" (see URS 2009b). This species was not detected during full-coverage pedestrian wildlife surveys of the Project site and proposed transmission line route.

California Condor (Gymnogyps californianus, ESA-threatened, CESA-threatened, California Fully Protected). The California condor is a highly mobile species, sometimes foraging several hundred miles from their nesting grounds. The species nests in caves, crevices, and ledges on cliffs, and forages on carrion. Because the Project site is devoid of major topographic features, no suitable nesting opportunities for this species exist on-site. However, the Project site is within foraging range of a known condor population in the Sespe Wilderness, approximately 35 miles southwest of the site. The Project site is unlikely to provide a frequent source of suitable carrion for this species, as the site is not grazed by livestock and shows no signs of use by deer. Thus, while it is possible that condors may occasionally fly over the site during foraging, it is unlikely that this species utilizes habitat within the Project site.

Mountain Plover (Charadrius montanus; ESA Proposed Threatened, PT). The mountain plover is a winter visitor to California, primarily from November through April, with peak numbers in the state occurring between December and February (Hunting and Edson 2008). The species is primarily associated with open habitats such as grasslands and plowed or burned fields with little or no vegetation, and avoids areas with substantial vegetative cover. Mountain plovers are known to winter in the Central Valley and interior coast ranges, and the San Joaquin Valley hosts substantial numbers between Stanislaus and Kern counties (Hunting and Edson 2008). The closest known occurrence to the Project site dates from 1999, when 24 individuals were observed approximately 3.5 miles east of the site (CDFG 2010). Because the site lacks the sparsely vegetated areas suitable for this species, it is unlikely that mountain plovers winter within the Project site. Some potential exists for this species to winter in agricultural fields in the Project vicinity; however, many seemingly suitable agricultural areas do not support this species due to microrelief, substrate heterogeneity, soil moisture content, prey availability, and other factors (Hunting and Edson 2008).

San Fernando Valley Spineflower (Chorizanthe parryi var. Fernandina; ESA Candidate, CESA-Endangered). This taxon was believed extinct, until it was rediscovered in Ventura County in 1999. Since that time, another population was discovered in the vicinity of Castaic Junction in Los Angeles County, approximately 25 miles south of the Project site, and this population represents the closest known extant occurrence of this species to the site. (An occurrence dating from 1929 in the vicinity of Lake Hughes is believed to have been extirpated.) Although the Project site may provide suitable habitat for this species, occurrence of the San Fernando Valley spineflower within the Project site is unlikely due to the distance from known populations. Full-coverage, floristic surveys of the site, conducted in accordance with USFWS, CDFG, and CNPS rare plant survey guidelines did not detect this species. Regulatory agencies have not adopted a species-specific survey protocol for the San Fernando Valley spineflower.

Golden Eagle (Aquila chrysaetos, California Fully Protected). Although not listed as threatened or endangered under the ESA, the golden eagle receives federal protection under the Bald and Golden Eagle Protection Act, which prohibits unauthorized take of this species. The golden eagle is an uncommon permanent resident and migrant throughout California. The species ranges from sea level up to 11,500 feet, and typically prefers to inhabit rolling foothills, mountain areas, sage-juniper flats, and desert. Secluded cliffs with overhanging ledges and large trees are used for cover. Golden eagles nest on cliffs of all heights and in large trees in open areas. No golden eagles were observed during any of the field surveys conducted within the Project solar generation site and associated transmission line route, and a review of pertinent literature did not reveal any occurrences in the Project vicinity. However, an ornithologist from the Los Angeles Natural History Museum indicated that he sees the species foraging "occasionally" in the Antelope Valley (estimated 1-2 sightings per year in the fall and early winter), primarily between 100th Street West and Quail Lake,

usually in agricultural areas and grasslands, but also including hilly areas such as those north of Quail Lake. Thus, while the species was not detected on-site, it is expected that golden eagles forage and nest in the Antelope Valley on occasion.

***State Special-status Species*.** As previously described, no CESA-listed species have been detected within the Project site or along the proposed transmission line route. However, a total of 16 species with state sensitivity designations were identified, including 10 CSC species, four Special Animals (SA), and two Watch-List (WL) species. With the exception of Blainville's horned lizard, all of the special-status species detected within the Project site and along the proposed transmission line route are birds. The majority of these species were detected during point-count and pedestrian transect surveys for breeding and wintering birds (see URS 2009b). However, in the case of the burrowing owl, specific protocol surveys were conducted for the purpose of locating burrowing owl individuals and determining the extent of their reliance on the Project site to meet life history requirements. Generally speaking, the sensitive bird species detected within the Project site can be divided into three categories based on their use of the site: species that use the site for nesting and foraging; species that use the site for foraging or wintering only; and species that use the site only as stop-over habitat during migration. For descriptions of the species with state sensitivity designations that were detected, including an assessment of their habitat affinities and likely use of the Project site, please refer to Appendix D.

***Other Special-status Species*.** Because the Project solar generation site is located in Los Angeles County, bird species identified as sensitive by the Los Angeles County Sensitive Bird Species Working Group were considered in this environmental analysis. A total of 14 Sensitive Bird Species (SBS) were detected during field surveys for the Project. Some of these species, including the tricolored blackbird, burrowing owl, long-eared owl, northern harrier, loggerhead shrike, vesper sparrow, yellow warbler, yellow-breasted chat, ferruginous hawk, and prairie falcon, also maintain state sensitivity designations. The remaining SBS detected include the greater roadrunner (*Geococcyx californianus*), mountain bluebird (*Sialia currucoides*), and western meadowlark (*Sturnella neglecta*). For descriptions of these species and their documented use of the Project, please refer to Appendix D.

3.8.2.1.4 Jurisdictional Waters and Streams. The jurisdictional delineation for the proposed Project identified a total of four CDFG- jurisdictional streambeds within the Project site. None of the drainages on the site are subject to federal jurisdiction under the CWA because they are not tributary to navigable waters. All of the drainages convey flows in a generally west to east direction, and exhibit defined beds, banks, and channels. Due to the ephemeral and intermittent flow regimes of the drainages on-site, no suitable habitat for aquatic or semi-aquatic species exists within these drainages. Vegetation in the channels is similar to that in the surrounding areas, and is comprised of upland plant species. No riparian plant communities are present within the Project site. The four drainages are subject to the

authority of the CDFG and the Lahontan RWQCB and the total jurisdictional area of these streams is 4.58 acres.

3.8.2.1.5 Wildlife Movement. No regional wildlife movement corridors are known to exist on the floor of the Antelope Valley in the vicinity of the Project site (South Coast Wildlands 2008, and CDFG 2008b). Within the Project site, the on-site drainages provide local travel routes for wildlife, as evidenced by the quantity of tracks observed within the drainages during field surveys; however, there is no evidence that these features constitute wildlife corridors connecting adjacent or nearby isolated blocks of habitat (i.e., Joshua tree woodland habitat).

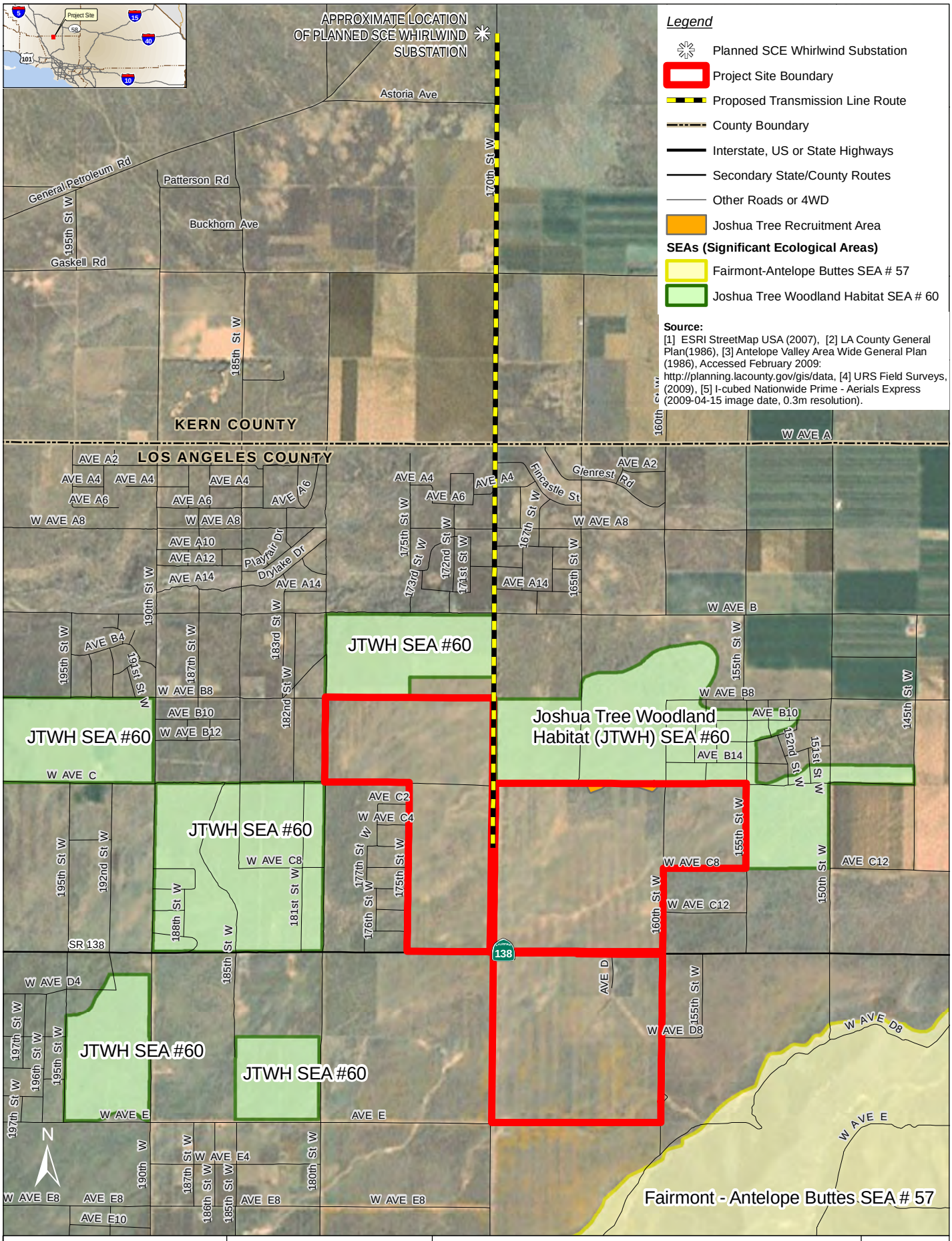
3.8.2.1.6 Significant Ecological Areas. Through the General Plan, Los Angeles County has designated a system of Significant Ecological Areas (SEAs) intended to protect environmentally sensitive resources. It is not the purpose to preclude development within these areas but to ensure, to the extent possible, that such development maintains and where possible enhances the remaining biotic resources of the significant ecological areas, while allowing for limited, controlled development therein.

Two Los Angeles County-designated SEAs, SEA #60 and SEA #57, occur in the vicinity of the Project site (Figure 3.8-2). The Joshua tree woodland SEA (SEA #60) is a 4,430-acre designation comprised of six discrete areas within the vicinity of the Project site. The Fairmont-Antelope Butte SEA (SEA #57) comprises approximately 5,567 acres. It contains wildflower fields, rolling hills, and rocky outcrops that are uncommon in the Antelope Valley. The southeast corner of Project site is roughly 700 feet northwest of SEA #57.

3.8.2.2 230-kV Transmission Line Route

3.8.2.2.1 Vegetation Communities. The land along the proposed transmission line route is comprised of the developed roadbed of 170th Street West and the adjacent disturbed shoulder, agricultural land, and the following three natural vegetation communities: rabbitbrush scrub, Joshua tree woodland, and desert saltbush scrub. Of these, only Joshua tree woodland is considered to be a sensitive natural community. A total of approximately 0.5 mile of Joshua tree woodland habitat is traversed by the proposed transmission line route within the public road ROW on the east side of 170th Street West in Los Angeles County north of the Project site (see Figure 3.8-3). The potentially affected Joshua tree woodland habitat area is on the outside edge of the public road ROW and within the westernmost edge of this Joshua tree woodland habitat area where few, if any, Joshua trees are present. The transmission line route is proposed to be underground in this area and to be installed within the paved roadway and/or adjacent disturbed shoulder.

3.8.2.2.2 Common Plants and Wildlife. The various plant communities along the proposed transmission line route provide habitat for different communities of invertebrates, reptiles, birds, and mammals. Because the proposed transmission line route is located



T:\FirstSolar\AVSR1_DOE_EA\deliverables\Fig3_8-3_JoshuaTreeWoodlandHabitatSEA.mxd

AV Solar Ranch One Environmental Assessment

Figure 3.8-2. JOSHUA TREE WOODLAND HABITAT SEA

2011

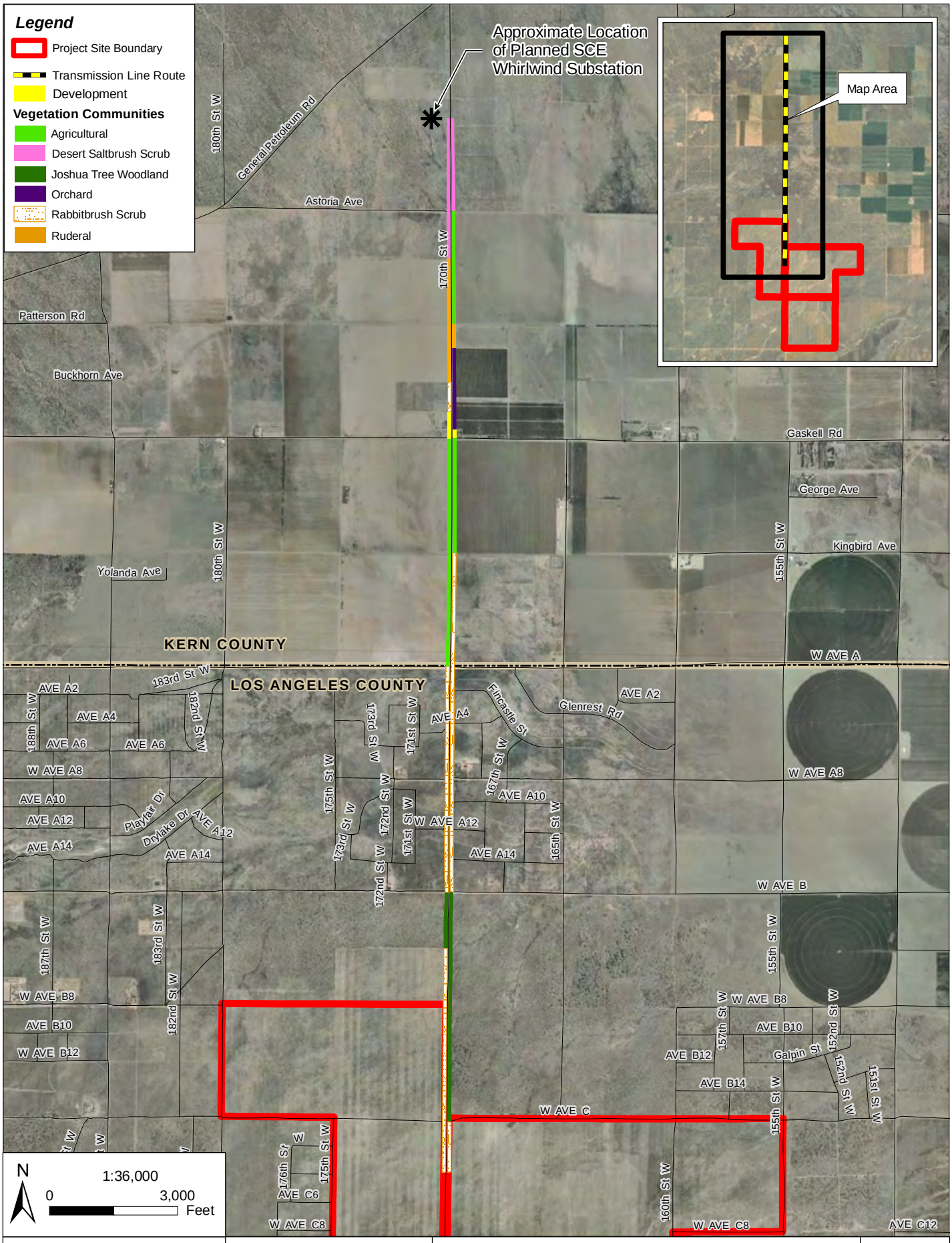


Image Source:
[1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [2] ESRI StreetMap USA (2007), [3] URS Field Surveys (2009).

AV Solar Ranch One Environmental Assessment

Figure 3.8-3. VEGETATION COMMUNITIES ALONG THE TRANSMISSION LINE ROUTE

2011

T:\FirstSolar\AVSR1_DOE_EA\deliverables\Fig3_8-2_VegetationCommunitiesAlongTransmissionLineRoute.mxd

primarily in the developed road ROW of 170th Street West in Los Angeles County and other human-converted land cover types in Kern County, use of the area by wildlife is limited. In natural habitats adjacent to the roadbed in Los Angeles County and in the desert saltbush scrub at the northern end of the route, use by common plants and wildlife is similar to that which occurs within the Project site. For a complete list of plants and wildlife observed along the transmission line route during biological field investigations, please refer to URS 2009b.

3.8.2.2.3 Protected and Special-status Species. Biological field surveys did not detect any special-status plants, and detected a total of 9 special-status wildlife species (all of which were birds), along the proposed transmission line route. Three of the species detected were judged to be migrants, based on the species' range and time of occurrence. Special-status wildlife detected along the proposed transmission line route included the chipping sparrow (migrant), lark sparrow, Lawrence's goldfinch, loggerhead shrike, prairie falcon, tricolored blackbird, western meadowlark, yellow warbler (migrant), and yellow-breasted chat (migrant). For descriptions of these species, including regulatory status and habitat requirements, please refer to Appendix D. No federally- or state-listed threatened or endangered species were observed during surveys of the proposed transmission line route. Because the location and conditions within lands along the transmission line route are substantially similar to those within the Project site, the list of species with potential to occur within the Project site is also applicable to the transmission line route (see Table 3.8-1).

3.8.2.2.4 Jurisdictional Waters and Streams. A formal delineation of waters of the U.S. (including wetlands) and CDFG-jurisdictional streambeds along the proposed transmission line did not reveal the presence of any jurisdictional waters or streambeds in this area. For additional information, refer to the jurisdictional delineation report in URS 2009b.

3.8.2.2.5 Wildlife Movement. Similar to the Project site, no regional wildlife movement corridors are known to exist on the floor of the western Antelope Valley in the vicinity of the proposed transmission line route. For a more detailed discussion of wildlife movement in the Project region, refer to URS 2009b.

3.8.2.2.6 Significant Ecological Areas. The off-site portion of the proposed transmission line route within Los Angeles County would parallel the boundary of SEA #60, but would be installed underground within the public road ROW of 170th Street West. The proposed transmission line route does not traverse or abut any designated SEA.

3.8.3 Environmental Consequences

3.8.3.1 Proposed Action

3.8.3.1.1 Construction.

Solar Generation Site.

Vegetation Communities. Construction of the proposed Project solar generation facility would involve the permanent and temporary removal of existing vegetation to facilitate installation of Project facilities. In addition, operation of the proposed solar arrays would result in modification of on-site habitats due to effects from shading, proposed vegetation management practices, and the excavation of stormwater infiltration basins to control stormwater runoff. The proposed Project would permanently remove 731 acres of existing habitats, and would modify an additional 1,206 acres for a total long-term impact to 1,937 acres of existing previously disturbed habitats on the Project site. Locations subject to permanent impacts from ground disturbance would be those that would be directly occupied by Project facilities (roads, buildings, solar panel foundations, fire breaks, etc.), and would not be vegetated following Project construction. Vegetation in temporarily disturbed areas would be allowed to recover after construction. However, within the Project site these areas would undergo a vegetation type conversion, typically from shrub-dominated rabbit brush scrub to grass and forb-dominated grassland/wildflower communities, due to ongoing vegetation management required for fire control. These areas would regain some level of habitat value as they undergo post-construction revegetation.

In areas where shading from solar arrays would occur and fuel management is proposed, solar radiation on the ground would be reduced and vegetation would be controlled by annual mowing, by the end of April, to a height of 6 inches or less for fire control purposes. This would allow the majority of native grasses and forbs the opportunity to seed before the vegetation is mowed. It is expected that the proposed vegetation management practices would lead to an increase in the density of annual grasses and forbs on-site, as the areas currently dominated by shrubs would likely be colonized by these species following removal of the shrubs. Although the natural vegetation communities within the Project site would be altered as a result of these impacts, the natural communities on the site have wide geographic distribution and are present throughout the Project region, and would persist in adjacent, undisturbed areas.

Construction of the proposed Project would permanently remove 79 acres of existing on-site wildflower field, and an additional 131 acres would be altered through habitat modification such as shading and ongoing vegetation management over the life of the Project. A total of approximately 210 acres of wildflower field would be subject to long-term impact on the Project site. This removal and modification of sensitive habitat would be mitigated through the Applicant-proposed on-site Habitat Enhancement and Vegetation Management Plan

(HEVMP) and off-site mitigation (as required by LA County CUP), as these measures would require the preservation and enhancement of wildflower field vegetation within the Project site and vicinity at a ratio of 1.5:1. Because the proposed facility would remove or modify a total of 210 acres of wildflower field vegetation, the Applicant-committed mitigation ratio would equal 315 acres. The proposed site layout would accommodate approximately 90 acres of wildflower field, and an additional 225 acres would be provided off-site. These measures are required by the approved Los Angeles County CUP for the Project and would be monitored and enforced by the Los Angeles County Department of Regional Planning. These County-required measures would result in a net increase of wildflower field vegetation in the Project vicinity.

As required by the CUP, the proposed Project would avoid the entire 7.3-acre Joshua tree recruitment area, and protect it with a buffer extending 50 feet from the nearest Joshua tree seedlings, resulting in a protected area 8.6 acres in extent.

Federally-listed Species. As described above, no federally-listed threatened or endangered species are known or suspected to occur within the Project site. Therefore, construction and operation of the Project would have no effect on these species. However, the golden eagle, which receives federal protection under the Bald and Golden Eagle Protection Act, may occasionally forage over the site. However, because the site is fairly remote from known eagle nesting locations, and because the floor of the Antelope Valley is very large and relatively homogeneous with respect to habitat structure, it is unlikely that eagles depend substantially on the on-site habitat for foraging. Thus, although development of the solar generation site would result in an incremental reduction in the extent of available foraging habitat for this species in the Antelope Valley, this reduction would probably not interfere substantially with normal feeding behavior given the relatively small area of habitat that would be impacted by the Project. Further, mitigation lands (as required by the CUP) that would be preserved in perpetuity to compensate for losses of habitat for grassland birds would also benefit the golden eagle, further reducing the Project's potential effect on this species.

State-listed Species. As stated previously, no CESA-listed species were detected during field surveys, and none are expected to occur on the Project site. Therefore, construction of the Project would be expected to have no effect on these species.

Other Special-status Wildlife. As stated previously, no CESA-listed species were detected during field surveys, and none are expected to occur on the Project site. Special-status wildlife that could be affected by Project construction are Blainville's horned lizard, and 15 bird species, including burrowing owl. Project-related injury or mortality of these species could potentially occur due to mechanical crushing or entombment during vegetation cutting and clearing, grading, installation of Project facilities, excavation of infiltration

basins, collisions with vehicles on access roads, exposure to excessive fugitive dust, and general disturbance due to increased human activity.

Blainville's Horned Lizard. Blainville's horned lizard is a ground-dwelling species with low mobility, and would be unable to escape from the threats described above. In addition to these impacts, Project ground disturbance may increase the susceptibility of the site to invasion by Argentine ants which outcompete and displace the native harvester ants that are the lizard's preferred food source. Project impacts relative to injury or mortality of Blainville's horned lizard during construction would be reduced to less than significant through implementation of Applicant committed measures, as required by LA County, including biological monitoring for the lizard, a worker environmental education program, and implementation of a capture and relocation program.

Burrowing Owl. The burrowing owl nests and roosts underground, and it is possible that adult and juvenile/nestling owls may be killed or injured, or eggs may be destroyed, by being crushed during construction-related ground disturbances. If construction occurs when nestlings are present, adult owls might have the ability to escape, but nestlings likely would not. In addition, disturbances from construction could potentially cause burrowing owls to abandon their nest burrows, leaving nestlings unattended and exposed to injury and mortality. Project construction could result in harm to owls through windblown dust in bare areas where vegetation has been cleared.

Applicant committed measures would require surveys and monitoring for sensitive nesting bird species during appropriate seasons, preventing destruction of burrows and prohibiting ground disturbance within 250 feet of active burrows, as recommended by the CDFG (1995) and California Burrowing Owl Consortium (1993) guidelines. These mitigation measures include:

- Biological monitoring during construction
- Development and implementation of a worker environmental awareness program
- Pre-construction nesting bird surveys
- Pre-construction wintering burrowing owl surveys
- Setbacks from active burrowing owl nests during construction
- Passive relocation of owls during the non-nesting season
- Development and implementation of a construction fugitive dust control plan

Other Sensitive Bird Species. Potential Project impacts to other sensitive bird species depends on the characteristics of the specific species and individuals. Adult birds are highly mobile, and may be able to avoid activities that could impact eggs or nestlings. Ground nests would be more susceptible to ground disturbing activities than those that nest in trees,

whereas tree nesting species would be more susceptible to tree clearing. Highly mobile adults would be more able to avoid impacts from windblown dust than less mobile juveniles or nesting birds. During the nesting season, impacts could potentially include destruction of nests (both on the ground and in vegetation) during ground clearing activities, injury or mortality of nestlings, injury or mortality of adult birds tending nests, and abandonment of active nests or nestlings due to construction disturbance. Impacts of this nature are inconsistent with the Migratory Bird Treaty Act, and must be avoided. Outside the nesting season, impacts to sensitive birds during construction would be limited to harassment and potential displacement of adult birds, and would be minimal due to the mobility of these individuals. Applicant-committed measures and compliance with the Migratory Bird Treaty Act would reduce potential impacts to sensitive bird species during the nesting season. These measures include:

- Biological monitoring during construction
- Development and implementation of a worker environmental awareness program
- Pre-construction nesting bird surveys
- Setbacks from active nests during construction
- Development and implementation of a construction fugitive dust control plan

***Wildlife Movement*.** While the Project solar generation site is not within an area identified as a large-scale habitat linkage (South Coast Wildlands 2008), many small and medium-sized wildlife species nonetheless move within and through the site, relying on on-site habitat and access to the site to satisfy biological requirements. Implementation of the proposed Project would entail the installation of chain-link fencing around the majority of the Project site. Applicant-committed measures would include wildlife permeable features in the fence to facilitate movement of small and medium sized animals through the site. Larger mammals would be able to avoid the site without significantly affecting their movement patterns.

***SEA Resources*.** Project solar generation facility construction would not directly impact either of the County designated SEAs in the site vicinity. Setbacks from Project facilities will avoid direct impacts; however, dust from construction, which can cause respiratory difficulties in animals and potentially affect plant physiology (e.g., photosynthesis), could cause indirect impacts. Development and implementation of the Construction Fugitive Dust Control Plan proposed by the applicant would reduce these impacts.

***230-kV Transmission Line Route*.**

***Vegetation Communities*.** Construction of the 230-kV transmission line would result in minimal net loss of natural vegetation. With the exception of Joshua tree woodland habitat, no sensitive habitat would be potentially impacted by the proposed 230-kV transmission line.

Underground installation of the portion of the transmission line within Los Angeles County would result in permanent loss of approximately 0.6 acre of mapped Joshua tree woodland habitat. However, no Joshua trees are located in the potentially impacted area and, thus, none would be impacted.

Federally-listed Species. As described above, no federally-listed threatened or endangered species are known or suspected to occur along the proposed transmission line route. Therefore, construction and operation of the Project would have no effect on these species. The golden eagle, which is not listed under the ESA but receives federal protection under the Bald and Golden Eagle Protection Act, would not be affected because the species is highly mobile, and because the extent of ground disturbance associated with construction of the transmission line would be minimal.

State-listed Species. As stated previously, no CESA-listed species were detected during field surveys, and none are expected to occur along the Project transmission line route. Therefore, construction of the 230-kV transmission line would be expected to have no effect on these species.

Other Special-status Wildlife. No burrowing owls or burrows suitable for this species were found along the transmission line route during protocol surveys in 2009 and supplemental surveys in 2010. Therefore, burrowing owls are not expected to occur in this area, and no impacts to the species are expected. In addition, it is very unlikely that Blainville's horned lizard would occur along the transmission line route, because this area is several miles north of the species' documented range. Thus, no impacts to the lizard are expected in this area.

Impacts to other special-status wildlife (birds) during construction of the transmission line would be similar to those that would occur within the Project solar generation site (discussed above), but would be reduced due to the smaller construction footprint and lower habitat quality along the transmission line route, which would decrease the probability for construction equipment to encounter sensitive species. The Applicant-committed measures described above would ensure compliance with the Migratory Bird Treaty Act.

Wildlife Movement. The proposed transmission line route does not intercept known wildlife movement corridors. Additionally, no fencing around the transmission line is proposed. Considering these factors, construction of the proposed transmission line is not likely to impact wildlife movement.

SEA Resources. The proposed transmission line route does not traverse a designated SEA, and construction-related impacts would therefore be limited to indirect effects. Because the transmission line is proposed to be buried within the road ROW of 170th Street West, and would largely be installed beneath the developed roadbed, installation of the line would involve only limited clearing of vegetated areas, and fugitive dust releases would be minimal.

However, as described above, Applicant-committed mitigation measures would further reduce this effect.

3.8.3.1.2 Operation.

Solar Generation Site.

Vegetation Communities. Once the Project enters the operational stage, the primary impacts to on-site vegetation communities would be due to the substantial alteration of natural habitats through shading from solar PV panels and vegetation management (e.g., mowing) activities.

Impacts to existing, previously disturbed, habitats during the operational phase would result from on-site vegetation management and fire control measures in accordance with Los Angeles County Fire Department requirements. Because the removal and modification of natural habitats would occur during the construction phase of the Project, on-going operations of the facility would not further remove additional habitat. Rather, Project operations would maintain the modified habitat state of grassland and wildflower field, inhibit the encroachment of brush, and restrict the spread of noxious weeds through active control measures.

Sensitive Wildlife.

Blainville's Horned Lizard. The primary operational impact to Blainville's horned lizards would be from the proposed annual vegetation management program. Shading from solar panel arrays, increased perching opportunities for ravens, and compaction of soils from vehicle traffic could adversely impact the lizard. Considering the amount of disturbance and activity on the site during the construction phase, it is very unlikely that Blainville's horned lizards would attempt to recolonize the site until after construction activities ceased. The post-construction population is expected to be very low, and concentrated toward the south end of the Project site, closest to the known limits of their range. Therefore, the chances of encountering a horned lizard during operational activities are also very low. Additionally, the acquisition of off-site land including wildflower field vegetation and other features that would provide habitat for the lizard, and installation of a "slack wire" on the perimeter fencing to discourage raven perching would reduce the Project's operational impacts.

Burrowing Owl. The proposed removal and modification of on-site habitats would render most of the site unsuitable for burrowing owls, particularly within the solar arrays and around Project. Therefore, permanent features of the Project pose relatively little threat of mortality and injury to burrowing owls, which would be largely absent on-site, except in the preserved areas around Drainages A and C and possibly elsewhere around the site perimeter. Increased perching opportunities for common ravens, known to prey on juvenile and even adult burrowing owls, would potentially pose a threat to the owls, particularly if they are

present near perimeter fences. However, the incorporation of the proposed "slack wire" along the top of the perimeter fence would discourage perching by common ravens thus lessening long-term mortality and injury impacts of the proposed Project.

Other Sensitive Bird Species. The proposed removal and modification of on-site habitats would render most of the site unsuitable, or only marginally suitable, for use by several of the sensitive bird species. Fire management activities could impact ground nesting species; however, annual nesting bird surveys prior to mowing of vegetation, as proposed by the Applicant, would reduce the potential for these impacts.

Wildlife Movement. During operations of the facility, applicant proposed wildlife permeable fencing would allow wildlife movement to continue through the Project site. The proposed fence design would facilitate movement of small and medium sized animals through the site. Larger mammals would be able to avoid the site without significantly affecting their movement patterns.

SEA Resources. Because of the low level of activity and noise associated with the solar facility operations, and proposed implementation of fugitive dust control measures, impacts of Project Operations on the adjacent SEAs would be minimal.

Transmission Line Route.

Vegetation Communities. Because the proposed transmission line within Los Angeles County would be buried, and would be entirely within the ROW of 170th Street West, no long-term effects on surrounding vegetation would result from operation of the line. Within Kern County, where the line would be installed above ground, short-term impacts to vegetation associated with maintenance of the line could be expected. These effects would be limited to the construction access pathways and would occur only infrequently.

Sensitive Wildlife. Because the proposed transmission line within Los Angeles County would be buried, and would be entirely within the ROW of 170th Street West, no long-term effects on sensitive wildlife would result from operation of the line. Within Kern County, occasional maintenance activities could potentially result in impacts to birds, particularly if conducted during the nesting season. The Applicant-committed measures described previously would reduce this impact and would ensure compliance with the Migratory Bird Treaty Act.

All overhead power line designs for the project would comply in all respects with the Avian Power Line Interaction Committee's (APLIC) "Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006." Also, the transmission design would follow the recommendations of APLIC's "Mitigating Bird Collisions with Power Lines: The State of the Art in 1994." Further, because the above-ground portion of the transmission line in Kern County would be only approximately 2.5 miles in length, and because the Project vicinity is

already traversed by several, much larger transmission line corridors, the Project's transmission line would not substantially increase the probability for eagles to be taken due to electrocution or collision with transmission lines.

***Wildlife Movement*.** As described previously, the proposed transmission line route does not intersect known wildlife corridors, and fencing is not proposed in this area. No impacts to wildlife movement would result from operation of the line.

***SEA Resources*.** Because the transmission line route does not pass through any areas designated as SEAs, and because any indirect impacts associated with maintenance would be minor, temporary, and infrequent, operation of the proposed transmission line would not significantly impact SEAs.

3.8.3.2 No Action Alternative

If the Project were not constructed, Project impacts to biological resources would not occur, including the expected beneficial impacts associated with acquisition and management of off-site mitigation lands under the proposed action.

3.9 CULTURAL RESOURCES

3.9.1 Regulatory Framework

The term "cultural resource" refers to a broad category of resources that includes prehistoric and historic archaeological sites, buildings, districts, structures, locations, or objects considered important to a culture or community for scientific, traditional, religious, or other reasons. Cultural resources deemed significant for their contribution to broad patterns of history, prehistory, architecture, engineering, and culture are listed on the National Register of Historic Places (NRHP) and afforded certain protections under the National Historic Preservation Act (NHPA). Regardless of age, cultural resources listed on or eligible for listing on the National Register are termed *historic properties*.

Because the Project may be funded in part through a DOE loan guarantee, it is a project subject to compliance with Section 106 of the NHPA of 1966, as amended (16 U.S.C. 470 *et seq.*). Section 106 regulations (36 CFR Part 800, as amended August 5, 2004) require federal agencies to consider the effects of their undertakings on historic properties, and consult with the State Historic Preservation Office (SHPO).

To be eligible for listing on the National Register, a property must be significant under one or more of the four evaluation criteria:

- ***Criterion A*:** Associated with events that have made a significant contribution to the broad patterns of our history.

- ***Criterion B*:** Associated with the lives of persons significant in our past.
- ***Criterion C*:** Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components might lack individual distinction.
- ***Criterion D*:** Yielded, or may be likely to yield, information important in prehistory or history.

In addition, a property must be able to convey its significance through the retention of specific aspects of integrity, such as location, design, setting, materials, workmanship, feeling, and association. In general, properties less than 50 years of age, unless of exceptional importance, are not eligible for listing on the National Register.

3.9.2 Affected Environment

Cultural resources include both prehistoric and historic resources and traditional use areas and sacred or religious resources used by contemporary Native American peoples.

A Phase I cultural resource study that was performed in 2009 (and supplemented in 2010) and research in support of this analysis was conducted at the South Central Coastal Information Center (SCCIC) at California State University Fullerton; the Southern San Joaquin Valley Information Center (SSJVIC) at California State University Bakersfield; the Natural History Museum of Los Angeles County (NHMLAC); and the Native American Heritage Commission (NAHC). This assessment included a review of published and unpublished literature.

Phase II testing and evaluation was performed for applicable resources in late 2010 by Statistical Research, Inc. (SRI).

3.9.2.1 Solar Generation Site

3.9.2.1.1 Cultural Resources Surveys. The Project would disturb the majority of the 2,100-acre solar generation facility site. As such, the area of potential effect (APE) for the Project includes the entire 2,100 acre facility site.

Phase I Intensive Surface Survey. Intensive pedestrian surveys were conducted in all areas within the APE. Ground visibility varied considerably throughout the APE, and though some portions had excellent visibility (>70 percent), much of the Project area had poor visibility (<10 percent) due to ground cover of short grasses, forbs, and desert scrub.

As a result of the Phase I survey of the proposed solar generation site, 21 archaeological sites and 43 isolates were identified and recorded (refer to Appendix C for tabular summaries). In

addition, four previously recorded archaeological sites within the APE were re-recorded so that their site records could be updated. Overall, 25 archaeological sites considered to be potentially significant were identified on the solar generation site as part of the Phase I survey. Of the 25 archaeological sites identified on the site, as part of the Phase I survey, 23 are prehistoric in age, and two are small historic artifact scatters. The prehistoric sites recorded within and near the Project area demonstrate a strong local settlement pattern composed of numerous relatively low density assemblages characterized by a limited range of artifact types, including groundstone, chipped stone tool production debris dominated by locally available rhyolite, and fire-affected rocks. Other artifact types are rare or absent. The emphasis on groundstone tools coupled with the low density and diversity of artifacts suggest the sites represent brief occupations focused on the collection and processing of seasonally available plant foods. The prevalence of rhyolite at the sites may indicate a link with the rhyolite quarries at Fairmont Butte located less than a mile southeast of the Project area (Sutton 1981).

Phase II Testing and Evaluation. A Phase II testing program was undertaken by SRI in November and December 2010 to evaluate the prehistoric archaeological sites identified in the Phase I cultural resources survey and to determine their eligibility for the NRHP and their significance under Section 106 of the NHPA. SRI identified one additional prehistoric site on the solar generation site during the Phase II testing program (i.e., total of 26 archaeological sites identified, 24 of which are prehistoric). A summary of the Phase II testing and evaluation follows.

Within the APE for the solar generation site, the Phase I investigation recorded a total of 26 sites. Two of these 26 sites (the Larsen Ranch and URS-MN-12) belong to the historical period, and the Phase I investigation report (URS 2010d) recommended them as ineligible for listing in the CRHR.

A Phase II testing plan was developed and performed to investigate the remaining 22 sites (Trampier et al. 2010). Phase II testing was intended to determine whether the sites contained intact, subsurface cultural deposits and to provide recommendations regarding CRHR and NRHP eligibility. During field work, SRI personnel discovered and recorded a new site, bringing the total to 24 sites. Following Phase II investigations, 3 sites (LAN-1777, LAN-1780, and LAN-3873 [URS-MN-6]) are recommended as NRHP- and CRHP-eligible, primarily because they contain subsurface features, evidence of site integrity, and promise for providing important, new information on Californian prehistory. These three sites are recommended eligible for listing in the NRHP and CRHR under criterion D of the NRHP and its CRHR counterpart, criterion 4. Each site is eligible primarily on the basis that it contains an intact subsurface feature and, therefore, exhibits integrity (for discussion, see Trampier et al. 2010:21−22). These sites exhibit multiple phases of use, including: lithic procurement and reduction, food processing, and/or subsurface thermal features. Each of these sites has yielded and has the potential to yield important information regarding California prehistory.

Based on these results of the Phase II investigation, a site-specific plan for Phase III resource avoidance or data recovery has been developed and forwarded to the SHPO for review and concurrence. This recovery plan includes a combination of open-area excavations and systematic, shallow backhoe trenching. Once the Section 106 compliance consultation with the SHPO is completed the Phase III plan for resource avoidance and/or data recovery, as applicable, will be finalized (planned completion date of June 2011).

***Historic Resources*.** The only structures on the Project solar generation site are clustered at a residential ranch area. The ranch house structures on the Project site, single story ranch style structures, were evaluated and it was determined that these are not deemed eligible for listing as a historic resource.

***Human Remains*.** A record search was conducted at the SCCIC to determine the presence of human remains within the proposed Project area. The search included a review of all recorded historic sites within a 0.5-mile radius of the proposed Project solar generation site, as well as a review of all relevant cultural resource and survey reports. In addition, a review of the USGS 7.5 minute series Fairmont Butte topographic quadrangle was completed, including a visual search for both the small and large cemetery icons.

The nearest cemetery to the proposed Project site is the Lancaster Cemetery, which is approximately 21 miles southeast of the Project site.

***Native American Consultation*.** As part of the research efforts undertaken for this Project, the NAHC was contacted to ascertain the presence of known sacred sites and/or the potential presence of Native American cultural resources within the Project solar generation site. A response from the NAHC indicated there was no known presence of such resources. Native American individuals and organizations potentially familiar with the Project site were contacted via mail and an on-site consultation with Native American representatives was conducted.

Issues raised by the Native American community included the need for Native American monitoring during Phase II or Phase III Archaeological Testing or Recovery, and Native American monitoring during all construction activities to assist in the discovery of potential for Native American burials or sacred sites, given the Project site's close proximity to Fairmont Butte. The issue of potential Project runoff impacts on known archaeological resources was also raised. (Note: Native American monitoring occurred during the Phase I and II testing programs, and is planned to occur during resource recovery and the construction phase. The proposed Project design, including drainage plan, would limit post-construction runoff to be essentially the same as pre-construction flows, thus no impacts to known [or unknown] archaeological resources would be expected to occur.)

3.9.2.2 230-kV Transmission Line Route

3.9.2.2.1 Cultural Resources Surveys. The area of potential effect (APE) for the Project includes the off-site transmission line route study area in northern Los Angeles and southern Kern County. In several locations in Kern County, the APE for the transmission line route was expanded, from approximately 100 feet to 200 feet or more to allow flexibility to accommodate final routing considerations, including SCE's existing transmission structures and requested point of connection into the Whirlwind Substation.

Phase I Intensive Surface Survey. Intensive pedestrian surveys were conducted in all areas within the APE. Similar to the solar generation site, ground visibility varied considerably throughout the APE, and though some portions had excellent visibility (>70 percent), much of the Project area had poor visibility (<10 percent) due to ground cover of short grasses, forbs, and desert scrub. The entire proposed off-site transmission route extending approximately 3.5 miles north along 170th Street West from the northern Project site boundary was surveyed.

One archaeological isolate, P-15-012781 has been recorded within the study area for the proposed off-site transmission line route. No new or previously recorded archaeological sites were found during the May 2009 literature review and archaeological surface survey of the route. The isolated artifact that had been previously recorded along the route was not relocated during the Phase I Cultural Resource Survey for the Project. During the supplemental survey of the expanded transmission line study area performed in March of 2010, a potential archaeological site (NL-NO Temp-1) was identified within the APE for the expanded study area (refer to Appendix C).

Phase II Testing and Evaluation. As described for the solar generation site, a Phase II testing and evaluation program was undertaken by SRI in November and December 2010, including the 230-kV transmission line. The Phase II testing and evaluation by SRI determined that the potential archaeological site (NL-NO Temp-1) identified as part of the Phase I survey effort within the APE for the transmission line is not an archaeological site and no further consideration is warranted. The Phase II testing and evaluation also concluded that the archaeological isolates identified during the Phase I survey are not eligible for the NRHP or CRHR.

3.9.2.2.2 Historic Resources. No historic resources were identified in the APE for the transmission line.

3.9.2.2.3 Human Remains. No known human remains were identified in the APE for the transmission line.

The nearest cemetery to the proposed transmission line is located over 21 miles away and is known as Lancaster Cemetery.

3.9.2.2.4 Native American Consultation. The Native American consultation undertaken for the Project 230-kV transmission line route is as discussed previously for the solar generation site.

3.9.3 Environmental Consequences

3.9.3.1 Proposed Action

To address potential impacts to NHRP eligible cultural resources, the Applicant has or will implement a number of measures. These measures include: evaluation of the NRHP eligibility of any cultural resources at the site (completed); provide for mitigation of any impacts to cultural resources determined eligible for the NHRP through data recovery or avoidance; and provide for monitoring during construction activities to address any previously undiscovered resources. These measures are included as Applicant Committed Measures in Appendix B.

The discussion of environmental consequences of Project development is provided below with the commitment by the Applicant that the Applicant Committed Measures in Appendix B have been or will be implemented.

3.9.3.1.1 Construction Phase Impacts.

Solar Generation Site. Virtually the entire Project site could be disturbed by Project construction activities and equipment installation. The 3 sites (LAN-1777, LAN-1780, and LAN-3873 [URS-MN-6]) that are recommended as eligible for the NRHP are located within interior portions of the proposed solar panel array field and cannot be avoided. These sites would be impacted by the proposed Project due to disturbance during site preparation (e.g., surface and near surface disturbance), subsurface pile foundation installation, equipment pad grading, and subsurface electrical conduit excavations. These eligible sites will be mitigated via Phase III data recovery in 2011 prior to construction in these areas.

Although the site has had a Phase II survey done, the proposed Project site has a small potential to contain undiscovered prehistoric sites that could include human remains. Should they exist, they could be disturbed, damaged or destroyed by ground disturbing construction activities, but implementation of Applicant Committed Measures in Appendix B are designed to further reduce any potential impacts to cultural resources.

Evaluation of the ranch house structure on the Project site has determined that it does not qualify for NRHP or CRHR listing, thus its demolition would not have an impact on historic resources.

230-kV Transmission Line Route. The literature search and Phase I cultural resources survey identified one potential archaeological site in the APE for the proposed off-site 230-

kV transmission line. This site was evaluated as part of the Phase II testing and evaluation and determined to not be an archaeological site. As with the solar generation site, vegetation obscured ground visibility during surveys in some areas, and aeolian and alluvial deposits may have buried currently unidentified cultural resources within the APE of the transmission line. Therefore, undiscovered cultural resources may exist in the APE along the off-site transmission line route, including tower foundation locations where subsurface disturbance would occur during construction.

Although the transmission line route has had a Phase II survey done, the proposed route has a small potential to contain undiscovered prehistoric sites that could include human remains. Should they exist, they could be disturbed, damaged or destroyed by ground disturbing construction activities, but implementation of Applicant Committed Measures in Appendix B would further reduce any potential impacts to cultural resources. No standing historic structures or built environment exists in the proposed transmission line corridor, and thus no impacts would occur associated with construction of the proposed off-site transmission line.

3.9.3.1.2 Operational Phase Impacts.

***Solar Generation Site*.** If previously undiscovered archaeological sites are discovered, avoided, and preserved during construction activities, they can be indirectly impacted by operational activities. Operations would increase the number of people in close proximity to archaeological resources and thus increase potential impacts from unauthorized artifact collection, looting, or other intentional or unintentional disturbance to an archaeological site. Implementation of the Applicant Committed Measures in Appendix B is designed to further reduce any potential impacts to previously undiscovered cultural resources.

No standing historic structures or built environment exists in the proposed Project area, and thus there would be no impacts during Project operations.

***230-kV Transmission Line Route*.** Operational phase activities for the off-site transmission line would be non-intrusive, and no impacts to previously undiscovered cultural resources would be expected to occur.

DOE determined that the proposed Project would have an adverse effect on three potentially eligible or listed Historic Properties. DOE, in accordance with Section 106 of the NHPA, sent a letter to the California SHPO on February 9, 2011 making an adverse effect determination.

DOE, in consultation with the California SHPO, has developed and executed a Memorandum of Agreement (MOA) and a Historic Properties Treatment Plan (HPTP). The MOA stipulates that the HPTP will be implemented to resolve the adverse effects on the three sites located within the project boundary (LAN-1777, LAN-1780, and LAN-3873 [URS-MN-6]). The HPTP explores these three sites in light of their potential contributions to questions of

regional settlement patterning, economic and subsistence strategy, and ethnic identity. Data requirements and methods for addressing these questions include hand- and machine-aided excavation and various laboratory analyses. The HPTP also provides an outline of reporting curation plans, Native American coordination, and a monitoring plan, as well as a tentative schedule and protocols for unanticipated discoveries, including human remains.

3.9.3.2 No Action Alternative

If the Project were not constructed, Project impacts to cultural resources would not occur. Other land uses that may occur on the site would likely have similar impacts to cultural resources.

3.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.10.1 Affected Environment

3.10.1.1 Socioeconomics

The Project is located within the unincorporated areas of Los Angeles and Kern counties, in the Antelope Valley. The Project site is currently undeveloped and has not been used for agricultural production since 2004. Portions of the off-site transmission line route cross lands that are used for agricultural production.

The Project region is generally characterized by a desert climate and rural character, with agricultural and military uses. The region is also planned for growth to accommodate for urban expansion needs for Southern California. During the year 2000 Census, populations in the Antelope Valley Planning Area, Los Angeles County, and Kern County were 66,800, 9,519,338, and 661,645, respectively (U.S. Census Bureau 2000). Residents in the Antelope Valley Planning Area, Los Angeles County, and Kern County are projected to increase to 243,015 (263.8 percent increase), 12,015,889 (26.2 percent growth), and 1,114,878 (68.9 percent increase), respectively, by 2030[6]. These population increases indicate that both locally and regionally, the proposed Project area is planned for substantial population growth.

According to the California Employment Development Department (EDD) Labor Market Information (LMI), Los Angeles and Kern counties experienced unemployment rates of 11.6 and 14.7 percent, respectively, in 2009 (EDD 2009). Based on EDD-LMI employment by industry data, the estimates of available construction positions in Los Angeles County were 127,600 jobs, and 14,700 jobs in Kern County. According to EDD-LMI, the total number of utility related positions in the Project region in June 2009 was 23,200 jobs (EDD 2009).

[6] Sources: LACDRP Antelope Valley Area Plan Update Background Report (April 2009); SCAG Adopted 2008 Regional Transportation Plan Growth Forecast (2008); KernCOG, 2000–2050 Kern County Population Projections (2009).

Fire protection legal enforcement services near the facility site are provided by the Los Angeles County Fire Department and Sheriff Department, respectively. The Kern County Fire Department and Kern County Sheriff Office provide services to the portion of the transmission line route in Kern County. The proposed Project would be using on-site groundwater and a septic tank and leachfield system for permanent workers (16); therefore, the proposed Project would not involve water and wastewater utility systems.

3.10.1.2 Environmental Justice

On February 14, 1994, President Clinton signed EO 12898, which directs each federal agency to "make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high or adverse human health effects of its programs, policies, and activities on minority populations and low-income populations." This environmental justice screening analysis assesses whether "the potentially affected community includes minority and/or low income populations." A minority and/or low-income population exist when the minority or low-income population exceeds 50 percent of the affected area's total population (Council on Environmental Quality 1997). Additionally, the screening analysis includes comparing the characteristics of the population residing near the proposed Project versus the population located within the county area surrounding the proposed Project site to determine whether the Project area contains a meaningfully greater minority or low-income population percentage with respect to the general population[7].

The facility site is located within Census Tract 9012.03 in Los Angeles County, and the proposed transmission line extends into Census Tract 55.06 in Kern County. The demographic characteristics of the Project area (facility site and transmission line) are provided in Table 3.10-1. As shown, the Project site area (i.e., Census Tract 9012.03) does not exceed 50 percent minority, and has a substantially smaller minority population in comparison with Los Angeles County as a whole. The Project site area also does not exceed a 50 percent poverty rate, and is experiencing lower poverty levels than the County.

The portion of the transmission line in Kern County is located in Census Tract 55.06. As shown in Table 3.10-1, the transmission line Project area is less than 50 percent minority, and also has a smaller minority population with respect to Kern County. The transmission line Project area has less than a 50 percent poverty level, and is also experiencing lower poverty rates than Kern County.

[7] In accordance with the Council of Environmental Quality "Environmental Justice Guidance Under the National Environmental Policy Act" (December 1997) and the USEPA "Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analysis" (April 1998) (USEPA 1998), the appropriate unit of geographic analysis with respect to the affected area (i.e., Project area) was selected to be Los Angeles and Kern counties.

TABLE 3.10-1
DEMOGRAPHIC CHARACTERISTICS IN PROJECT AREA, LOS ANGELES AND KERN COUNTIES, AND STATE OF CALIFORNIA

	Census Tract 9012.03	Los Angeles County	Census Tract 55.06	Kern County	State of California
Total Population	1,482	9,519,338	4,885	661,645	33,871,648
Demographic Characteristics (Race and Ethnicity)					
White alone	75.4%	48.7%	66.4%	61.6%	59.5%
Black or African-American alone	3.1%	9.8%	2.5%	6.0%	6.7%
American Indian/Alaska Native alone	0.9%	0.8%	1.4%	1.5%	1.0%
Asian alone	2.8%	11.9%	1.4%	3.4%	10.9%
Native Hawaiian and Other Pacific Islander	0.2%	0.3%	0.2%	0.1%	0.3%
Some other race	0.5%	23.5%	0.1%	23.2%	16.8%
Two or more races	2.3%	4.9%	2.7%	4.1%	4.7%
Hispanic or Latino	14.8%	44.6%	25.4%	38.4%	32.4%
Total of individuals below poverty level	14.7%	17.9%	15.8%	20.8%	14.2%

Source: U.S. Census Bureau. Profile of General Demographic Characteristics: 2000 (DP-1) and Profile of Selected Economic Characteristics: 2000 (DP-3). Accessed December 3, 2009.

The demographic characteristics of Census Tracts 9012.03 (Los Angeles County) and 55.06 (Kern County) have no minority or poverty populations exceeding 50 percent and no minority or poverty populations that would be considered meaningfully greater than the Project region, because the percentages of minority and poverty populations in the Project area are lower than the Project region (i.e., Los Angeles and Kern counties).

In summary, the pertinent demographic data indicate that the area where the proposed Project is located does not have the potential for disproportionately high and adverse effects on minority or low-income populations.

3.10.2 Environmental Consequences

3.10.2.1 Proposed Action

3.10.2.1.1 Socioeconomics.

Construction. Under the proposed action, direct and indirect beneficial impacts on social and economic conditions would occur as a result of additional job opportunities.

During peak construction periods, the Project would be expected to provide up to 453 jobs. Based on the large, available workforce in the Project region (Los Angeles and Kern counties), it is expected that a sufficient regional workforce exists in these counties to serve the Project construction workforce needs, and workers would not be anticipated to relocate into the Project area during construction. An economic benefit from employment by the Project would be expected to occur in both Los Angeles and Kern counties. Workers who do not commute will likely use available hotel and temporary lodging accommodations in local areas. As a result, the Project would not be expected to significantly affect local population and/or housing.

***Operation*.** Long-term benefits include 16 full-time jobs for operations and maintenance. Additional beneficial impacts are anticipated as a result of indirect spending and job creation in local communities. Based on local workforce data, the Project is anticipated to hire permanent employees from the available regional workforce, and as a result, workers would generally not be expected to need to relocate to the Project area. In the event that some permanent workers do relocate, based on small long-term employment, the Project is not expected to directly or indirectly significantly impact local population, housing, public and utility services, and the overall income and employment levels.

3.10.2.1.2 Environmental Justice. The demographic characteristics of Census Tracts 9012.03 (Los Angeles County) and 55.06 (Kern County) have no minority or poverty populations exceeding 50 percent, and no minority or poverty populations meaningfully greater than the Project region (i.e., Los Angeles and Kern counties). As a result, the proposed action would not result in disproportionately high and adverse impacts on low-income or minority populations and therefore, would not result in environmental justice impacts.

3.10.2.2 No Action Alternative

If the Project were not constructed under the No Action Alternative, no socioeconomic and environmental justice impacts, including beneficial job creation, would occur from the Project.

3.11 PUBLIC HEALTH AND SAFETY

3.11.1 Regulatory Framework

The Occupational Safety and Health Act of 1970 recognized that personal injuries and illnesses incurred in a work setting result in reduced productivity, wage loss, and medical expenses. As a result of the act, the Occupational Safety and Health Administration was established to ensure the health and safety of workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health (29 CFR Part 1910).

Occupational health and safety standards for construction and operation workers are protected through California's regulations for occupational safety and health (California Code of Regulations [CCR] Title 8), which incorporate the federal Occupational Safety and Health Act (29 USC 651 et seq.).

The Resource Conservation and Recovery Act (RCRA) of 1976 charges the EPA with controlling the generation, transportation, treatment, storage, and disposal of hazardous waste (42 U.S.C. 6901 *et seq.*). RCRA also promulgated a framework for the management of nonhazardous solid wastes. The 1986 amendments to RCRA enabled the EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.

Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that could endanger public health or the environment.

CERCLA also enabled the revision of the National Contingency Plan, which provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The National Contingency Plan also established the National Priorities List. CERCLA was amended by the Superfund Amendments and Reauthorization Act on October 17, 1986, which included several changes and additions to the program.

3.11.2 Affected Environment

3.11.2.1 Solar Generation Site

The proposed action would be implemented in compliance with applicable construction and operational worker health and safety standards.

Construction sites are high-risk environments involving many opportunities for falls, trips, impacts, exposure to hazardous materials, and other injuries. The proposed Project would involve the use of minimal amounts of hazardous materials during the construction and operations phases. During construction, the disturbance of potentially contaminated soils introduces a risk of hazardous material exposure. A Phase I Environmental Site Assessment (ESA) performed to applicable ASTM standards for the Project identified several potential hazards on the Project site including several small areas of near surface soil hydrocarbon contamination, and an on-site abandoned oil well that may have not been abandoned properly. The Phase I ESA also identified that the on-site residential structures to be removed as part of the Project may contain asbestos-containing materials (ACM) and/or lead-based paint (LBP). The Phase I ESA involved searches of available databases (in accordance with

ASTM E 1527-05) and no record of known contamination was found at the proposed facility site. Subsequent to the Phase I ESA, a pre-demolition survey for ACM and LBP for 10 buildings on the Project site (Larsen Ranch residences and farm structures) verified the existence of friable and non-friable ACM and LBP in some of the buildings.

Hazardous materials used for Project construction will be typical of most projects, and will include gasoline, diesel fuel, oils, lubricants, solvents, spent batteries, and waste welding materials. Construction hazardous materials will be managed according to a Hazardous Materials Management Program (HMMP), which would address: hazardous materials handling, use, storage, and transport; emergency release and response procedures; spill control and prevention; employee training; fueling and maintenance of equipment; and recordkeeping and reporting.

Construction sites can also pose a safety hazard for members of the general public who gain unauthorized access to the site. As a result, the facility site will be fenced with a minimum 7-foot-tall, chain link security fence with 1 foot of barbed wire or razor wire on top (i.e., 8-foot total height) to discourage access by the public. Controlled access gates will be located at the Project entrance and security patrols of the site will be performed on regular basis during the construction phase.

Operations workers at the completed Project would not be working with hazardous materials on a daily basis. Limited quantities of hazardous materials (e.g., oils, lubricants, paints, solvents, degreasers, cleaners, PM200 fire suppressant, and transformer dielectric oil [mineral oil]) will be used and stored on-site for operation and maintenance. The on-site hazardous materials would be managed according to an Operations HMMP.

Lighting will be provided at the O&M building and the main plant access road only. The facility site will be staffed 24 hours per day, seven days per week. This staff will include full time security, and regular security patrols will be conducted throughout the site. A perimeter security system may also be installed as necessary.

3.11.2.2 230-kV Transmission Line Route

The proposed 230-kV transmission line would be located within, or on private land adjacent to, the public road right-of-way of 170th Street West. Several residences (refer to Figure 3.5-1) are located near the route.

The proposed 230-kV transmission line would meet the requirements of the California Public Utilities Commission (CPUC), General Order (GO) No. 95, Rules for Overhead Electric Line Construction. This design code addresses shock hazards to the public by providing guidelines on minimum clearances to be maintained for practical safeguarding of persons during the installation, operation, or maintenance of overhead transmission lines and their associated

equipment. Compliance with the requirements of CPUC GO 95 would limit potential Project-related electric shock hazards to acceptable levels.

The Applicant has committed to managing the electric and magnetic field (EMF) strengths associated with the proposed 230-kV transmission line by constructing the transmission facilities in accordance with the requirements of CPUC GO 95, GO 52 (Rules for Construction and Operation of Power and Communication Lines for the Prevention or Mitigation of Inductive Interference), and GO 131-D (Rules for Planning and Construction of Facilities for the Generation of Electricity and Certain Electric Transmission Facilities), as applicable. Compliance with these requirements would limit potential EMF levels from Project facilities to levels that are consistent with CPUC policies which consider protection of public health.

3.11.3 Environmental Consequences

3.11.3.1 Proposed Action

3.11.3.1.1 Solar Generation Site. The Phase I ESA performed on the subject property determined that the Project site has not been identified on federal, state, or local databases for significant contamination. The Phase I ESA did indicate the potential for soil contamination associated with past agricultural and oil exploration activities, and a pre-demolition survey has confirmed the presence of asbestos containing materials and lead-based paint occurring in the farm residential structures. There is also the potential need to re-abandon an old oil exploration well that may be present on the site and, if present, may not have been abandoned to current standards. The Applicant is committed to addressing and remediating these potential hazards to the approval of oversight agencies.

Construction of the facility site would generate dust, which may potentially increase risk of Valley Fever contraction in the workers. The Project would apply several measures (Fugitive Dust Control Plan, dust plume response, worker training and issuance of dust masks) to minimize the risk of worker exposure to Valley Fever.

Operation of the Project would not produce hazardous materials or significant air emissions. Hazardous materials used and stored on-site will be handled as required by applicable regulations. Additionally, the site would be staffed 24 hours a day, 7 days a week, and would include fulltime security to conduct regular security patrols throughout the site.

The PV modules use a CdTe technology, and the cadmium in the PV modules is in the environmentally stable form of a compound rather than a metal (National Renewable Energy Laboratory http://www.nrel.gov/pv/cdte/). Moreover, the CdTe compound is encapsulated in the PV module (National Renewable Energy Laboratory http://www.nrel.gov/pv/cdte/). Also, a CdTe PV module contains very little cadmium, as it consists of less than 0.1 percent

cadmium by weight. An 8-square-foot area of a CdTe panel contains less cadmium than one size-C NiCd flashlight battery.

Several peer-reviewed studies have evaluated the environmental, health, and safety (EHS) aspects of CdTe PV panels. These studies have consistently concluded that during normal operations, CdTe PV panels do not present an environmental risk (French MEEDAT 2009). Specifically, it has been demonstrated that there are no cadmium emissions to air, water, or soil during standard operation of CdTe PV systems (French MEEDAT 2009).

CdTe releases are unlikely to occur during accidental breakage (Fthenakis 2004). Furthermore, studies have been conducted of the panels when the stability of the encapsulation is jeopardized such as if a broken panel was exposed to fire. These studies indicate that even these events result in negligible cadmium emissions, most likely because CdTe has a very high melting temperature of 1,041^{o}C (Brookhaven National Laboratory 2005).

Disposal risks of cadmium are minimized because of the encapsulation within the panel and because the cadmium can be effectively recycled at the end of the panel's 25- to 30-year life. The PV module manufacturer for this Project has established the industry's first comprehensive, prefunded module collection and recycling program. The program is designed to maximize the recovery of valuable materials for use in new modules or other new products and minimize the environmental impacts associated with PV system production. Approximately 90 percent of each collected PV module can be recycled into new products, including new PV modules. In addition, today's CdTe PV modules pass federal (TCLP-RCRA) leaching criteria for non-hazardous waste (Fthenakis 2002) and would not pose a risk for cadmium leaching if placed in a landfill.

The proposed Project construction and operation activities are subject to Cal-OSHA worker protection and proper hazardous materials management, and with incorporation of the Applicant committed measures (Appendix B), the Project is expected to have minimal effects on public health and safety. During operation, the Project does not produce hazardous materials or significant air emissions, and would have very limited risk of accidents or upset conditions.

Intentional Destructive Acts. Solar generation projects can be the subject of intentional destructive acts ranging from random vandalism and theft to sabotage and acts of terrorism intended to disable the facility. Acts of vandalism and theft are far more likely to occur than sabotage or terrorism. Theft usually involves equipment at substations and switchyards that contain salvageable metal when metal prices are high. Vandalism usually occurs in remote areas and is more likely to involve spontaneous acts such as shooting at equipment.

Pursuant to DOE's policy set out in a December 1, 2006, memorandum, "Need to Consider Intentional Destructive Acts in NEPA Documents," DOE has considered the potential

environmental consequences of intentional destructive acts at the Project site. DOE concludes that the risk of damage to the proposed Project from intentional destructive acts would be considered very low, in line with or less than the risk to similar generation facilities in the U.S. Theft or opportunistic vandalism is more likely than sabotage or terrorist acts, which are considered to be a negligible risk.

As indicated above, in order to keep the Project infrastructure secure from threats from intentional destructive acts, the Project site would be physically secured and staffed. Furthermore, uncontrolled access would be prevented through the use of access controls. The State's 2008 adoption of Assembly Bill 844, which increases the level of accountability in junk dealer and recycler operations, has resulted in a reported decline of material theft in the Project area (Kern County 2009).

Protection of widely dispersed electrical generation equipment and miles of transmission lines from destructive acts is not practical. Damaged equipment and transmission lines may be quickly repaired or replaced in the same manner that storm damaged equipment are returned to service. The results of any such acts could be expensive to repair, but no substantial impacts to continued electrical service would be anticipated.

3.11.3.1.2 <u>230-kV Transmission Line Route</u>. Construction of the transmission line route has the potential to uncover contaminated soils during earth disturbance activities. The Applicant is committed to implementing a soil management plan to manage contaminated soil if encountered. The Plan would include proper identification, assessment, removal, and disposition of impacted soil.

The transmission line would be constructed in accordance with applicable requirements in California Public Utility Commission (CPUC) GO 95 (Rules for Overhead Electric Line Construction), GO 52 (Rules for Construction and Operation of Power and Communication Lines for the Prevention or Mitigation of Inductive Interference), and GO 131-D (Rules for Planning and Construction of Facilities for the Generation of Electricity and Certain Electric Transmission Facilities), such that operation of the transmission lines would result in reduced hazards (i.e., EMF levels and shock hazards) that are consistent with CPUC policies for protection of public health.

3.11.3.2 <u>No Action Alternative</u>

If the Project were not constructed under the No Action Alternative, no public health and safety impacts would occur from the Project.

3.12 TRANSPORTATION

The study area for the traffic and access analysis includes the immediate vicinity of the proposed Project area and the surrounding local and regional circulation system, which could

be affected by traffic generated by the proposed Project during construction and operation of the solar generation facility and the 230-kV transmission line.

3.12.1 Affected Environment

3.12.1.1 Solar Generation Site

3.12.1.1.1 Roadway Network. The proposed Project solar generation site is located on SR-138 between Interstate 5 (I-5) on the west, and State Route 14 (SR-14) on the east. A regional vicinity map is presented on Figure 2-1. The Project site occupies an area both north and south of SR-138 as shown on Figure 2-2.

I-5 is a major north-south interstate freeway through Los Angeles County located 22 miles west of the Project site. The Antelope Valley (AV) Freeway or SR-14 is a north/south regional roadway approximately 15 miles east of the Project site. SR-138 is an east/west oriented regional facility that traverses and provides direct access to the Project site. SR-138 generally runs east-west from SR-14 to the I-5 Freeway with one travel lane in each direction.

In the immediate vicinity of the Project site, 170th Street West is a north/south local roadway that provides the primary north-south access to the proposed Project site from SR-138. This street is currently configured with 1 travel lane in each direction. Alternate access to the solar generation site is provided by 160th Street West, also a north/south local roadway. The north and south segments of 160th Street West at SR-138 are currently unpaved.

3.12.1.1.2 Existing Traffic Conditions. The traffic data collected in 2009 for the traffic study (URS 2010a) included 24-hour roadway segment counts and a.m. and p.m. peak hour study intersection counts which were used in the traffic impact analysis. For analysis purposes, peak hour data were collected during the 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m. peak hours. These peak hours are the standard adjacent street traffic peak hours used in the Institute of Transportation Engineers (ITE) Trip Generation Manual and the majority of traffic analyses. The traffic analysis focuses on existing and future (with Project) levels of service (LOS) at pertinent roadways and intersections.

Based on the results of the traffic study field review, a total of 9 key study area intersections and 6 roadway segments were identified for analysis in the traffic study. The existing conditions at each of the applicable intersection and roadway segments are presented in Tables 3.12-1 and 3.12-2, respectively. As shown in Tables 3.12-1 and 3.12-2, all of the intersections and roadways considered in the traffic study are currently operating at LOS A or B.

TABLE 3.12-1
PEAK HOUR INTERSECTION LEVEL OF SERVICE RESULTS, EXISTING CONDITIONS[1]

	A.M. Peak Hour		P.M. Peak Hour	
Intersection	LOS[2]	Average Delay (Seconds/Vehicle)	LOS[2]	Average Delay (Seconds/Vehicle)
State Route 14 NB ramps/State Route 138	A	9.1	A	9.6
State Route 14 SB ramps/State Route 138	A	9.4	A	9.4
90th Street West/State Route 138	B	10.5	B	11.1
110th Street West/State Route 138	A	10.0	B	10.1
160th Street West/State Route 138	A	0.0	A	0.0
170th Street West/State Route 138	A	9.7	B	10.3
La Petite Avenue/State Route 138	A	9.2	A	9.4
270th Street West/State Route 138	A	0.0	A	7.4
Ridge Road/State Route 138	A	7.4	B	10.3

1 Source: URS 2010a (Traffic Impact Analysis Report).

2 LOS = Level of service.

Notes:
Unsignalized intersections – LOS calculated in delay (seconds).
All intersections are unsignalized two-way stop controlled. SR-138 is the major roadway.
NB = northbound; SB = southbound.

3.12.1.2 230-kV Transmission Line Route

The proposed 230-kV transmission line route parallels the public road ROW of 170th Street West to interconnect to SCE's planned Whirlwind Substation (refer to Figures 2-1 and 2-2). The descriptions of the existing roadway network and traffic conditions for the solar generation site in Section 3.12.1.1 are also applicable to the 230-kV transmission line located to the north of the site since the access routes are the same for the site and transmission line. As shown in Table 3.12-1, 170th Street West is currently operating at LOS A at the intersection of SR-138 to the south of the proposed transmission line route.

3.12.2 Environmental Consequences

3.12.2.1 Proposed Action

3.12.2.1.1 Solar Generation Site.

Project-related Traffic Characteristics. Based on the proposed solar generation site development plan, the traffic analysis assumed that the intersection of SR-138/170th Street West would be used as the primary access point to the Project site. It was assumed that during initial stages of Project construction, all projected construction traffic would access

TABLE 3.12-2
ROADWAY SEGMENT LEVEL OF SERVICE RESULTS, EXISTING CONDITIONS

Roadway	Segment	Cross-section Classification	Time Period	Traffic Volume	Level of Service (A.M./P.M.)
I-5	North of SR-138	Freeway	Daily	71,000[1]	B/B[2,3]
SR-14	South of SR-138	Freeway	Daily	37,500[1]	B/B[2,3]
SR-14	North of SR-138	Freeway	Daily	36,000[1]	B/B[2,3]
SR-138	East of 170th Street West	2-lane collector	a.m./p.m.	151/210[4]	B/B[4]
170th Street West	North of SR-138	2-lane collector	a.m./p.m.	19/23[4]	A/A[4]
170th Street West	South of SR-138	2-lane collector	a.m./p.m.	6/8[2]	A/A[4]

[1] Average Daily Traffic (ADT).

[2] ADT volumes were converted to a.m./p.m. peak hours volumes using K and D factors obtained from Caltrans Traffic Data Branch website. http:/traffic-counts.dot.ca.gov.

[3] Peak Hour LOS.

[4] Peak Hour Volume.

the Project site north of SR-138 and later in the development schedule all construction traffic would access the Project site to the south of SR-138. These assumptions present a worst-case traffic assessment scenario since it is assumed the entire peak construction workforce and associated truck deliveries would be accessing either the Project area north of SR-138 or south of SR-138 at one particular time.

The traffic impact analysis evaluated both peak Project construction and Project operations scenarios. Based on the anticipated higher number of trips during peak Project construction, the peak construction trip generation is considered the worst case condition. Table 3.12-3 shows the peak Project construction trip generations.

Table 3.12-4 shows the forecasted Project operations trip generation after construction and represents the normal day-to-day operational trips at the Project site. Additional operations-related trips, including material deliveries and maintenance trips at the Project site, are anticipated to be minimal and infrequent.

Analysis Methodology and Guidelines. The traffic analyses conducted for this study were performed in accordance with County of Los Angeles traffic impact analysis guidelines, Los Angeles County CEQA guidelines, and the Los Angeles County Congestion Management Program (CMP) requirements. Detailed information on intersection analysis methodologies, standards, and thresholds are discussed in the Traffic Impact Analysis Report (URS 2010a).

Level of Service is an indicator of operating conditions on a roadway or at an intersection and is defined in categories ranging from A to F. LOS A indicates free-flowing traffic and

TABLE 3.12-3
PEAK PROJECT CONSTRUCTION TRIP GENERATION

Category	Actual Number of Vehicles	Daily Trips (One-way Trips)	A.M. Peak-hour Trips (7:00 A.M. – 9:00 A.M.)		P.M. Peak-hour Trips (4:00 P.M. – 6:00 P.M.)		Non-peak-hour Trips	
			In	Out	In	Out	In	Out
On-site management and staff (individual vehicles)[1]	46	92	46	0	0	46	0	0
Construction and manufacturing workers[1]	407	814	407	0	0	407	0	0
Construction deliveries[2,3]	15 (45 PCE)[2,3]	90[2,3]	14	9	9	14	22	22
Total trips	498	996	467	9	9	467	22	22

1 On-site Management and Staff will use 46 individual vehicles (92 daily round trips) during Peak Project Construction Month in Year 2013. Based on the information provided by the Project proponent, there will be 407 construction and manufacturing workers (i.e., total of 453 management/staff and construction workers). It is assumed conservatively that all the workers and staff trips will enter and exit the site during morning and evening peak-hours, respectively.

2 Construction Deliveries were converted to Passenger Car Equivalent (PCE), assuming 1 Truck equal to 3 Passenger Cars, 15 Trucks = 45 PCE.

3 Approximately 30 percent of the Construction Deliveries are assumed to enter the site during the morning peak-hour and approximately 20 percent of the Construction Deliveries are assumed to exit the site during the morning peak hours. Approximately 20 percent of the Construction Deliveries are assumed to enter the site during the evening peak hours and approximately 30 percent of the Construction Deliveries are assumed to exit the site during the evening peak hour. The remaining 50 percent of the truck trips are assumed to occur during the off-peak hours of the day.

TABLE 3.12-4
PEAK PROJECT OPERATIONS TRIP GENERATION

Description	Daily Round Trips	A.M. Peak-hour Trips		P.M. Peak-hour Trips	
		In	Out	In	Out
Operational workforce[1]	32	16	0	0	16
Total trips	32	16	0	0	16

1 Approximately 32 daily round trips for 16 workers are expected during the operations period.

LOS F indicates substantial congestion with stop-and-go traffic and long delays at intersections. An explanation of LOS levels is provided in Table 3.12-5.

There are no signalized intersections in the Project study area and traffic levels associated with the proposed Project do not warrant the installation of new signals at existing intersections. No analysis of signalized intersections was performed for this Project.

TABLE 3.12-5
LEVEL OF SERVICE DESCRIPTIONS

Level of Service	Description of Operation
A	Describes primarily free-flow conditions at average travel speeds. Vehicles are seldom impeded in their ability to maneuver in the traffic stream. Delays at intersection are minimal.
B	Represents reasonably unimpeded operations at average travel speed. The ability to maneuver in the traffic stream is slightly restricted and delays are not bothersome.
C	Represents stable operations, however, ability to change lanes and maneuver may be more restricted than LOS B and longer queues are experienced at intersections.
D	Congestion occurs and a small change in volumes increases delays substantially.
E	Severe congestion occurs with extensive delays and low travel speeds occur.
F	Characterizes arterial flow at extremely low speeds and intersection congestion with high delays and traffic queuing.

Unsignalized intersections, including two-way and all-way stop controlled intersections were analyzed using the 2000 Highway Capacity Manual (Section 10) unsignalized intersection analysis methodology. The LOS for a two-way stop controlled (TWSC) intersection is determined by the computed or measured control delay and is defined for each minor movement.

The County of Los Angeles considers LOS D or better during the a.m. and p.m. peak hours to be the maximum acceptable intersection LOS. This is consistent with the approach outlined in the Los Angeles County CMP. The traffic impact analysis presented herein uses this criterion (i.e., LOS D or better) for determining the significance of Project traffic levels.

Based on the Caltrans Guide for the Preparation of Traffic Impact Studies, "Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State Highway Facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the target LOS. If an existing State highway facility is operating at less than the appropriate target LOS, the existing LOS should be maintained."

Construction Traffic Impact Analysis. The traffic impact study determined that the proposed Project will not contribute a significant impact at the study area intersections during the construction phase of the proposed Project. Table 3.12-6 shows the intersection LOS and average delay results of Future (2013) No Project conditions used as baseline in evaluating Project construction impacts. Table 3.12-7 shows the intersection LOS and average delay results during the Future (2013) peak Project construction conditions. All intersections are anticipated to operate at acceptable levels of service (LOS C [stable operations] or better) during the Project construction phase.

TABLE 3.12-6
PEAK HOUR INTERSECTION LEVEL OF SERVICE RESULTS, YEAR 2013 NO PROJECT CONDITIONS[1]

	A.M. Peak Hour		P.M. Peak Hour	
Intersection	LOS	Average Delay (Seconds/Vehicle)	LOS	Average Delay (Seconds/Vehicle)
State Route 14 NB Ramps/State Route 138	A	9.3	A	9.8
State Route 14 SB Ramps/State Route 138	A	9.6	A	9.6
90th Street West/State Route 138	B	11.0	B	11.7
110th Street West/State Route 138	B	10.2	B	10.4
160th Street West/State Route 138	A	9.7	B	40.0
170th Street West/State Route 138	A	10.0	B	10.6
La Petite Avenue/State Route 138	A	9.3	A	9.6
270th Street West/State Route 138	A	9.3	A	7.4
Ridge Road/State Route 138	A	7.4	B	10.6

Source: URS 2010a.
Notes:
Unsignalized intersections – LOS calculated in delay (seconds).
All intersections are unsignalized two-way stop controlled. SR-138 is the major roadway.

TABLE 3.12-7
PEAK HOUR INTERSECTION LEVEL OF SERVICE RESULTS, FUTURE (2013)

	A.M. Peak Hour		P.M. Peak Hour	
Intersection	LOS	Average Delay (Seconds/Vehicle)	LOS	Average Delay (Seconds/Vehicle)
State Route 14 NB Ramps/State Route 138	B	13.5	B	10.0
State Route 14 SB Ramps/State Route 138	B	12.7	B	10.2
90th Street West/State Route 138	C	18.0	C	17.8
110th Street West/State Route 138	B	14.3	B	14.6
160th Street West/State Route 138	B	13.7	B	13.7
170th Street West/State Route 138 (north only)	C	17.0	C	22.0
170th Street West/State Route 138 (south only)	C	15.1	C	16.6
La Petite Avenue/State Route 138	A	9.7	B	10.4
270th Street West/State Route 138	A	9.8	A	7.7
Ridge Road/State Route 138	A	7.7	B	11.6

Source: URS 2010a.
Notes:
Unsignalized intersections – LOS calculated in delay (seconds).
All intersections are unsignalized two-way stop controlled. SR-138 is the major roadway.

The traffic impact study determined that the proposed Project would not contribute a significant impact at the study area roadway segments during the construction phase of the proposed Project. Table 3.12-8 shows the roadway LOS results of Future (2013) No Project conditions used as baseline in evaluating Project Construction impacts. Table 3.12-9 shows the roadway LOS results during the Future (2013) peak Project construction conditions. All roadway segments are anticipated to operate at acceptable levels of service (LOS C or better) during the Project construction phase.

TABLE 3.12-8
ROADWAY SEGMENT LEVEL OF SERVICE RESULTS,
YEAR 2013 NO PROJECT CONDITIONS

Roadway	Segment	Cross-section Classification	Time Period	Traffic Volume	Level of Service (A.M./P.M.)
I-5	North of SR-138	Freeway	Daily	80,200[1]	B/B[3,4]
SR-14	South of SR-138	Freeway	Daily	42,375[1]	B/B[3,4]
SR-14	North of SR-138	Freeway	Daily	40,680[1]	B/B[3,4]
SR-138	East of 170th Street West	2-lane collector	a.m./p.m.	177/246[2]	B/B[4]
170th Street West	North of SR-138	2-lane collector	a.m./p.m.	22/27[2]	A/A[4]
170th Street West	South of SR-138	2-lane collector	a.m./p.m.	7/9[2]	A/A[4]

1 Average Daily Traffic (ADT).

2 ADT volumes were converted to a.m./p.m. peak hours volumes using K and D factors obtained from Caltrans Traffic Data Branch website. http:/traffic-counts.dot.ca.gov.

3 Peak Hour LOS.

4 Peak Hour Volume.

Project Utility Roadway Crossing Impact Analysis. Construction of the Project will require the following utility crossings of roadways: 1) water supply pipeline and 34.5-kV line under SR-138; 2) 34.5-kV lines across 170th Street West from the east side to the proposed on-site substation on the west side; and 3) multiple 230-kV line crossings of 170th Street West along the 230-kV transmission line route from the Project site to the Whirlwind Substation. Refer to Section 3.12.2.1.2 for the impact analysis of the 230-kV transmission line roadway crossings.

The proposed water line and 34.5-kV line crossing of SR-138 would be performed by horizontal directional drilling or jack-and-bore under SR-138, and would require Encroachment Permits from Caltrans and compliance with the terms of the Encroachment Permit would avoid any potentially significant traffic impacts.

The construction envelope to erect the 34.5-kV transmission lines across 170th Street West may require work in the public road right-of-way. If there is insufficient area in which to

TABLE 3.12-9
ROADWAY SEGMENT LEVEL OF SERVICE RESULTS, FUTURE (2013)

Roadway	Segment	Cross-section Classification	Time Period	Traffic Volume	Level of Service (A.M./P.M.)
I-5	North of SR-138	Freeway	Daily	80,307[1]	B/B[3,4]
SR-14	South of SR-138	Freeway	Daily	43,118[1]	C/C[3,4]
SR-14	North of SR-138	Freeway	Daily	40,721[1]	B/B[3,4]
SR-138	East of 170th Street West	2-lane collector	a.m./p.m.	539/610[2]	C/C[4]
170th Street West (north access only)	North of SR-138	2-lane collector	a.m./p.m.	491/500[2]	A/A[4]
170th Street West (south access only)	South of SR-138	2-lane collector	a.m./p.m.	479/491[2]	A/A[4]

1 Average Daily Traffic (ADT).

2 Peak Hour Volume.

3 ADT volumes were converted to a.m./p.m. peak hours volumes using K & D factors obtained from Caltrans website.

4 Peak Hour LOS.

work, construction activities may encroach beyond the roadway shoulders into the traveled roadway.

During the planned 34.5-kV transmission line construction periods, it is expected that traffic flow may need to be intermittently restricted for activities associated with pole installation and stringing and tensioning of the transmission lines. Transmission line crossings of SR-138 (underground) and 170th Street West (overhead) would require Encroachment Permits from Caltrans and LACDPW, respectively. The Applicant has committed to implementing a worksite traffic control plan as defined in Appendix B. Construction impacts would be short-term (lasting less than a week) and compliance with the terms of the Encroachment Permits would avoid any potentially significant traffic impacts.

Operation Traffic Impact Analysis. The traffic impact study (URS 2010a) determined that the proposed Project would not contribute a significant impact at the study area intersections or roadway segments during the operation phases of the proposed Project. All intersections and roadway segments are anticipated to operate at acceptable levels of service (LOS B or better) during the Project operation phase.

In order to accommodate Caltrans' potential future widening plans for SR-138, the proposed site layout for AV Solar Ranch One includes a 100-foot setback from centerline on both sides of SR-138 (refer to Figure 2-4). The Project will offer sufficient land for dedication to Caltrans that, along with the existing road right-of-way, will provide a total right-of-way width of 200 feet. The Project will also offer to the County a 10-foot-wide irrevocable slope

easement adjacent to the Caltrans easement on both sides of SR-138, as required by Los Angeles County. The Project would be responsible for maintenance of the setbacks along SR-138 outside the existing Caltrans right-of-way as discussed in Section B.3.2.5 in Appendix B.

3.12.2.1.2 230-kV Transmission Line Route. The regional roadway segment construction analysis presented for the solar generation site in Section 3.12.2.1.1 also applies to the 230-kV transmission line since the construction workforce and truck deliveries include both the solar site and 230-kV transmission line components, and the access routes to 170th Street West are the same.

Construction. Construction of the proposed 230-kV transmission line along 170th Street West would occur in both Los Angeles and Kern counties over a period of approximately 6 months. If there is insufficient area, the construction may encroach beyond the roadway shoulders into the traveled way requiring limited closures of roadway segments in the construction zones causing short-duration traffic impacts. The 230-kV transmission line route also crosses multiple County roads in Los Angeles County on the east side of 170th Street West (West Avenue C, West Avenue B, West Avenue A12, West Avenue A8, Avenue A4, West Avenue A [County Line]), and then Kern County (west side of 170th Street West at Kingbird Avenue, then east side of 170th Street West at Gaskell Road, Patterson Road, and Astoria/Holiday Avenue). In addition, the transmission line may need to cross 170th Street West (from east to west) north of Astoria/Holiday Avenue to connect to SCE's planned Whirlwind Substation.

These roadway crossings would require encroachment permits from the LACDPW and the Kern County Resource Management Agency, Roads Division, for roads within their respective jurisdictions. The Applicant has committed to implementing worksite traffic control plan as described above and further defined in Appendix B (see Section B.3.10). Compliance with the terms of the Encroachment Permits and the worksite traffic control plan(s) would avoid any potentially significant impacts.

Operation. Operational phase activities for the off-site transmission line would consist primarily of periodic visual surveys of the transmission line via pick-up truck and would not be expected to conflict with any alternative transportation policies, plans or programs. Should the transmission line require maintenance or repair involving equipment and use of the public road ROW, traffic control measures would be utilized to ensure public and worker safety. In addition, maintenance activities would be performed in accordance with County encroachment permit conditions, as applicable.

3.12.2.2 No Action Alternative

If the proposed Project were not constructed, no transportation impacts would occur from the Project.

CHAPTER 4.0
CUMULATIVE EFFECTS

The following sections describe the potential cumulative environmental effects that could result from implementing the proposed action. A cumulative effect is defined as, "the impact on the environment that results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action" (40 CFR Part 1508.7).

This chapter defines the area DOE considered in the cumulative effects analysis, identifies relevant project actions in the area of consideration based on information from other federal, state, and local planning agencies and the availability of documentation for future projects, and concludes with the cumulative effects analysis that covers all resources for which the proposed action would contribute environmental effects.

4.1 AREA OF EVALUATION

The area evaluated for the cumulative effects analysis is within the western portion of the Antelope Valley between I-5 on the west and SR-14 on the east, as depicted on Figure 4.1-1. The geographic area considered varies by resource topic to focus the evaluation of conditions contributing to potential cumulative effects in the Project vicinity, including both the solar generating site and the off-site 230-kV transmission line route which extends into southern Kern County. This cumulative effects analysis study area was selected in part, because it: 1) encompasses the viewshed from which Project facilities would be potentially visible; 2) encompasses the area for which local road networks could be potentially be impacted by the proposed Project and cumulative Projects; 3) encompasses the primary watershed area that has the potential to be subject to cumulative water quality impacts; and 4) encompasses the geographic area (i.e., areas within the near vicinity of the Project site) where cumulative noise impacts could occur to sensitive receptors.

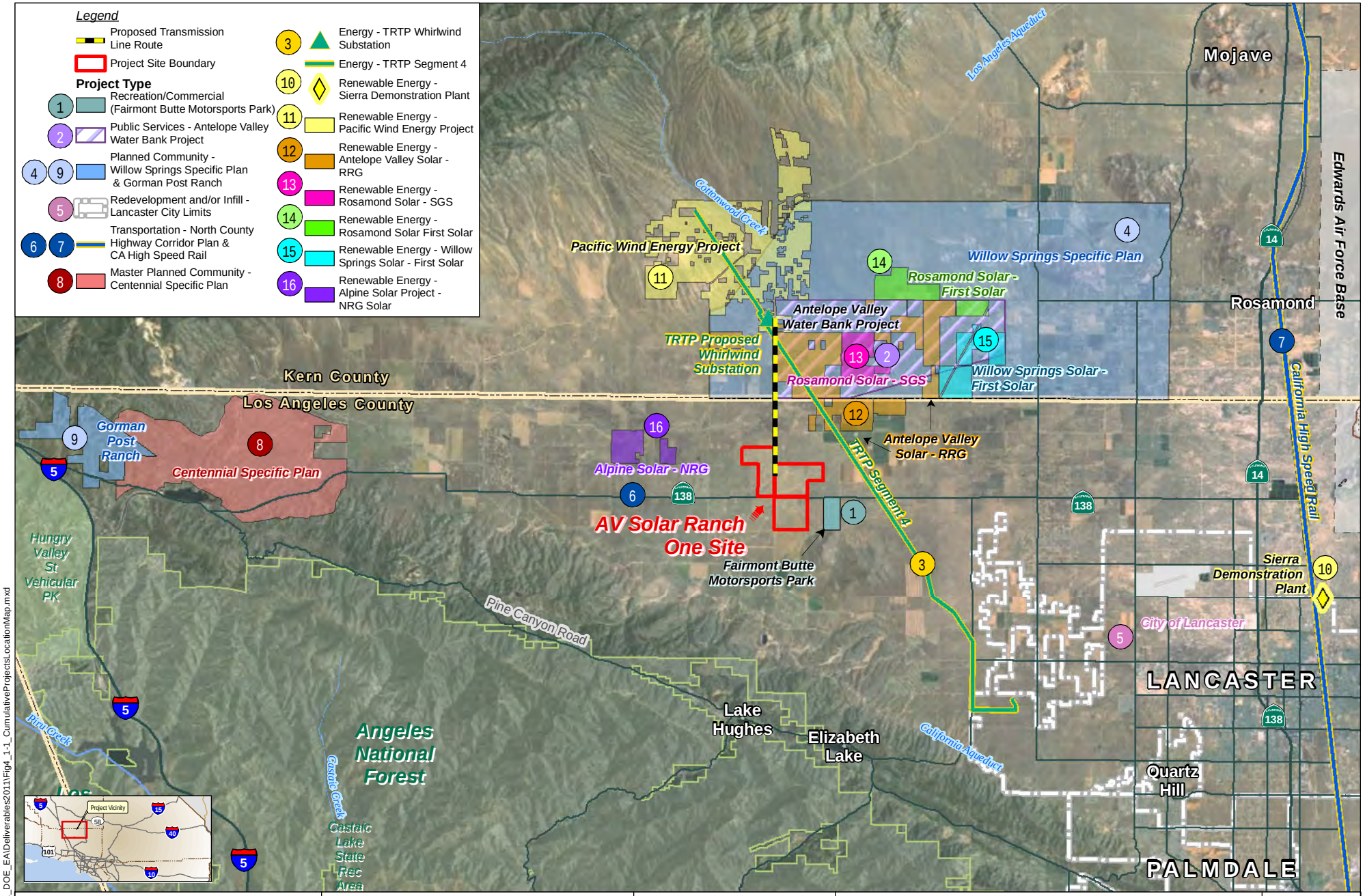
For resource topics/impacts with a potentially more regional impact area (e.g., air quality and traffic), the Project-specific impact assessments already consider impacts on a regional basis. For air quality, the Mojave Desert Air Basin is considered for cumulative increases of any criteria pollutants. For the Project-specific traffic analysis it was conservatively assumed that to account for ambient traffic growth and cumulative project traffic, an ambient traffic growth of 4 percent per year was used to develop future baseline cumulative conditions from existing traffic count data (URS 2010a). This traffic growth assumption was based on the growth forecast for the North County Area from the Los Angeles County Congestion Management Plan.

4.2 IDENTIFIED POTENTIAL CUMULATIVE PROJECTS

The cumulative impact basis was developed through a review of active project lists (i.e., reasonably foreseeable) from Los Angeles County Department of Regional Planning, Kern County Planning Department, City of Lancaster, California Energy Commission (CEC), the California Independent System Operator (CAISO) interconnection queue, and the U.S. Bureau of Land Management (BLM). The cumulative impact basis presented herein also considers planning documents, including general plans, area plans, specific plans, EIRs, Southern California Association of Governments (SCAG) growth projections, and Los Angeles County Congestion Management Plan (CMP) traffic projections.

Projects identified in the Project region which have the potential to result in cumulative impacts when considered together with the proposed Project are identified and assessed herein, and are shown on Figure 4.1-1. The pertinent energy-related and other projects considered in the cumulative assessment, as of January 2011, are as follows:

- **Fairmont Butte Motorsports Park Project (Map Key Identification Number 1).** The proposed Fairmont Butte Motorsports Park (FBMP) Project is located on a 320-acre site approximately 0.5 mile east of the AV Solar Ranch One Project site. The FBMP proposes a paved racetrack approximately 3.6 miles in length, 186,808 square feet of appurtenant facilities, including an administration building, three tower buildings, servicing units, two caretaker houses, a restaurant, two paddock garages, and twenty-six garage lounges. The primary use of the FBMP would be as a venue for racing events open to the public. Typical racing events generally occur over a two- or three-day weekend period that includes Friday, Saturday, and Sunday, and attendance during a typical racing weekend is estimated to range from between 250 and 1,325 persons. The FBMP Final EIR was issued in June 2010, but the project has not been approved. Construction of the project was anticipated in 2010, and operation in December 2012 (FBMP 2009). On December 2, 2010, LACDRP issued a memo notifying the Los Angeles County Regional Planning Commission that the Applicant was in the process of selling the subject property, and requested that the project be placed on hold until further notice. As of January 2011, it is considered unlikely that this project will be approved or built.
- **Antelope Valley Water Bank Project (2).** Western Development and Storage, LLC proposes to develop facilities to store and recharge imported surface water and associated delivery and distribution pipelines. The 13,440-acre facility area would be bound by the Kern/Los Angeles County border line to the south and Rosamond Boulevard to the north, and between 170th Street West and 100th Street West in unincorporated Kern County. The proposed AV Solar Ranch One off-site transmission line route traverses the proposed water bank facility along 170th Street West.
- **Tehachapi Renewable Transmission Project (3).** SCE was granted a Certificate of Public Convenience and Necessity by the California Public Utilities Commission in



N

0 1 2 3 4 5 Miles

Source:
[1] I-cubed Nationwide Prime - Aerials Express (2009-04-15 image date, 0.3m resolution), [2] LA Dept. of Regional Planning, [3] USFS Region 5, [4] Kern County Planning Department, [5] ESRI StreetMap USA (2006).

AV Solar Ranch One Environmental Assessment

Figure 4.1-1. CUMULATIVE PROJECTS LOCATION MAP

2011

T:\NextLight_AVSR1_DOE_EA\Deliverables2011\Fig4_1-1_CumulativeProjectsLocationMap.mxd

December 2009 for the Tehachapi Renewable Transmission Project (TRTP) Segments 4-11. This project involves constructing and operating a series of primarily 500-kV transmission system improvements to deliver electricity from renewable energy projects in eastern Kern County to the Los Angeles Basin. Construction is estimated to begin in 2010 and end in 2013 or early 2014. The AV Solar Ranch One site is located near the northern portion of the Antelope-Whirlwind transmission line (Segment 4) and the Project proposes to interconnect into the planned SCE Whirlwind Substation (TRTP Segment 9) in southern Kern County. Although the AV Solar Ranch One Project will interconnect to the Whirlwind Substation, the primary purpose of the substation is to support delivery of wind energy from the Tehachapi area, and construction of the substation is not contingent on successful completion of AV Solar Ranch One.

- **Willow Springs Specific Plan (4).** The Willow Springs Specific Plan (adopted September 1986, amended April 1, 2008) Area is located in the southwest Kern County portion of Antelope Valley, and encompasses 50,560 acres. The specific plan provides for a maximum development of 1,597 acres for public facilities, 46,775 residential units, 515 acres commercial development, 3,770 acres industrial development, and 9,108 acres of resource uses.
- **City of Lancaster (5).** The City of Lancaster Development Review Summary contains a listing of active projects proposed in the City. The City emphasizes an effort to use infill parcels and revitalize urban areas within the urban core (City of Lancaster 2030 General Plan FEIR, April 2009). Based on the development review summary, a large portion of the active projects are proposed within the City's seven redevelopment project areas. These projects consist of planning and development of a total of approximately 11,630 residential units, 385 acres of public facilities, 379 acres of commercial areas, 163 acres of industrial development, and 17 acres of mixed uses. The remaining active projects are located outside of the redevelopment areas, and consist of planning and development of a total of approximately 11,279 residential units, 73 acres of public facilities, 134 acres of commercial areas, 104 acres of industrial development, and 73 acres of mixed uses.
- **North County Corridor Plan (6).** The North County Corridor Plan is a regional transportation plan to address future transportation needs in North Los Angeles County. In the vicinity of the Project site, the Plan includes expansion of SR-138 into a 4- to 6-lane expressway. The Plan also includes corridor integration improvements to I-5 and SR-14. This Project is a regional effort involving multiple local and state agencies. According to the North County Combined Highway Corridors Study (MTA 2004), funding constraints make it unlikely that the I-5 and SR-14 corridor improvements will be completed until 2020 or 2025, and the SR-138 expansion corridor would likely be implemented after 2030.
- **California High-Speed Rail (7).** The California High-Speed Rail Authority proposes an 800-mile statewide high-speed train system from Sacramento to San Diego. A portion of the route in southern California would traverse the cities of Lancaster and Palmdale

passing within about 15 miles to the east of the proposed AV Solar Ranch One site. Groundbreaking of the southern California rail segment was originally proposed to begin as early as 2011 subject to final routing, approvals, right of way acquisition, and funding. However, the environmental review process is still in process, and is estimated to be completed between September 2011 and October 2012 (California High Speed Rail Authority 2011). The approval process and actual timing of the California High Speed Rail Project are heavily dependent on the availability of the substantial state and federal funding (estimated at $40 billion or more) that would be required (California High Speed Rail Authority 2009).

- **Centennial Specific Plan (8).** The Centennial Specific Plan provides for a master-planned community encompassing approximately 12,000 acres in the northwestern portion of the Antelope Valley, about 12 miles west of the proposed AV Solar Ranch One Project along SR-138 near the intersection with I-5. The Centennial project proposes a maximum of 23,000 dwelling units, 14 million total square feet of non-residential development, including commercial, business parks, schools, recreational areas, open space, roads, and utilities. The project NOP was issued in March 2004, and the DEIR is currently in preparation. Certification of the EIR and approval of the Specific Plan was anticipated in 2010, and build-out of the community is planned over 20 years (Centennial Founders, LLC 2004). However, as of January 2011, the DEIR still remains in preparation.
- **Gorman Post Ranch (9).** The proposed Gorman Post Ranch Project planned community is located at the northwest corner of unincorporated Los Angeles County along Gorman Post Road, and is roughly 20 miles west of the proposed AV Solar Ranch One Project site. The Gorman Post Ranch Project consists of the development of 531 single-family residential lots on 422 acres; two single-family ranch lots on 307 acres; 18 open space lots totaling 1,875 acres; one 7-acre water tank lot; six debris basin lots on 8 acres; one sewer pump station lot on 0.9 acre; and five private and future street lots on 99 acres. The project NOP was issued on January 10, 2007, and the DEIR is reportedly in preparation (Gorman Post Ranch, LLC 2007). However, the Applicant filed for bankruptcy in 2009, and the Project status is currently uncertain.
- **Sierra Demonstration Plant (10).** The eSolar Sierra Demonstration Plant is a solar thermal test site occupying 95 acres in the City of Lancaster. The facility can generate a maximum of 7.5 MW, and began operation in 2009.
- **Pacific Wind Energy Project (11).** The Pacific Wind Energy Project is a proposed wind energy facility to generate up to 250 MW, with proposed interconnection into the Whirlwind Substation. The project site comprises approximately 8,300 acres, and is generally bound on the north and west by the Tehachapi Mountains, to the south by Patterson Road, and to the east by 160th Street West. The Final EIR was certified in September 2010, and construction of the project is expected to begin in September 2011.

- **Antelope Valley Solar Project (12).** Renewable Resources Group proposes the Antelope Valley Solar Project, which is a 650-MW photovoltaic solar facility on approximately 5,400 acres. The Project site is located in unincorporated Los Angeles and Kern counties, and is generally bound by 115th Street West to the east, 190th Street West to the west, Rosamond Boulevard to the north, and Avenue B to the south. The Project is proposed to interconnect at the SCE Whirlwind Substation. Primary site access is proposed from SR-14 via Avenue A and Rosamond Boulevard (i.e., should not overlap with proposed AV Solar Ranch One facility construction traffic via SR-138). The Project NOP was issued on March 8, 2010, and the Project EIR is in progress.
- **Rosamond Solar Project – SGS (13).** SGS Antelope Valley Development, LLC proposes the Rosamond Solar Project, which would produce up to 200 MW of electricity using solar photovoltaic panels. The project is located in unincorporated Kern County, and the approximately 960-acre site is generally bordered by Holiday Avenue to the north, 135th Street West to the east, Kingbird Avenue to the south, and 150th Street West to the west. The project proposes to interconnect to the SCE Whirlwind Substation through an approximately 2.5-mile-long transmission line along Holiday Avenue. Construction is planned to occur from early 2012 to mid-2013, with a peak workforce of approximately 300 workers. It is estimated that 7 or 8 permanent workers would be needed during operation. Primary site access is proposed from SR-14 via Holiday Avenue in Kern County (i.e., no potential overlap with AV Solar Ranch One traffic via SR-138 and 170th Street West). The Final EIR was issued in November 2010.
- **Rosamond Solar Array Project – First Solar (14).** First Solar, Inc. proposes the Rosamond Solar Array Project in unincorporated Kern County, which is a solar PV facility that would generate up to 155 MW. The approximately 1,177-acre project site occupies an area generally bound by Irone Avenue to the north, 105th Street West to the east, Astoria Avenue to the south, and 140th Street West to the west. The project proposes a 13.5-mile generation tie-line that would deliver the generated power to the local grid at the existing SCE Antelope Substation. Project construction is expected to last for approximately 16 months. Construction workforce and schedule information is currently not available. During operation, the facility would be operated on an unstaffed basis and monitored remotely, with on-site personnel visitations by 2 to 5 part-time staff. The project NOP for an EIR was issued in March 2010, and the EIR is in progress.
- **Willow Springs Solar Array Project (15).** First Solar, Inc. proposes the Willow Springs Solar Array Project in unincorporated Kern County, which occupies approximately 1,402 acres, and is generally bordered by Holiday Avenue to the north, 100th Street West to the east, West Avenue A to the south, and 120th Street to the west. The project would generate up to 160 MW of electricity using solar PV panels. The project proposes a generation tie-line to interconnect at the existing SCE Antelope Substation, located approximately 11 miles south of the project site. Project construction is expected to last for approximately 17 months. Construction workforce and schedule information is

currently not available. During operation, the facility would be operated on an unstaffed basis and monitored remotely, with on-site personnel visitations by 2 to 5 part-time staff. The project NOP for an EIR was issued in March 2010, and the EIR is in progress.

- **Alpine Solar Project (16).** NRG Solar Alpine, LLC proposes to construct and operate a 92-MW solar photovoltaic generating facility on an approximately 800-acre property in the Antelope Valley, in unincorporated Los Angeles County. The Alpine Solar Project is approximately 3 miles west of the AV Solar Ranch One Project, and approximately 1 mile north of SR-138. The Alpine Project proposes to interconnect into the SCE Neenach Substation. Construction of the project is estimated to require between 12 to 18 months. The Alpine Solar Project Mitigated Negative Declaration was issued in November 2010. Two appeals were filed on the project in January 2011, and as a result, the project CUP review process has been extended to at least March 2011.

As energy projects are proposed, completed, or withdrawn, the California Independent System Operator (CAISO) updates its queue of requests for interconnection. Multiple energy projects, including the proposed Project, have requested interconnection either into the planned SCE Whirlwind Substation or through the Antelope-Magunden 230-kV transmission line east of the proposed Project site. These projects include photovoltaic facilities (including the proposed AV Solar Ranch One Project), solar thermal projects, and multiple wind generation projects. Combined, these projects are expected to generate substantial amounts of renewable energy although the actual amount will be dependent on which projects are actually permitted and built. Project-specific information (e.g., project name, applicant, location, construction timeframe, etc.) are not available via the CAISO queue. The planning records in Los Angeles and Kern counties were reviewed through January 2011 to update the cumulative projects list used in this cumulative impact analysis, including known energy projects that have submitted land use permit-related applications (and have associated environmental documentation) and that propose to interconnect at SCE's planned Whirlwind Substation.

4.3 CUMULATIVE IMPACT ASSESSMENT

Cumulative impacts that are potentially associated with implementation of the proposed Project are discussed for applicable environmental topics in the following sections. The level of analysis presented is dependent on two primary factors: 1) the extent of available project information and details for the project considered; and 2) the spatial and temporal relationship of the proposed Project relative to the other projects considered. The cumulative impact assessment presented herein only addresses resource topics for which adverse cumulative impacts were determined to have the potential to occur.

4.3.1 Land Use

Cumulatively, the proposed Project is one of several proposed projects, including other renewable energy development projects (refer to Figure 4.1-1) that have the potential to impact existing and proposed land uses within the Project region. The proposed Project together with other proposed projects in the Project region would convert primarily open agricultural land (combination of actively farmed and fallow) to developed renewable energy production related uses (solar, wind, and transmission). With the exceptions of wind energy and transmission, converted lands would no longer be suitable for agricultural production, although the affected lands could potentially be returned to agricultural uses in the future following decommissioning of renewable energy projects, as applicable.

Based on currently available information, the proposed Project solar generation site (2,100 acres) together with other proposed projects in the Project region would potentially result in the cumulative conversion of approximately 20,000 acres of primarily vacant agricultural land to primarily renewable energy production uses. The estimated potential cumulative conversion of approximately 20,000 acres of the Antelope Valley represents less than 2 percent of the land area of the Antelope Valley.

4.3.2 Visual Resources

The proposed Project (solar generation site and off-site transmission line) considered together with other proposed projects in the Project region has the potential to result in cumulative impacts to visual resources. As discussed in Section 4.2, and shown on Figure 4.1-1, multiple projects are proposed in the general vicinity of the proposed Project. The primary cumulative impact to visual resources is the introduction of development (solar farms, wind farms, and overhead transmission lines) into an area that is currently rural in nature. The potential cumulative impacts to visual resources from the proposed Project when considered together with other proposed projects are minimal since the proposed Project features would generally only be visible from distant elevated vantage points within a maximum of approximately 5 miles and from relatively short segments of SR-138 and 170th Street West. The only publically accessible elevated vantage points with unobstructed views and within 5 miles of the proposed Project facilities are from the Antelope Valley California Poppy Reserve and to a lesser extent the Arthur B. Ripley Desert Woodland State Park to the southeast and southwest of the proposed Project site, respectively. As shown on Figures 3.3-3 and 3.3-4, the proposed Project facilities are almost indistinguishable from these viewing locations. The other proposed projects (refer to Figure 4.1-1) are generally further away from these vantage points and would be even less distinguishable. The proposed Project facilities would not be visible from elevated viewing points to the north in the Tehachapi Mountains.

Views of the proposed Project solar generation site from SR-138 and 170th Street West would be limited to several mile long stretches along these roadways. Due to the flat

topography and low profile of the proposed solar facilities, viewers travelling along these roadways would not see the other proposed projects (generally separated by at least several miles from the proposed Project site) when viewing the proposed Project solar facilities.

4.3.3 Air Quality and Greenhouse Gases

The majority of the impacts to air quality from the proposed Project would occur during the construction phase and would be temporary and less than significant. Based on currently available information, other proposed renewable energy projects may have construction phases that overlap with the proposed Project (e.g., Rosamond Solar [SGS], Pacific Wind Energy, TRTP, etc.) Cumulative impacts to air quality for the proposed Project when considered with other potential projects would include short-term emissions of PM_{10} and NO_X during the construction phase. Construction emissions from the proposed Project and other proposed projects would be required to be less than applicable AVAQMD and KCAPCD significance thresholds, which were developed with consideration of anticipated growth and associated construction project emissions throughout the air district/basin. Air emission estimates for most of the other proposed projects in the region are currently unavailable; thus comprehensive cumulative emission estimates are not available. However, the combined short-term construction emissions (at or below applicable significance thresholds) would not be cumulatively significant. During operation, the Project would result in less than significant emissions. Potential cumulative impacts of the proposed Project with other renewable energy projects proposed in the Project region, such as the Alpine Solar Project, Rosamond Solar Project, Pacific Wind Energy Project, Antelope Valley Solar Project, etc., would be considered to be beneficial and result in a combined substantial reduction in combustion-related emissions. The proposed Project alone would be expected to reduce carbon dioxide (CO_2) equivalent (CO_2e) emissions by approximately 195,000 metric tons per year compared to traditional generation source emissions for an equivalent electrical output.

4.3.4 Noise

There are several other proposed projects that have the potential to result in cumulative noise impacts with the proposed Project. Since noise attenuates rapidly with distance, only proposed projects that are relatively close to the proposed Project have the potential to result in cumulative noise effects. A review of the cumulative projects list compiled for this EA (see Section 4.2) indicate that the only proposed project (with available project information) with the potential to result in significant cumulative noise impacts with the proposed AV Solar Ranch One Project is the proposed FBMP located to the east of the proposed Project site. As discussed in Section 4.2, it is considered unlikely the FBMP will be approved or built; thus, potential cumulative noise effects from that project are not anticipated to occur.

4.3.5 Water Resources

The primary potential cumulative impact to water resources in the Project region is water use by multiple proposed projects during the construction and operational phases. Based on currently available data, the other proposed renewable energy projects in the Project region propose to use a combination of groundwater, municipal supplies (where available), and/or trucked non-potable water. Proposed water usage data is not available for many of the other proposed projects, including volumes or sources. Available data indicate that the cumulative water demand during construction of the proposed Project when considered together with other proposed projects could be approximately 1,200 AFY during construction (up to 3 years) and 220 AFY during operation. For reference, the estimated cumulative water demand of 1,200 AFY during construction equates to approximately 8 projects similar in size and water demand to the proposed Project being under construction simultaneously. Assuming that this cumulative water demand was entirely groundwater (worst case), it would equate to approximately 1.5 and 0.03 percent, respectively, of the estimated total sustainable yield of 82,300 AFY for the Antelope Valley Groundwater Basin [LACDPW 2010]).

4.3.6 Biological Resources

As described in Section 3.8, the proposed Project (solar generation site and transmission line) has the potential to result in biological impacts to: natural habitats, sensitive natural communities, special status species, and wildlife movement. However, with implementation of ACMs, including on-site and off-site mitigation, avoidance of biological resources and habitats, implementation of wildlife-permeable fencing, and revegetation and restoration efforts, as required by the approved Conditional Use Permit (Los Angeles County), the proposed Project would fully mitigate potential biological effects. It is likely that the other proposed projects would also be required to fully mitigate their respective biological impacts.

4.3.7 Cultural Resources

With implementation of the ACMs for cultural resources (including the Phase II testing completed in late 2010 and the Phase III data recovery prior to construction in 2011), no Project-specific significant impacts to cultural resources would be expected to occur and data collected from the sites would be collected and preserved in perpetuity. As required by law, other projects that may be approved and implemented would also mitigate their potential project-specific adverse impacts to cultural resources. The cultural resource investigations and associated data recovery for the various projects proposed in the Project region, as applicable, may result in an expanded understanding of pre-historic life in the Antelope Valley.

4.3.8 Transportation

The proposed Project when considered together with other proposed projects would result in temporarily increased traffic (workers and truck traffic) on area roadways during the short-term construction phase of each project. It is expected that project construction phases would overlap in some instances. The proposed Project would result in minor increases and associated traffic impacts on SR-138 and 170th Street West. The other proposed projects considered in the cumulative traffic assessment would generally not utilize or temporarily increase traffic levels on SR-138 since they are located primarily to the north and would utilize different access routes from SR-14 (e.g., Rosamond Boulevard). During the operation phases of the projects considered in the cumulative assessment, increased traffic levels would be very minor due to the small operational workforces associated with renewable solar energy projects.

CHAPTER 5.0
LIST OF PREPARERS

U.S. DEPARTMENT OF ENERGY, LOAN GUARANTEE PROGRAM OFFICE

Doug Boren
BS, Marine Biology
Years of Experience: 8
NEPA Document Manager

URS CORPORATION

Robert Ray
B.S., Natural Resources Management/Environmental Services
Years of experience: 33
Responsibilities: Project Manager

Jennifer Wu
B.A., Chemistry
Years of experience: 8
Responsibilities: Land Use, Visual Resources, Socioeconomics, Environmental Justice, Cumulative Effects, and Deputy Project Manager

Pell Menk
M. ENG., Geotechnical Engineering
B.S, Earth Science
Years of experience: 30
Responsibilities: Geology and Seismicity, Water Resources

Matt Dunn
B.S., Chemical Engineering
Years of experience: 27
Responsibilities: Air Quality and Global Climate Change

Jeff Rice, AICP
MBA; B.S. Urban and Regional Planning
Years of experience: 32
Responsibilities: Land Use

Ron Reeves
B.S., Information Systems
Years of experience: 18
Responsibilities: Noise

Christopher Julian
B.S., Aquatic Biology
Years of experience: 8
Responsibilities: Biological Resources

Laurie Solis
M.A., Anthropology, History
Years of experience: 10
Responsibilities: Cultural Resources and Paleontology

Noel Casil, PE, TE, PTOE
B.S., Civil Engineering
Years of experience: 27
Responsibilities: Transportation

CHAPTER 6.0
LIST OF AGENCIES CONTACTED

Regulatory agencies and organizations consulted during the studies that were performed in support of the EA for the AV Solar Ranch One Project include the following:

- **Federal Agencies:**
  - U.S. Department of Agriculture, Natural Resources Conservation Service
  - U.S. Fish and Wildlife Service
- **State Agencies:**
  - California Department of Conservation
  - California Department of Fish and Game
  - California Department of Transportation (Caltrans)
  - Lahontan Regional Water Quality Control Board
  - Native American Heritage Commission (see Native American groups and individuals contacted, below)
  - Office of Historic Preservation
  - State Department of Parks and Recreation (including Antelope Valley California Poppy Reserve and Arthur B. Ripley Desert Woodland State Park)
- **Regional and Local Agencies:**
  - Antelope Valley Air Quality Management District
  - City of Lancaster Planning and Development Services
  - City of Palmdale Planning Department
  - Community of Antelope Acres Town Council
  - Kern County Air Pollution Control District
  - Kern County Public Works and Planning Departments
  - Los Angeles County Department of Regional Planning
  - Los Angeles County Department of Public Works
  - Los Angeles County Fire Department
  - Southern California Association of Governments

- **Organizations:**
  - Desert and Mountain Conservation Authority
  - Pacific Gas and Electric Company
  - Sierra Club
  - Santa Monica Mountains Conservancy
  - South Central Coastal Information Center (Cultural Resources)
  - Southern California Edison Company
- **Native American Tribes and Individuals Contacted, Kern and Los Angeles Counties:**
  - Fernandeno Tataviam Band of Mission Indians
  - Kaiwaiisu Tribe of Tejon Reservation
  - Kern Valley Indian Council
  - Kitanemuk and Yowlumne Tejon Indians
  - San Fernando Band of Mission Indians
  - San Manuel Band of Mission Indians
  - Te-Moak Tribe of Western Shoshone Indians of Nevada
  - Mr. Charles Cooke (Chumash, Fernandeno, Tataviam, Kitanemuk)
  - Ms. Beverly Salazar Folkes (Chumash, Tataviam, Fernandeno)
  - Mr. Randy Guzman-Folkes (Chumash, Fernandeno, Tataviam, Shoshone Paiute, Yaqui)
  - Mr. Ron Wermuth (Tubatulabal, Kawaiisu, Koso, Yokuts)

CHAPTER 7.0
REFERENCES

Antelope Valley Water Group. 2007. Antelope Valley Integrated Regional Water Management Plan. 2007.

Baranek, LL et al. 2006. Noise and Vibration Control Engineering, Principles and Applications. John Wiley & Sons, Inc. Hoboken, NJ.

Bransfield, R. 2010. U.S. Fish and Wildlife Service. Correspondence with C. Julian (URS Corporation) confirming federally listed species potentially present in AV Solar Ranch One Project area. December.

Brookhaven National Laboratory. Fthenakis et al. 2005. Emissions and Encapsulation of Cadmium in CdTe PV Modules During Fires, Progress in Photovoltaics Research and Applications, 13 (8), 713–723.

California Air Resources Board (CARB). 2009. Top 4 Summary website. http://www.arb.ca.gov/adam/cgi-bin/db2www/adamtop4b.d2w/start.

California Building Code (CBC). 2007. California Building Standards Commission.

California Burrowing Owl Consortium (CBOC). 1993. Burrowing owl survey protocol and mitigation guidelines.

California Department of Conservation, Division of Land Resource Protection (CDOC). 2009. Los Angeles Important Farmland, 2008. March.

2008. Rural Mapping Edition, Kern County Important Farmland. 2006. November.

2007. Kern County Williamson Act Lands.

2004. A Guide to the Farmland Mapping and Monitoring Program, 4th Edition. 2004.

California Department of Fish and Game (CDFG). 2010. California Natural Diversity Database (CNDDB), Rarefind 3.1.0. Accessed December 2010.

2009. Special Animals (865 taxa). CDFG Biogeography Data Branch. At http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SP Animals.pdf. Visited through February 2009.

2008a. California Natural Diversity Database (CNDDB), Rarefind 3.1.0. Accessed December 2008.

2008b. California Wildlife Habitat Relationships (CWHR), v 8.2. Prepared 1996, updated 2008. Accessed online at www.dfg.ca.gov/biobiogeodata/cwhr/. Visited through February 2009.

1995. Staff Report on Burrowing Owl Mitigation.

California Department of Water Resources (DWR). 2004. California's Groundwater – Bulletin 118. February 27.

California Employment Development Department (EDD). 2009. Labor Market Information.

California High-Speed Rail Authority. 2011. California High-Speed Rail Environmental Review Fact Sheet. January.

2009. California High-Speed Rail Project: Program Summary Report. July. Accessed at http://www.cahighspeedrail.ca.gov/news/CHSRAProgramSummaryReportJuly2009.pdf.

California Invasive Plant Council (Cal-IPC). 2009. The California Invasive Plant Inventory Database. Accessed online at http://www.cal-ipc.org/ip/inventory/weedlist.php.

Centennial Founders, LLC. 2004. Centennial Specific Plan NOP. March 2004.

City of Lancaster Planning Department. 2009. City of Lancaster 2030 General Plan FEIR, April 2009.

Council on Environmental Quality. 1997. Environmental Justice Guidance under the National Environmental Policy Act. December 10.

Crocker, M.J. and F.M Kessler. 1982. Noise and Noise Control, Volume II. CRC Press, Inc. Boca Raton, Florida.

Electrical Power Research Institute (EPRI). 1987. Transmission Line Reference Book, 345-kV and Above. Electric Power Research Institute. Palo Alto, CA.

Fairmont Butte Motorsports Park (FBMP). 2009. Fairmont Butte Motorsports Park DEIR. July 2009.

Federal Emergency Management Agency (FEMA). 2008. Flood Insurance Rate Map (FIRMette). http://msc.fema.gov.

French Ministry of Ecology, Energy, and Sustainable Development (MEEDAT). July 2009. Summary Report – Environmental, Health and Safety Aspects of First Solar Cadmium – Telluride (Cd-Te) Photovoltaic (PV) Systems.

Fthenakis Vasilis M. 2004. "Life cycle impact analysis of cadmium in CdTe PV production." Brookhaven National Laboratory, Upton, NY11973.

2002. "Could CdTe PV modules pollute the environment?" Aug. 2002, Brookhaven National Laboratory, Upton, NY 11973.

Gorman Post Ranch, LLC. 2007. Gorman Post Ranch NOP. January 10, 2007.

Harris, Cyril M., ed. 1991. Handbook of Acoustical Measurements and Noise Control. Third Edition. McGraw-Hill, Inc. New York, NY.

Heindel, Matt. 2000. Birds of eastern Kern County. Draft manuscript. Available at http://fog.ccsf.org/~jmorlan/eastkern.pdf. Accessed June 1, 2009.

Hunting, K. and Edson, L. 2008. Mountain Plover (*Charadrius montanus*). Pp 180–186 in California Bird Species of Special Concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California, ed. W. David Shuford and Thomas A. Gardali. Studies of Western Birds. no. 1. Camarillo: Western Field Ornithologists; Sacramento: California Department of Fish and Game.

Intergovernmental Panel on Climate Change (IPCC). 2007. Fourth Assessment Report, Climate Change 2007 Syntheses Report. Obtained from: http://www.ipcc.ch/ipccreports/ar4-syr.htm. November.

Jones and Stokes Associates. 2008. URBEMIS 2007 for Windows Version 9.2. March 8, 2008. http://www.urbemis.com/software/urbemis2007v9_4.html.

Kern County Budget Unit 2210. 2009. County of Kern 2009–2010 Recommended Budget: Sheriff-Coroner. 2009.

Kern County Air Pollution Control District (KCAPCD). 2009. Attainment Status. http://www.kernair.org/Kern%20County%20APCD%20Attainment%20Status.pdf.

Kern County Budget Unit 2210. 2009. County of Kern 2009–2010 Recommended Budget: Sheriff-Coroner.

Kern County Planning Department (KCPD). 2004. General Plan, Safety Element Chapter 4 (amended 2007).

Lahontan California Regional Water Quality Control Board (LRWQCB). 1995. Water Quality Control Plan for the Lahontan Region (Basin Plan). Amendments effective 1995 through 2005.

Larsen, J. 2010. Larsen Ranch (previous property owner). Personal communication with URS Corporation (P. Menk). March 6, 2010.

Los Angeles County Department of Public Works (LACDPW). 2010. Letter from Dennis Hunter to Sorin Alexanian dated June 10, 2010 and attached Technical Memorandum (Water Requirements and Groundwater Supply AV Solar Ranch One) dated June 1, 2010 prepared by Joseph C. Scalmanini. (Note: Appendix J.2 in LACDRP 2010.)

Los Angeles County Department of Regional Planning (LACDRP). 2010. Draft Environmental Impact Report for the AV Solar Ranch One Project. June. http://planning.lacounty.gov/case/all (listed under Project No. R2009–02239).

1993. Los Angeles County General Plan.

1990. Los Angeles County General Plan. Safety Element. Plates 1 through 5.

Los Angeles County Metropolitan Transportation Authority (MTA) et al. 2004. North County Combined Highway Corridors Study: SR-14, SR-138, and I-5. June. Accessed online at: www.scribd.com/doc/8141217/North-County-Combined-Highway-Corridors-Study-2004.

Los Angeles County Sensitive Bird Species Working Group (LACSBSWG). 2009. Los Angeles County's Sensitive Bird Species. Western Tanager 75 (3): E1-E11.

Minshew, Hudson. 2010. District Conservationist, Lancaster Service Center, U.S. Department of Agriculture (USDA) Natural Resources conservation Service. Personal communication with URS/Jennifer Wu on September 20, 2010.

National Energy Information Center (NEIC). 2008. Greenhouse Gases, Climate Change, and Energy. http://www.eia.doe.gov/bookshelf/brochures/greenhouse/Chapter1.htm.

Psomas. 2009. Drainage Concept Report. AV Solar Ranch One Project Antelope Valley, California. December. (Note: Appendix C in LACDRP 2010.)

Scoll, J.P. 2003. Environmental Justice in California Power Plant Siting. Environmental Law News, Vol. 12, Number 3.

South Coast Wildlands. 2008. South Coast Missing Linkages: A Wildland Network for the South Coast Ecoregion. Produced in cooperation with partners in the South Coast Missing Linkages Initiative. http://www.scwildlands.org.

Sutton, Mark Q. 1981. Archaeology of Antelope Valley, Western Mojave Desert, California.

Terracon. 2009. Geotechnical Engineering Report, Antelope Valley Solar Ranch 1, Project No. 60085038. August. (Note: Appendix B in LACDRP 2010.)

Trampier, Joshua, Mark Q. Sutton, and Michael K. Lerch. 2010. Plan of Work for Archaeological Testing and National Register of Historic Places, Evaluation of 22 Archaeological Sites on the AV Solar Ranch One Project, Los Angeles County, California. Technical Report 10-79. Statistical Research, Redlands, California.

URS. 2010a. Traffic Impact Analysis for the AV Solar Ranch One Project, Los Angeles County, California. March. (Note: Appendix G in LACDRP 2010.)

2010b. Air Quality Emission Calculations and Wind Rose Data. June. (Note: Appendix D in LACDRP 2010.)

2010c. Noise Technical Report for the AV Solar Ranch One Project, Los Angeles County, California. June. (Note: Appendix I in LACDRP 2010.)

2010d. Phase I Cultural Resources Survey Technical Report for the AV Solar Ranch One Photovoltaic Solar Project, Los Angeles and Kern Counties, California. June. (Note: Appendix F in LACDRP 2010).

2009a. Groundwater Characteristics at the AV Solar Ranch One Site, Southwestern Antelope Valley, Los Angeles County, California. November. (Note: Appendix J in LACDRP 2010.)

2009b. Biota Report for the AV Solar Ranch One Project, Antelope Valley, California. November. (Note: Appendix E in LACDRP 2010.)

U.S. Army Corps of Engineers (USACE). 2010. Jurisdictional Determination Letter and No Permit Required Letter for the AV Solar Ranch One Project Site. November 15.

U.S. Census Bureau 2003. Table 5. SUB-EST2002-05-06-California Incorporated Place Population Estimates, Sorted within County: April 1, 2000 to July 1, 2002. July.

2000. Census 2000 Summary File 3 (SF 3). Retrieved on January 2, 2009. http://factfinder.census.gov/servlet/DatasetMainPageServlet?_ds_name=DEC_2000_SF1_U&_program=DEC&_lang=en.

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). 2008. Prime and other Important Farmlands: Antelope Valley Area, California. Tabular Data Version 5. January.

U.S. Department of Energy (DOE). 2000. Carbon Dioxide Emissions from the Generation of Electric Power in the United States. July.

U.S. Department of the Interior, U.S. Geological Survey (USGS). 2003. Simulation of Ground-Water Flow and Land Subsidence in the Antelope Valley Ground-Water Basin, California (Water Resources Investigations Report 03-4016). 2003.

1993. Draft Study Plan for the Geohydrologic Evaluation of Antelope Valley, and Development and Implementation of Ground-Water Management Models. 1993.

U.S. Environmental Protection Agency (USEPA). 2009a. eGrid2007 version 1.1. Available at http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html.

2009b. National Assessment Database. Accessed July 2009. Available at: http://www.epa.gov/waters/305b/.

2006. Drinking Water Health Advisories, 2006 Edition, EPA 822-R-06-013. August.

1998. Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses. April.

Wolff, G. 2005. Quantifying the Potential Air Quality Impacts from Electric Demand Embedded in Water Management Choices. The Pacific Institute for the California Energy Commission, PIER Energy-Related Environmental Research. CEC-500-2005-031.

APPENDIX A
HAZARDOUS MATERIALS USED AND WASTES GENERATED DURING OPERATIONS

TABLE A-1
HAZARDOUS MATERIALS USED DURING OPERATIONS

Chemical	Use	Storage Location	State	Storage Quantity
Various solvents, Cleaning Chemicals/Detergents, paints and other cleaners, oils, lubricants	Building maintenance and periodic cleaning	Warehouse/shop area	Liquid	Commercial 1- and 5-gallon containers
FM-200	Fire protection	Warehouse/shop area	Gaseous	15,000 pounds
Dielectric transformer insulating oil	Transformers/ switchyard	Contained within transformers and electrical switches	Liquid	84,000 gallon total

TABLE A-2
WASTES GENERATED DURING OPERATIONS[1]

Waste	Origin and Composition	Classification	Estimated Quantity	Disposal
Office and packaging materials from supplies deliveries	Office and warehouse paper, wood, plastic, and cardboard	Non-hazardous	Intermittent – 4 cubic yards per week	Weekly collection for recycling and/or approved waste disposal
Sanitary wastewater solids	Restrooms, Sanitary waste	Non-hazardous	2,000 gallons per week	Dispose to sanitary leach field
Spent batteries	Lead acid, alkaline, gel cell, nickel, and cadmium	Hazardous, recyclable	<5 units per week	Store for less than 30 days. Dispose to authorized waste recycling facility
Oily absorbent and spent oil filters	Vehicle and equipment maintenance	Hazardous	One 55-gallon drum per quarter	Store for less than 90 days, dispose to authorized recycle facility
Oily rags	Vehicle and equipment maintenance	Hazardous	One 55-gallon drum per quarter	Store for less than 90 days, dispose to authorized recycle facility
Used hydraulic fluid, oils and grease	Vehicle and equipment maintenance	Hazardous, recyclable	Less than 5 gallons per month	Store for less than 90 days, dispose to authorized recycle facility

[1] Total amount of solid waste generated is approximately 31 tons per year as calculated using conversion factor from EPA 1997, Publication No. EPA530-R-97-011.

APPENDIX B
APPLICANT-COMMITTED MEASURES

The Project site and the Project's construction and operational characteristics have undergone extensive review with regard to environmental resources and potential for Project development to impact existing resources. Site-specific studies have been conducted to characterize biological resources, hydrologic and geotechnical conditions, noise, visual resources, cultural resources, and land use. The Applicant has committed to measures and procedures to minimize or avoid environmental impacts if the Project is carried forward. These Applicant-committed measures (ACM) have been implemented through the site selection, design, and equipment selection process, in order to minimize potential impacts or avoid them altogether, and also through development of site-specific management and operation plans. Project permitting requirements, including the Conditional Use Permit (CUP) issued by Los Angeles County, have identified a number of design standards and recommended measures to minimize any Project development impacts and to comply with local, state and federal resource protection programs. Collectively, these measures and conditions including a list of resource management plans that will be developed constitute ACMs that will be implemented by the Applicant in the event that the proposed action is approved.

This appendix provides a summary of measures that will be implemented by the Applicant to minimize the environmental impacts that could occur during Project construction and operation. For some resource areas, regulations stipulate that resource protection plans be developed and implemented. The content of these plans is generally guided by minimum standards defined in implementing regulations, combined with assessment of site-specific conditions. For other resource areas, review by state and local agencies is ongoing and specific details of resource protection measures have not been finalized. The Applicant will continue to pursue resource protection measures during the permitting and approval process. Many of the plans will also provide for periodic assessment of effectiveness of resource protection measures and will provide for adaptation of processes, or modification of resource protection programs to ensure resource impacts are addressed.

In summary, the measures presented in this appendix result in the avoidance or minimization of Project impacts to less than significant levels.

B.1 PLANS AND PROGRAMS

A number of plans and programs will be developed by the Project applicant to address potential impacts to resources as a result of construction and operation of the facility. These plans will be developed based on regulatory requirements, agency guidance documents, and professional standards. The plans and programs to be developed by the Applicant are listed below:

- **Hazardous Material Management Program (HMMP).** At a minimum the HMMP will include procedures for:

- Hazardous materials handling, use, and storage
- Emergency response
- Spill control and prevention
- Employee training
- Recordkeeping and reporting

- **Recycling and Reuse Plan.** Developed in accordance with the Los Angeles County Construction and Demolition Debris Recycling and Reuse Ordinance, as applicable, for compliance with County requirements under Title 20 Chapter 20.87 to recycle at a minimum, 50 percent of construction and demolition debris. Per Chapter 20.87, the Project will prepare a Recycling and Reuse Plan and progress reports (submitted to LACDPW Environmental Programs Division) to implement and document the Project's recycling practices.
- **Storm Water Pollution Prevention Plan (SWPPP).** The SWPPP will include implementation of BMPs erosion-control measures to control storm water runoff. Site-specific BMPs will be designed by the contractor in compliance with regulations and permit conditions.
- **Mitigation Monitoring and Reporting Plan (MMRP).** The MMRP will be developed in accordance with California Environmental Quality Act (CEQA) requirements (California Public Resources Code, Section 21081.6) and will ensure that the mitigation measures identified in the Final EIR for the Project are properly implemented and monitored.
- **Fire Protection and Prevention Plan.** Submitted to LACFD for review and approval prior to issuance of the Grading Permit. The Plan will address construction and operation activities for the Project, and establish standards and practices that will minimize the risk of fire danger, and in the case of fire, provide for immediate suppression and notification (see Section A.3.9 for additional details).
- **Vegetation Management and Fire Control Measures Plan.** Submitted to LACFD for review and approval.
- **Plant Operations Fire Protection and Prevention Program.** This program will address the following:

  - Names and/or job titles responsible for maintaining equipment and accumulation of flammable or combustible material control
  - Procedures in the event of fire
  - Fire alarm and protection equipment
  - System and equipment maintenance

- Monthly inspections
- Annual inspections
- Firefighting demonstrations
- Housekeeping practices
- Training

- **Dust Control Plan.** Developed in accordance with AVAQMD requirements. The Plan will address Project-specific application of AVAQMD Rule 403 requirements to address potential fugitive dust impacts, including use of frequent watering and chemical dust suppressants, trackout and carryout minimization, storage pile management, vehicle speed limits on unpaved surfaces, disturbed area stabilization, unpaved road maintenance, and controls for wind erosion (*see additional discussion of Dust Control Plan content under Section A.3).*

  The Project will need to comply with the AVAQMD Rules and Regulations pertaining to the stationary concrete batch plant (if needed) and fugitive dust rules. The proposed PM measures (#24 to #44) in AVAQMD's List and Implementation Schedule for District Measures to Reduce PM Pursuant to Health & Safety Code §39614(d) will be incorporated into the fugitive dust control plan. Major elements of a fugitive dust control plan include a watering schedule, equipment track out, and activity scheduling.

B.2 DESIGN STANDARDS

The Project design, construction and operation will incorporate a number of design standards as required by state and local codes. To address potential Project-related environmental impacts, the following design standards were assumed to be implemented to eliminate or minimize impacts to environmental resources and public health.

B.2.1 Visual Resources

Lighting will be designed to provide the minimum illumination needed to achieve safety and security objectives and will be directed downward and shielded to focus illumination on the desired areas only and minimize light trespass.

B.2.2 Geology and Seismicity

Project facilities will be designed and constructed: 1) using the recommendations and site-specific seismic design parameters as specified in the Project geotechnical report (Terracon 2009), and 2) in conformance with the appropriate California Building Code (CBC) criteria and applicable industry standards.

Geotechnical hazard-related recommendations are subject to final engineering design and approval by LACDPW, including the solar array design(s) selected (e.g., trackers, fixed tilt) and associated foundation types (e.g., concrete ballast or pile/pier foundations).

B.2.3 Water Resources

Domestic well design requirement will be incorporated per Los Angeles County Department of Public Health Standards.

Septic/leach field system design as per the requirements of the LRWQCB, Los Angeles County Department of Public Works (LACDPW) and the Los Angeles County Department of Public Health (LACDPH).

Los Angeles County Standard Stormwater Urban Mitigation Plan (SUSMP) – areas of the facility that could potentially release contaminants, such as the paved areas surrounding the O&M building and delivery areas, will be provided with stormwater containment (i.e., berms) to meet requirements.

Low Impact Development (LID) Standards of Los Angeles County (Psomas 2009):

- **Conserving Natural Areas:** The proposed Project development will avoid all drainages as previously described, and include setbacks and flood easements in accordance with Los Angeles County Public Works Department requirements. As such, the Project will not encroach onto California Department of Fish and Game jurisdictional drainages.
- **Minimize Disturbances to Natural Drainage Pattern:** The proposed Project is designed to conform to the natural local watershed, and to maintain the surface flow pattern of the pre-developed condition. The existing drainage channels will remain in their natural condition to avoid hydrologic effects such as concentration of flow, scouring, and increased runoff to the down-gradient areas.
- **Directing Runoff from Impervious Areas to Infiltration Areas:** Excess volumes determined by hydrologic analyses will be infiltrated throughout the Project site. To comply with the LID Standards, and to meet the Los Angeles County Department of Public Works (LACDPW) requirements for balancing pre- and post-development runoff volume, infiltration basins will be constructed within the solar array and near the O&M facility and substation areas.

B.2.4 Public Health and Safety

California Public Utilities Commission (CPUC), General Order (GO) No. 95, Rules for Overhead Electrical Line Construction – proposed transmission lines will meet these requirements. Compliance with these requirements will limit potential Project EMF

emissions to levels that are consistent with CPUC policies which consider protection of public health, among other factors.

B.2.5 Fire Hazards

Electrical equipment enclosures that house the inverters and transformers will be either metal or concrete structures and will be designed to meet National Electric Manufacturers Association (NEMA) 1 or NEMA 3R IP44 standards for electrical enclosures.

Measures implemented in accordance with LACFD requirements for the facility site, and regulations for transmission line fire safety:

- Water requirements will be in accordance with National Fire Protection Association (NFPA) 1142 prior to issuance of a building permit.
- The Project will provide paved fire apparatus access with a minimum width of 26 feet clear to sky. The access will extend to within 150 feet of all exterior portions of all buildings.
- All fire access gates will comply with LACFD "Regulation 5 – Limited Access Devices and Systems."
- Access roads will be maintained with a minimum of 10 feet of brush clearance on each side. Fire access roads will have an unobstructed vertical clearance clear-to-sky with the exception of protected tree species.
- Turning radii within the facility site will not be less than 32 feet.
- The Project will comply with LACFD "Regulation 27 – Requirements for Building Construction and Land Use Within or Adjacent to High Voltage Transmission Lines."
- The Project will comply with CPUC GO 95, PRC 4292, and PRC 4293 for transmission line fire safety requirements.

B.3 OTHER MEASURES

Studies conducted to characterize the Project site conditions, and the surrounding area potentially affected by Project development activities, identified a number of areas where Project-related impacts could be potentially significant. To avoid any significant impacts to the environment or public health and safety, the following measures will be implemented.

B.3.1 Land Use

B.3.1.1 Implement and Comply with Local Standards

The Project will comply with Los Angeles County ordinance amendments: Chapter 12.84, LID; Title 21 Section 21.24.430, Drought Tolerant Landscaping; and Chapter 22.52, Green Building Development standards. The Project will comply with applicable provisions in the ordinance amendments, or obtain a waiver or modification of requirements (as approved by the Director of Public Works) in accordance with the ordinance provisions.

B.3.1.2 Transmission Line Williamson Act Review (Kern County)

Prior to the construction of the proposed transmission line route within any Williamson Act contracted lands in Kern County, the Project will submit a written site description, along with a plot plan of the proposed transmission line route within the contracted land to the Kern County Planning Department for review and approval.

B.3.1.3 Tree Planting Modification

Prior to issuance of a grading permit, the Project will obtain authorization to modify the tree planting requirements of the Green Building Ordinance from the Director of Public Works and will comply with all considerations and other terms of the Green Building Ordinance requirements to the satisfaction of the Director of Public Works (see Sections 22.52.2130.C.5 and Section 22.52.2150 of the County Code).

B.3.2 Visual Resources

B.3.2.1 Visual Screening during Construction

Prior to any construction activity within the vicinity of SR-138, temporary screening of construction and staging areas (e.g., via vegetation, or fencing with fabric or slats) will be installed to minimize visual effects from construction as required by LACDRP.

B.3.2.2 Construction Housekeeping

During construction, the development site will be maintained. The Project facility construction site and off-site transmission line route work areas will be kept clean of debris, trash, or waste.

B.3.2.3 Building and Equipment Paint

All proposed on-site structures and appropriate equipment will be painted will neutral colors and non-reflective, as approved by the LACDRP.

B.3.2.4 Screening Vegetation Landscaping Plan and Maintenance

Prior to issuance of a grading permit, the Project will submit a landscaping plan for the 10-foot-wide strip of Project screening vegetation proposed along the facility fencelines on both sides of SR-138, to the LACDRP for review and approval. The Plan will be certified by a registered landscape architect, and will identify use of temporary irrigation, and the areas on both sides of SR-138 at the Project site to be planted with Joshua trees and/or other native yucca species, and native shrub species, in compliance with the County Drought-Tolerant Landscaping Ordinance. The landscaping will be installed within 14 months of the commencement of construction activities. The vegetation will be maintained via selective thinning and removal of invasive weeds and monitored thereafter to promote successful, long-term establishment of the native vegetation to the satisfaction of LACDRP. The landscaped area will also be maintained free of trash and debris for the Project lifetime to the satisfaction of LACDRP.

B.3.2.5 Maintenance of SR-138 Caltrans and County Easements

In order to accommodate Caltrans' potential plans to widen SR-138 in the future, areas on both sides of the existing Caltrans right-of-way for SR-138 will be offered by the Project for dedication in fee simple to Caltrans as well as adjacent 10-foot-wide slope easements to the County. These areas will be maintained free of trash and debris by the Project on an as-needed basis to the satisfaction of LACDRP. The dedicated area for Caltrans will be maintained by the Project until such time the deed for the applicable area is transferred to Caltrans, and the slope easement areas for the County will be maintained by the Project until such time that the County installs improvements.

B.3.3 Air Quality

B.3.3.1 Ensure AVAQMD Construction Emission Thresholds Would Be Met

Prior to issuance of the grading permit, the Project will select an engineering, procurement, and construction (EPC) contractor to build the Project. The Project/EPC contractor will be required to demonstrate that the final construction plans will not result in exceedances of applicable AVAQMD air emission significance thresholds during construction of the Project to the satisfaction of AVAQMD and LACDRP.

Prior to issuance of a grading permit, the Project will prepare a report describing the Project's final engineering design-based plan for constructing the Project, including: 1) scheduling of construction activities; 2) equipment usage and details; 3) construction workforce loading; 4) truck deliveries schedule; and 5) ground disturbing/dust generating activities, etc. The report will include emission calculations to demonstrate that the final construction plan will not result in exceedances of all applicable AVAQMD criteria pollutant emissions thresholds to the satisfaction of AVAQMD.

B.3.3.2 Develop and Implement Fugitive Dust Emission Control Plan

The Project will develop a Fugitive Dust Emission Control Plan (FDECP) for construction work. The FDECP will be submitted to AVAQMD for review and approval prior to issuance of a grading permit.

Measures to be incorporated into the plan will include, but are not limited to the following:

- The proposed PM measures (#24 to #44) in AVAQMD's List and Implementation Schedule for District Measures to Reduce PM Pursuant to Health & Safety Code §39614(d) will be incorporated into the fugitive dust control plan, as applicable.
- Non-toxic soil binders will be applied per manufacturer recommendations to active unpaved roadways, unpaved staging areas, and unpaved parking area(s) throughout construction to reduce fugitive dust emissions.
- Travel on unpaved roads will be reduced to the extent possible, by limiting the travel of heavy equipment in and out of the unpaved areas.
- Water the disturbed areas of the active construction sites at least three times per day, (when soil moisture conditions result in dust generation) and more often if visible fugitive dust leaving the site is noted.
- Enclose, cover, water twice daily, and/or apply non-toxic soil binders according to manufacturer's specifications to exposed piles of soils with a five percent or greater silt content.
- Maintain unpaved road vehicle travel to the lowest practical speeds, and no greater than 15 miles per hour (mph), to reduce fugitive dust emissions.
- All vehicle tires will be inspected, be free of dirt, and washed as necessary prior to entering paved roadways from the Project site.
- Install wheel washers or wash the wheels of trucks and other heavy equipment where vehicles exit the site.
- Cover all trucks hauling soil and other loose material, or require at least 2 feet of freeboard.
- Establish a vegetative ground cover (in compliance with biological resources impact mitigation measures) or otherwise create stabilized surfaces on all unpaved areas through application of dust palliatives at each of the construction sites within 21 days after active construction operations have ceased.
- Prepare contingency for high wind periods (greater than 25 mph) to shutdown or mitigate activity as necessary to control fugitive dust.

- Travel routes to each construction site area will be developed to minimize unpaved road travel. Travel management will include staging of deliveries to minimize idling or congestion, use of dust palliatives or soil tackifiers on road surfaces, and minimizing travel distance.

B.3.3.3 Dust Plume Response

An air quality construction mitigation manager (AQCMM) or delegate will monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported: 1) off the Project site; 2) 200 feet beyond the centerline of the construction of linear facilities; or 3) within 100 feet upwind of any regularly occupied structures not owned by the Project owner, indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMM or Delegate will promptly implement dust plume reduction measures in the event that such visible dust plumes are observed. Additional measures to be implemented, as necessary, will include increased watering, application of dust palliatives, and/or scaled back construction activities up to and including temporary work cessation.

B.3.3.4 Off-road Diesel-fueled Equipment Standards

All construction diesel engines not registered under CARB's Statewide Portable Equipment Registration Program, which have a rating of 50 hp or more, and all off-road construction diesel engines not registered under CARB's In-use Off-road Diesel Vehicle Regulation, which have a rating of 25 hp or more, will meet projected 2011 fleet average of NO_X and PM emissions as predicted by CARB's OFFROAD2007 model (http://www.arb.ca.gov/msei/offroad/offroad.htm). The EPC will use the CARB Portable Diesel Engine Airborne Toxic Control Measure (ATCM) Fleet Calculators and the Off-road Diesel Fleet Average Calculators (for large/medium fleets) in accordance with the respective regulation under Title 13 of the California Code of Regulations (CCR) to conduct this comparison. No Tier 0 diesel equipment will be used at the site after the initial calculation/registration without recalculation using the CARB fleet calculators. The fleet average calculation of the on-site equipment will be conducted annually to ensure compliance. The EPC contractor will ensure labeling of all portable and off road diesel equipment in accordance with Title 13 of the CCR.

B.3.3.5 Limit Vehicle Traffic and Equipment Use

Vehicle trips and equipment use will be limited by efficiently scheduling staff and daily construction activities to minimize the use of unnecessary/duplicate equipment.

B.3.3.6 Heavy Duty Diesel Haul Vehicle Equipment Standards

For the pile foundation case (which results in higher air emissions than the ballast foundation case and requires additional mitigation), the EPC will use 2006 model or newer engines in order to meet the EMFAC predicted emissions levels in grams of pollutant per mile travelled (g/mile) of on-road heavy duty diesel trucks used for water hauling at the site. The EPC contractor will ensure labeling of such trucks to indicate model year.

B.3.3.7 On-road Vehicles Standards

All on-road construction vehicles will meet all applicable California on-road emission standards and will be licensed in the State of California. This does not apply to construction worker personal vehicles.

B.3.3.8 Properly Maintain Mechanical Equipment

The construction contractor will ensure that all mechanical equipment associated with Project construction is properly tuned and maintained in accordance with the manufacturer's specifications.

B.3.3.9 Restrict Engine Idling to 5 Minutes

Diesel engine idle time will be restricted to no more than 5 minutes, as required by the CARB engine idling regulation. Exceptions are vehicles that need to idle as part of their operation, such as concrete mixer trucks.

B.3.3.10 Off-road Gasoline-fueled Equipment Standards

Any off-road stationary and portable gasoline powered equipment brought on-site for construction activities will have USEPA Phase 1/Phase 2 compliant engines, where the specific engine requirement will be based on the new engine standard in affect two years prior to the commencement of Project construction. In the event that USEPA Phase 1/Phase 2 compliant engines are determined not to be available, the Project will provide documentation to the AVAQMD with an explanation.

B.3.3.11 Off-road Equipment Operator Worker Protection

Appropriate training for respiratory protection will be provided to construction workers. Dust masks (NIOSH approved) will be provided with proper training to construction workers to mitigate the protection against dust exposure and possibly Valley Fever during high wind events and/or dust-generating activities**.**

B.3.4 Noise

B.3.4.1 Construction Work Hours

Construction hours will comply with applicable local ordinances. These hours are 7:00 a.m. to 7:00 p.m. within Los Angeles County. Construction noise is exempt from regulation in Kern County from 6:00 a.m. to 9:00 p.m., Monday through Friday, and from 8:00 a.m. to 9:00 p.m. on Saturdays and Sundays. It is anticipated that construction will generally occur between 7:00 a.m. and 5:00 p.m., Monday through Friday. Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities. Construction hours are expected to be monitored as part of the Mitigation Monitoring and Reporting Plan (MMRP) that will be prepared in accordance with CEQA requirements (California Public Resources Code, Section 21081.6).

B.3.4.2 Construction Equipment Use of Mufflers

Construction equipment and vehicles will be fitted with efficient, well-maintained mufflers to reduce equipment noise emission levels. In addition, the Project construction equipment and vehicles will be maintained according to the manufacturers' instructions and recommendations. The Project/construction contractor will ensure that Project construction equipment and vehicles will be well maintained.

B.3.4.3 Pile Driver Orientation

In order to reduce the noise levels generated by the vibratory pile driver and comply with all applicable Los Angeles County noise standards, the pile driver will be oriented such that the rear of the pile driver faces toward the noise-sensitive receptors when the vibratory pile driver is being utilized within 3,000 feet of the receptors (off-site residences).

B.3.5 Water Resources

Compliance with the construction SWPPP and SUSMP, as well as implementation of several Project design and stormwater management measures during construction will minimize the potential for these impacts and reduce them to levels of insignificance. These are described as follows:

- Project site and transmission line facilities would avoid all drainages and FEMA Zone A floodplain areas. No construction activities will occur within site drainages, and construction will be setback from the two major drainages (Drainages A and C) by a minimum of approximately 100 feet. Additionally, all Project development will be set back a minimum of 100 feet from the FEMA Zone A floodplain for Drainage C.
- Implementation of construction SWPPP and SUSMPs and associated BMPs in accordance with the requirements of State Water Resources Control Board NPDES

permit (Order No. 99-08-DWQ) and in compliance with the Los Angeles County NPDES permit issued by the LRWQCB (Los Angeles County MS4 Permit).

The potential for impacts to surface and stormwater quality due to facility site and off-site transmission line operations are expected to be minimized through Project design and implementation of BMPs and stormwater management measures. These are described as follows:

- Project site and transmission line facilities will avoid all drainages.
- Hazardous materials and wastes will be stored in the O&M warehouse and managed in accordance with applicable regulations. Secondary containment will be provided for transformers and periodic inspections and maintenance will be performed to identify and implement corrective actions, as necessary.
- Herbicides may be used to control noxious weeds within the solar field or to maintain the fire breaks. Use of such herbicides will be approved by the LACDRP and will be applied by qualified personnel.
- Earth disturbing activities during operations will be primarily limited to maintenance of the firebreaks, infiltration basins, or access roads. Implementation of the BMPs described below is expected to minimize potential impacts related to erosion and sedimentation potentially associated with these activities.
- As required by Title 12, Section 12.80.520 of the Los Angeles County Code, BMPs for spill and erosion control will be implemented during Project operations to minimize the potential for impacts to stormwater runoff. These BMPs will also ensure compliance with the LRWQCB Basin Plan (LRWQCB 1995), and any applicable individual Project permit (with associated Waste Discharge Requirements) required by LRWQCB.
- Applicable BMPs as selected from: 1) LRWQCB Basin Plan; 2) CASQA Stormwater Best Management Practice Industrial and Commercial Handbook (CASQA 2003b); and 3) the Los Angeles County LID Standards Manual (LACDRP 2009). Minimum BMPs would include:
    - Good housekeeping practices and site revegetation where applicable
    - Regularly scheduled site inspections, monitoring, and maintenance of site facilities including on-site drainage channels
    - Maintaining spill prevention and control procedures
    - Monitoring of soil erosion and revegetation efforts and implementation of remedial activities, as necessary
    - Ensure stormwater runoff continues to be directed away from operating, processing, fueling, cleaning, and storage areas

- To address potential flood hazards, infiltration basins will be installed in accordance with the Los Angeles County Low Impact Development (LID) Standards, as well as the Los Angeles County Department of Public Works (LACDPW) requirements. The infiltration basins would function as a series of detention basins that would detain the excess stormwater runoff flow and volume on-site and let the detained stormwater infiltrate into the ground. In addition to balancing the runoff volume, the infiltration basins would also serve as an erosion and debris control BMP. Stormwater runoff would flow into the basins, thereby reducing its velocity and decreasing its erosion potential and sediment load.

B.3.5.1 On-site Wastewater Treatment System Feasibility Report

Prior to construction/installation of the on-site septic/leach field system, a complete on-site wastewater treatment system (OWTS) feasibility report will be submitted to the LACDPH for review and approval. The feasibility report will be prepared in conformance with the requirements outlined in the current version of LACDPH guidelines, "On-site Wastewater Treatment System Guidelines."

B.3.5.2 Erosion Control and Stormwater Management Measures

In order to ensure that Project-related erosion and debris deposition as well as stormwater related impacts would be minimized, the design measures specified in the Drainage Concept Report (Psomas 2009) will be implemented subject to review and approval by the Los Angeles County Department of Public Works (LACDPW).

B.3.6 Biological Resources

B.3.6.1 Habitat Enhancement and Vegetation Management Plan

Prior to issuance of a grading permit, the Project will develop a Habitat Enhancement and Vegetation Management Plan (HEVMP) to restore/compensate for impacts to existing vegetation communities. The HEVMP will be approved by the County prior to issuance of a grading permit.

B.3.6.2 Off-site Mitigation for Loss of Habitat

The Project will preserve and/or restore natural habitats at an off-site location within the Antelope Valley, either through direct acquisition and protection or by contracting with a County-approved land management entity. The loss of existing natural habitat will be mitigated at a 0.28:1 ratio (28 percent), and wildflower field habitat will be mitigated at a ratio of 1.5:1 (150 percent). Mitigation will be provided on-site and off-site with the off-site mitigation area providing a minimum of 450 acres, with at least 225 acres in the vicinity of the Antelope Valley California Poppy Reserve. The Project will establish a fund sufficient

for the restoration, enhancement, and maintenance of the mitigation land(s) until such time when the mitigation land(s) become self-sustained and meet the mitigation requirements.

B.3.6.3 Biological Restrictions for Dust Suppression

Where construction activities are proposed within 100 feet of mapped Joshua tree woodland vegetation or the Joshua tree recruitment area, a screening fence (i.e., a 6-foot-high chain link fence with green fabric up to a height of 5 feet) will be installed to protect locations where these sensitive resources may be present to the satisfaction of LACDRP. In addition, dust abatement within 100 feet of these areas will be achieved by water or by chemical dust suppression if authorized by the County and CDFG.

B.3.6.4 Biological Monitor

Prior to grading, a qualified biologist will be retained by the Project as the biological monitor subject to the approval of the County of Los Angeles. The biological monitor will ensure that impacts to biological resources are avoided or minimized to the fullest extent possible. During earth moving activities, the biological monitor will be present to relocate any vertebrate species that may come into harm's way to undisturbed areas of suitable habitat using appropriate methods that would not injure the wildlife. The biological monitor will have the authority to stop specific grading or construction activities if violations of mitigation measures or any local, state, or federal laws are suspected.

B.3.6.5 Worker Environmental Education Program

A Worker Environmental Education Program will be developed for construction crews by a qualified biologist(s) provided by the Project. The training sessions will be conducted by a qualified biologist or other individual approved by the biologist.

B.3.6.6 Blainville's Horned Lizard Capture and Relocation

Prior to the initiation of ground clearing activities, capture and relocation efforts will be conducted for the Blainville's horned lizard. Trapping will be conducted by a County-approved biologist possessing proper scientific collection and handling permits.

B.3.6.7 Pre-construction Nesting Bird and Desert Tortoise Surveys

Within 30 days prior to vegetation clearing of ground disturbance associated with construction or grading occurring during the nesting/breeding season of native bird species potentially nesting on the site (typically February through August in the Project region, or as determined by a qualified biologist), the Project will have nesting bird surveys conducted by a qualified biologist.

As discussed in Section 3.8, the desert tortoise is unlikely to occur within the Project site area due to known distribution and lack of suitable habitat. The biological surveys of the site were negative for this species and the impact assessment did not identify any potential Project impacts to desert tortoise. However, as an added precaution, the Applicant will conduct pre-construction surveys for this species to ensure that impacts to this species are avoided. Within 30 days prior to construction-related initial ground clearing, the Applicant shall retain a qualified biologist to conduct surveys for signs of occupancy by the desert tortoise. Surveys shall be conducted on foot, and intended to detect any live tortoises or their carcasses, burrows, palates, tracks, or scat. Where practical, the surveys for desert tortoise sign may be conducted concurrently with the pre-construction nesting bird surveys described above, or with the wintering burrowing owl surveys described below. If any desert tortoise sign is identified, a qualified biologist will conduct further investigations in the area of the find to determine if desert tortoise may in fact be present. If the qualified biologist determines that desert tortoise may be present the Applicant shall not proceed with ground clearing activities in the area of the find and shall contact the USFWS to develop an avoidance strategy.

B.3.6.8 Pre-construction Wintering Burrowing Owl Surveys

For Construction or site preparation activities during the non-nesting season of the burrowing owl (typically September through January), the Project will retain a qualified biologist to conduct wintering burrowing owl surveys within the area to be disturbed. Burrowing Owl occurrences will be addressed in accordance with local and state protocols.

B.3.6.9 Burrowing Owl Management Plan

Prior to issuance of a grading permit, a habitat management plan for the burrowing owl will be developed for portions of the site supporting suitable habitat for burrowing owl and away from Project facilities and the solar panel arrays.

B.3.6.10 Nesting Bird Surveys Prior to Mowing

Mowing for vegetation management purposes during the nesting/breeding season of native bird species potentially nesting on the site (typically February through August in the Project region, or as determined by a qualified biologist), will be preceded by nesting bird surveys.

B.3.6.11 Facility Lighting

Project facility lighting will be designed to provide the minimum illumination needed to achieve safety and security objectives. All lighting will be directed downward and shielded to focus illumination on the desired areas only and avoid light trespass into adjacent areas. Lenses and bulbs will not extend below the shields. The lighting plan will be submitted to LACDPW for review and approval.

B.3.6.12 Desert Kit Fox

To avoid injury or mortality of the desert kit fox, preconstruction surveys will be conducted for this species concurrent with the pre-construction nesting bird surveys. A qualified biologist will perform pre-construction surveys for kit fox dens in the Project site and along the proposed transmission line route. Any den(s) identified by these surveys will be evaluated, excavated and backfilled following applicable protocols. The Project will submit a report to the LACDRP and CDFG within 30 days of completion of the kit fox surveys describing the survey methods, results, and details of any dens backfilled or foxes observed.

B.3.7 Cultural Resources

The Project will ensure a qualified archaeologist implements the following measures in accordance with professional standards and guidelines, including those established by the California OHP.

B.3.7.1 Avoid Archaeological Sites

Archaeological sites within the proposed Project area will be avoided and protected from future disturbance or evaluated for significance and mitigated, as appropriate, to the satisfaction of the LACDRP.

B.3.7.2 Phase II Testing/Phase III Data Recovery

Phase II testing and evaluation has been conducted at all unavoidable prehistoric archaeological sites in the proposed Project area to determine their significance under Section 15064.5 of CEQA. Sites determined eligible for the California Register of Historic Resources (CRHR) will both be avoided and/or protected from future disturbance via a Phase III data recovery plan. All archaeological collections, technical reports and related documentation will be curated at a curation facility approved by the County of Los Angeles. (Note: The Phase II testing and evaluation activities were completed by SRI in late 2010 for the Project. The Phase III data recovery program is planned to be implemented in 2011 prior to construction.)

B.3.7.3 Archaeological Monitoring

Prior to construction, an archaeological monitoring plan will be prepared and implemented to the satisfaction of LACDRP. A qualified archaeological monitor will be present during all ground disturbing activities. In the event that any prehistoric or historic cultural resources are encountered, activities potentially affecting the resource will be halted and the site evaluated. Additional measures will be implemented as necessary to avoid significant resource impacts.

B.3.7.4 Native American Monitor

A Native American monitor (Tataviam/Fernadeno Band of Mission Indians) will be notified prior to construction and allowed the opportunity to be present during all ground disturbing activities, including vegetation clearing, grubbing, grading, filling, drilling, and trenching. In the event that any sacred site or resource is identified, a Native American monitor will be retained to divert construction activities to another area of the Project site while a proper plan for avoidance or removal is determined to the satisfaction of the LACDRP.

B.3.7.5 Human Remains

In the event human remains are encountered, construction in the area of the finding will cease, and the remains will stay in situ pending definition of an appropriate plan. The Los Angeles County Coroner (Coroner) will be contacted to determine the origin of the remains. In the event the remains are Native American in origin, the NAHC will be contacted to determine necessary procedures for protection and preservation of the remains, including reburial, as provided in the State of California Environmental Quality Act (CEQA) Guidelines, Section 15064.5(e), "CEQA and Archaeological Resources," CEQA Technical Advisory Series.

B.3.7.6 Paleontological Resources Protection

In the event paleontological discoveries are encountered by the cultural monitors, all excavation will cease in the area of the find and a paleontologist will be contacted who will devise a plan for recovery in accordance with standards established by the Society of Vertebrate Paleontology. At least one of the on-site cultural monitors during construction will have familiarity and expertise in paleontological resources and have the ability to recognize significant vertebrate paleontological resources. Any paleontological resources will be documented and submitted to the Natural History Museum of Los Angeles County, or any other accredited institution (i.e., San Bernardino County Museum, UCLA Dept of Earth and Space Sciences) that will accept paleontological resources for curation.

B.3.7.7 Construction Worker Training

Prior to construction, the qualified archaeological monitor or qualified designee will conduct a brief educational workshop such that all construction personnel understand monitoring requirements, roles and responsibilities of the monitors, and penalties for unauthorized artifact collecting or intentional disturbance of archaeological resources. The construction worker training will include an overview of potential cultural and paleontological resources that could be encountered during ground disturbing activities to facilitate worker recognition, avoidance, and subsequent immediate notification to a designated on-site cultural monitor for further evaluation and action, as appropriate.

B.3.8 Public Health and Safety

B.3.8.1 Hazardous Materials and Hazardous Waste Management

The Project will develop and implement a hazardous materials and hazardous waste management program for both construction and operation phases. The program will include the following, as required by applicable regulations:

- **Hazardous Materials and Hazardous Waste Handling.** The construction contractor will prepare a Project-specific hazardous materials management and hazardous waste management program prior to initiation of construction. The program will outline proper hazardous materials use, storage, and disposal requirements, as well as hazardous waste management procedures. The program will identify types of hazardous materials to be used during Project construction and operation, and the types of wastes that will be generated. Hazardous wastes will be handled and disposed of according to applicable rules and regulations. Prior to construction and operation the Project will prepare or update and submit a HMBP, in accordance with Chapter 6.95 of the CHSD, and Title 22 CCR, as required by the CUPA.
- **Construction Stormwater Pollution Prevention Plan.** The construction contractor will prepare a Project-specific construction-related SWPPP for review and approval by appropriate regulatory agencies, and will implement the Plan prior to the start of demolition and construction activities. The construction-related SWPPP will utilize BMPs to address the storage and handling of hazardous materials and sediment runoff during demolition and construction activities.
- **Transport of Hazardous Materials/Waste.** Hazardous materials transported by truck will include fuel (diesel fuel and gasoline) and oil and lubricants for equipment, hazardous building materials waste from Project demolition and small amounts of construction waste such as waste oils, solvents or cleaners. The construction contractor will prepare written procedures for the transport of hazardous materials/waste in accordance with California Vehicle Code, CHP Regulations (California Code of Regulations [CCR] Title 13); United States Department of Transportation (DOT) Regulations, Title 49, Code of Federal Regulations (49 Code of Federal Regulations); and U.S. Environmental Protection Agency (USEPA) Regulations, Title 40 Code of Federal Regulation, and CCR 22 regulations prior to construction activities. These procedures will include packaging, manifesting, and USEPA Identification Number requirements.
- **Fueling and Maintenance of Construction and Operation Equipment.** The construction contractor will prepare written procedures for fueling and maintenance of construction equipment prior to construction activities. If on-site fueling is conducted, refueling procedures will include the use of drop cloths made of plastic, drip pans, and trays to be placed under refilling areas to ensure that chemicals do not come into contact with the ground. Refueling stations will be located in designated areas where absorbent

pads and trays are available. Drip pans or other collection devices will be placed under the equipment at night to capture drips or spills. Equipment will be inspected daily for potential leakage or failures.

- **Emergency Release Response Procedures.** The construction contractor will prepare an Emergency Response Plan detailing responses to releases of hazardous materials prior to construction activities. It will prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and will include an emergency response program to ensure quick and safe cleanup of accidental spills. All hazardous materials spills or threatened release, including petroleum products such as gasoline, diesel, and hydraulic fluid, will be immediately reported, as required. All construction and operations personnel will be made aware of state and federal emergency response reporting guidelines.

B.3.8.2 Hazardous Materials Business Plan

The Hazardous Materials Business Plan (HMBP) for the Project will include an Emergency Response Plan for approval by the LACFD. Additionally, an Emergency Action Plan and a Fire Prevention Plan will be prepared for the Project as required by Cal-OSHA. Thus, the proposed Project will have established plans and procedures for responding to emergency situations and will not be expected to impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.

B.3.8.3 Electric and Magnetic Fields

The Project will manage the electric and magnetic field strengths associated with the proposed transmission line(s) by constructing the transmission facilities in accordance with the requirements of CPUC GO 95. In addition, EMF strengths will be managed in accordance with GO 52 (Rules for Construction and Operation of Power and Communication Lines for the Prevention or Mitigation of Inductive Interference), and GO 131-D (Rules for Planning and Construction of Facilities for the Generation of Electricity and Certain Electric Transmission Facilities), as applicable. Compliance with these requirements will limit potential EMF levels from Project facilities to levels that are consistent with CPUC policies which consider protection of public health, among other factors.

B.3.8.4 Additional Assessment, and Possibly Remediation, of Potentially Contaminated Soils on the Project Site

Prior to the issuance of a grading permit, the Project will obtain a site closure letter from the Los Angeles County Fire Department, Health Hazardous Materials Division. The Project will conduct additional site assessment or remediation activities as required by and to the satisfaction of the Voluntary Oversight Program of the CUPA (Los Angeles County Fire Department, Health Hazardous Materials Division). These actions could include preparation

and implementation of Phase II Environmental Site Assessment Work Plans and Site Remediation Action Plans, as necessary.

B.3.8.4.1 A Soil Management Plan for Transmission Line Construction. Prior to issuance of a grading permit, a soil management plan will be submitted to the CUPA for review and approval. The plan will include practices that are consistent with the California Title 8, Occupational Safety and Health Administration (Cal-OSHA) regulations, as well as CUPA remediation standards that are protective of the planned use. Appropriately trained construction personnel will be present during site preparation, grading, and related earthwork activities (e.g., augering) to monitor soil conditions encountered. In order to confirm the absence or presence of hazardous substances associated with former land use, a sampling strategy may be implemented. The sampling strategy will include procedures regarding logging/sampling and laboratory analyses. The Soil Management Plan will outline guidelines for identifying impacted soil, assessing impacted soil, soil excavation, impacted soil storage, verification sampling, and impacted soil characterization and disposal.

***The historic oil well that requires abandonment or re-abandonment will be abandoned to current standards*.** Prior to issuance of a grading permit, an investigation into the location of the historic oil well (abandoned dry hole), reportedly located on the proposed Project site will be conducted. If the well is determined to be located on the Project site, the well will be inspected. If the well was not abandoned properly, as determined by the California Division of Oil, Gas, and Geothermal Resources (DOGGR), the well will be re-abandoned to the satisfaction of DOGGR. The Project development plans will comply with the required setbacks from oil and gas wells as determined by DOGGR and the County of Los Angeles. (Note: The abandoned dry hole was located on the Project solar generation site in December 2010; coordination with DOGGR to abandon the dry hole was in progress as of May 2011.)

B.3.8.5 Demolition Hazardous Building Materials Assessment and Management Plan

Prior to the commencement of any demolition activity on the Project site, the demolition contractor will prepare a written Demolition Hazardous Building Materials Assessment and Management Program for review and approval by the CUPA, and/or other appropriate regulatory agency. The Demolition Hazardous Building Materials Management Program will include an assessment for lead-based paint (LBP) and asbestos-containing material (ACM) as identified in the URS pre-demolition survey report (URS 2010e), and the following plans will be prepared:

- **Lead-based Paint Abatement and Management Plan.** A LBP Abatement Plan will be prepared and implemented by a qualified contractor. Elements of the plan will include the following:
    - Containment of all work areas to prohibit off-site migration of paint chip debris.

- Removal or encapsulation of all peeling and stratified LBP on building surfaces and on non-building surfaces to the degree necessary to properly complete demolition activities per the recommendations of the survey. The demolition contractor will properly contain and dispose of intact LBP on all equipment to be cut and/or removed during demolition.
- Providing on-site air monitoring during all abatement activities and perimeter monitoring to ensure no contamination of work of adjacent areas.
- Cleanup and/or HEPA vacuum paint chips.
- Collection, segregation, and profiling waste for disposal determination.
- Post-demolition testing of soil to assure that soil at the site is not contaminated by LBP.
- Providing for appropriate disposal of all waste.

- **Asbestos-containing Materials Abatement and Management Plan.** Prior to demolition work that will disturb identified ACMs, an ACM Abatement and Management Plan will be prepared. Asbestos abatement will be conducted during demolition activities, consistent with OSHA and air quality regulations. The Management plan will include detailed information regarding ACM classification, ACM hazard assessment (the possibility of fiber release from ACM is based on the materials condition, such as friability), ACM inventory information, training and qualification for workers, demolition handling procedures, waste management and disposal procedures, and emergency response procedures (in case of a release of friable materials). A licensed asbestos abatement removal contractor will remove the ACMs under the oversight of a California Certified Asbestos Consultant. All identified ACMs will be removed and appropriately disposed of by a state-certified asbestos contractor. The proposed Project will include notification of demolition activities to the Antelope Valley Air Quality Management District.

B.3.9 Fire Hazards

B.3.9.1 Fire Protection and Prevention Plan

The Project will develop and submit a Fire Protection and Prevention Plan to the LACFD for review and approval prior to issuance of a Grading Permit. The Plan will address construction and operation activities for the Project, and establish standards and practices that will minimize the risk of fire danger, and in the case of fire, provide for immediate suppression and notification.

The Fire Protection and Prevention Plan will address spark arresters, smoking and fire rules, storage and parking areas, use of gasoline-powered tools, road closures, use of a fire guard,

and fire suppression equipment and training requirements. In addition, all vehicle parking areas, storage areas, stationary engine sites and welding areas will be cleared of all vegetation, and flammable materials. All areas used for dispensing or storage of gasoline, diesel fuel or other oil products will be cleared of vegetation and other flammable materials. These areas will be posted with signs identifying they are "No Smoking" areas. An interim fire protection system will be in place during construction until the permanent system is completed. The Plan will also address vegetation clearance and maintenance requirements applicable to the transmission pole structures during operation.

Special attention will be paid to operations involving open flames, such as welding, and use of flammable materials. Personnel involved in such operations will have appropriate training. A fire watch utilizing appropriately classed extinguishers or other equipment will be maintained during hot work operations. Site personnel will not be expected to fight fires past the incident stage. The local responding fire officials will be given information on the site hazards and the location of these hazards, and the information will be included in the emergency response planning.

Materials brought on-site will conform to contract requirements, insofar as flame resistance or fireproof characteristics are concerned. Specific materials in this category include fuels, paints, solvents, plastic materials, lumber, paper, boxes, and crating materials. Specific attention will be given to storage of compressed gas, fuels, solvents, and paint. Electrical wiring and equipment located in inside storage rooms used for Class I liquids will be stored in accordance with applicable regulations. Outside storage areas will be graded to divert possible spills away from buildings and will be kept clear of vegetation and other combustible materials.

On-site fire prevention during construction will consist of portable and fixed firefighting equipment. Portable firefighting equipment will consist of fire extinguishers and small hose lines in conformance with Cal-OSHA and the National Fire Protection Association (NFPA) for the potential types of fire from construction activities. Periodic fire prevention inspections will be conducted by the contractor's safety representative.

Fire extinguishers will be inspected routinely and replaced immediately if defective or in need of recharge. All firefighting equipment will be conspicuously located and marked with unobstructed access. A water supply of sufficient volume, duration, or pressure to operate the required firefighting equipment will be provided on-site. Authorized storage areas and containers for flammable materials will be used with adequate fire control services.

B.3.9.1.1 <u>Fire Department Notification of Street Closures</u>. The Project will notify the County of Los Angeles Fire Department First Stations 78, 112, and 140 a minimum of three days in advance of any street closures that may affect fire/paramedic responses in the area. In

the event that the Project would require road closures, alternate route details (detour plans) and the schedule of closures would be submitted to the LACFD prior to construction.

B.3.10 Transportation

B.3.10.1 Water Line Crossing Technique

The proposed water line crossing of SR-138 will be performed by horizontal directional drilling or jack-and-bore under the road. It is currently expected that the installation under SR-138 will not require any traffic control or delays as traffic could continue in both directions unimpeded. The water pipeline crossing of SR-138 will require Encroachment Permits from Caltrans and compliance with the terms of the Encroachment Permit would avoid any potentially significant traffic impacts. If the proposed 34.5-kV transmission line crossing of SR-138 near the intersection with 170th Street West (refer to Figure 2-4) is installed underground instead of overhead, the construction techniques and Caltrans Encroachment Permit requirements identified for the proposed water pipeline crossing would apply.

B.3.10.2 Provide Adequate Worksite Traffic Control

Utility crossings of SR-138 and 170th Street West, and multiple County roads that are crossed by the proposed off-site 230-kV transmission line along 170th Street West, may encroach upon roadway travel lanes, and may require temporary road closures. Prior to any construction activities and/or issuance of required encroachment permits from Los Angeles and Kern counties, the Project will prepare worksite traffic control plans for review and approval from the LACDPW and the Kern County Resource Management Agency, Roads Department. The plans will include: 1) the location and usage of appropriate construction work warning signs that will be placed in accordance with the California Manual on Uniform Traffic Control Devises (Caltrans 2010); 2) proper merging taper and/or shifting lane schematics; and 3) adequate work area and buffer zone designation as well as proper location and conduct of flagmen and the traffic management supervisor at the installation worksite area. The Project worksite traffic control plans will be coordinated with driver and worker safety in mind. Where the observed speed limit on affected roadways is 55 MPH or more, the plans will incorporate and implement the following minimum standard requirements per the Work Area Traffic Control Handbook (WATCH):

- A Type C flashing arrow pane will be used for each closed lane.
- The minimum height for traffic cones will be 28 inches.
- A minimum of three advance warning signs will be posted.
- Consideration of advanced safety enhancement measures will be taken into account for workers in the work zones.

The above safety and traffic control measures identified in the traffic control plans will also be implemented at pole installation sites within the public road ROW and/or roadway crossings at a minimum.

B.3.10.3 Document Pre- and Post-project Construction Pavement Condition of 170th Street West and Pay Fair Share

Prior to issuance of a grading permit, the Project will document and submit all required information and/or material pertaining to the pavement conditions of 170th Street West including the formula for calculating the Project's fair share of any repair and/or reconstruction of 170th Street West to the satisfaction of the LACDPW. The Project will reimburse the County of Los Angeles for the cost of any repairs and/or reconstruction of 170th Street West attributable to the Project as agreed to by the LACDPW. The timing of any necessary repairs and/or reconstruction of 170th Street West and the required payment by the Project will be determined by LACDPW.

APPENDIX C
SUMMARY OF ARCHAEOLOGICAL SITES AND ISOLATED ARTIFACTS RECORDED AND EVALUATED WITHIN THE PROJECT SITE

Tables C-1 and C-2 present lists of the archaeological sites and isolated artifacts recorded during the Phase I cultural resource surveys of the Project site and the proposed off-site 230-kV transmission line in 2009 and 2010 (URS 2010d). The results of the Phase II testing and evaluation performed by SRI in late 2010 are summarized in Section 3.9 of this EA, and in Tables C-1 and C-2. The confidential Phase II testing and evaluation report was completed in January 2011 by SRI, and has been provided to the DOE and SHPO.

TABLE C-1
ARCHAEOLOGICAL SITES RECORDED AND EVALUATED WITHIN THE PROJECT SITE

Phase I Survey Field Designation	Phase I Survey Description	Phase II Testing and Evaluation Eligibility Recommendation (NRHP/CRHR)[1]
CA-LAN-1776 Update	Concentration of fire-affected and fire-cracked rock and one rhyolite flake.	NE
CA-LAN-1777 Update	Large scatter of rhyolite flakes, three biface fragments, one mano fragment, and scattered fire-cracked rock.	E
CA-LAN-1780 Update	Large scatter of fire-cracked rock, 30 plus groundstone fragments and a lithic scatter consisting of mostly rhyolite with two crypto-crystalline silicate (CCS) flakes.	E
CA-LAN-1781 Update	Large site consisting of 20 groundstone fragments, 25 pieces of fire-affected rock, several rhyolite cores, flakes and shatter, nine metate fragments, one groundstone fragment, and one CCS flake.	NE
URS-SB-1	Historic trash scatter consisting of bottle glass shards, ceramic shards, and unknown metal fragments.	NE
URS-SB-2	Prehistoric lithic scatter consisting of six rhyolite flakes.	NE
URS-SB-3	One portable schist metate fragment and two fire-affected schist fragments in association.	NE
URS-SB-4	Prehistoric lithic scatter consisting of seventeen rhyolite flakes, one granitic mano, and two fire-affected rocks.	NE
URS-SB-5	Cluster of fifteen granitic fire-cracked rocks.	NE
URS-SB-6	Prehistoric lithic scatter consisting of rhyolite flakes and shatter, and one CCS flake.	NE
URS-MN-1	Prehistoric lithic scatter consisting of four rhyolite flakes, one rhyolite core, and one ground stone (metate) fragment.	NE
URS-MN-2	Lithic scatter consisting of rhyolite flakes and shatter.	NE
URS-MN-3	Lithic scatter consisting of two rhyolite flakes and one rhyolite core.	NE
URS-MN-4	Lithic scatter consisting of five large rhyolite core fragments with shatter, fire-cracked rock, and four groundstone fragments.	NE
URS-MN-5	Lithic scatter consisting of three rhyolite core fragments and shatter, one groundstone fragment, two rhyolite flakes, and fire-cracked rock.	NE
URS-MN-6	Lithic scatter consisting of three rhyolite core fragments and shatter, five groundstone fragments, and ten pieces of fire-cracked rock.	E
URS-MN-7	Lithic scatter consisting of seven groundstone fragments, one rhyolite flake, four pieces of rhyolite shatter, and fire-affected rock.	NE

TABLE C-1 (CONTINUED)
ARCHAEOLOGICAL SITES RECORDED AND EVALUATED WITHIN THE PROJECT SITE

Phase I Survey Field Designation	Phase I Survey Description	Phase II Testing and Evaluation Eligibility Recommendation (NRHP/CRHR)[1]
URS-MN-9	Lithic scatter consisting of three rhyolite flakes, one piece of tabular rhyolite, and one groundstone fragment.	NE
URS-MN-10	Lithic scatter consisting of rhyolite cores, flakes and tools, two burned rhyolite metate fragments, and fire-affected rock.	NE
URS-MN-11	Lithic scatter consisting of rhyolite cores, tools, and shatter, four groundstone fragments, and fire-affected rock.	NE
URS-MN-12	One historic era glass bottle base and four other glass shards from the same bottle. Glass bottle base has been worked, possibly with the intention of making a projectile point perform.	NE
URS-MN-13	Sparse scatter of rhyolite flakes, groundstone fragments, and fire-cracked rock.	NE
URS-MN-15	Sparse lithic scatter consisting of rhyolite flakes and shatter.	NE
URS-MN-16	Scatter consisting of one large, shaped pestle fragment, seven groundstone fragments, rhyolite flakes and shatter, and fire-affected rock.	NE
URS-MN-17	Sparse scatter of groundstone fragments, fire-cracked rock, and rhyolite cores, flakes, and shatter.	NE
Phase II Program (SRI)		
SRI-430	Scatter consisting of four flakes; only example of jasper found in Project area.	NE
Transmission Line		
NL-NO Temp-1	Site consisting of 10 artifacts total. One possible mortar fragment; 5 small- to medium-size boulders on surface indicating milling activity; quartz cores and fragments; and one mano fragment.	NE (not a site)[2]

1 NRHP/CRHR Eligibility recommendations made by SRI as part of Phase II testing and evaluation program performed in November and December 2010. NE = not eligible; E = eligible.

2 SRI Phase II testing and evaluation program determined that NL-NO-Temp-1 is not an archaeological site.

TABLE C-2
ISOLATED ARTIFACTS RECORDED WITHIN THE PROJECT SITE[1]

Phase I Survey Field Designation	Phase I Survey Description
ISO-SB-1	Rhyolite secondary flake measuring 2.5 x 1.9 x 0.4 centimeters (cm).
ISO-SB-2	Green bottle base with embossing "PLUTO" with a man figure. Likely dates to the 1930s. Base measures 3 1/8" diameter.
ISO-SB-3	Pink and white granitic mortar fragment. Has an estimated diameter of 19 cm.
ISO-SB-4	Granitic mano with one area of use wear. Measures 13.7 x 10.2 x 6.9 cm.
ISO-SB-5	Large rhyolite secondary flake measuring 7.6 x 6.7 x 2.4 cm.
ISO-SB-6	One granitic mano fragment, slightly convex with a polished grinding surface. Measures 8.9 x 6.2 x 3.9 cm. Grinding surface measures 6.5 x 7.0 cm.
ISO-SB-7	One rhyolite core measuring 6.9 x 6.2 x 5.8 cm.
ISO-SB-8	One rhyolite tertiary flake.
ISO-SB-9	One rhyolite tertiary flake measuring 3 x 2 x 0.5 cm.
ISO-SB-10	One white/mottle purple rhyolite test cobble with 80 percent cortex and one flake removal scar. Test cobble measures 11.7 x 7.4 x 5.2 cm.
ISO-SB-11	One piece of rhyolite debitage. Material is flow-banded brown to purplish-gray and measures 4.9 x 3.7 x 2.8 cm.
ISO-SB-12	One secondary (15 percent cortex remaining) and one tertiary purple banded rhyolite flake.
ISO-SB-13	One schist metate measuring 21.4 x 20.4 x 6.4 cm, and one rhyolite cobble.
ISO-SB-14	One secondary (10 percent cortex remaining) rhyolite flake measuring 6.9 x 5.5 x 1.5 cm.
ISO-SB-15	Two chunky rhyolite flakes. Material has a light cream and pinkish-tan banding. Flakes measure 5.1 x 3.3 x 1.8 cm and 3.6 x 2.2 x 0.9 cm.
ISO-SB-16	One historic steel headed pick/hoe with a twisted steel to attach hoe end. Attached to a weathered wooden handle measuring 33 inches long. Pick/hoe head measures 14 inches.
ISO-SB-18	One hand chopping tool. Tool is triangular in shape and is made of a grayish-white rhyolite. Tool measures 11.7 x 11.2 x 2.7 cm.
ISO-SB-19	One schist unifacial metate fragment measuring 11.8 x 5.8 x 3.2 cm.
ISO-MN-1	Tabular rhyolite fragment that is brownish-purple. Fragment measures 14 x 10 x 4 cm.
ISO-MN-2	Rhyolite secondary flake, purplish-brown in color, measuring 10 x 22 x 5 millimeters (mm).
ISO-MN-3	Small rhyolite flake, pinkish-brown in color. Flake measures 2.5 x 2.2 x 0.7 cm.
ISO-MN-4	Ground and battered rhyolite cobble fragment measuring 9 x 9 x 9 cm.
ISO-MN-5	Two rhyolite flakes (one whole, one fragment) measuring 3 x 2.2 x 0.5 cm and 1 x 2 x 1.2 cm.
ISO-MN-6	One rhyolite flake fragment measuring 3.7 x 1.6 x 0.7 cm.
ISO-MN-7	One secondary flake measuring 3.2 x 2.2 x 0.2 cm. Flake is CCS material and may have possibly been heat treated.
ISO-MN-8	One rhyolite core measuring 9.2 x 5.0 x 5.4 cm.
ISO-MN-9	One rhyolite core with a possible ground surface. Core measures 11.3 x 9.0 x 5.8 cm.

TABLE C-2 (CONTINUED)
ISOLATED ARTIFACTS RECORDED WITHIN THE PROJECT SITE[1]

Phase I Survey Field Designation	Phase I Survey Description
ISO-MN-10	One purple rhyolite worked flake or tool fragment. Possibly heat treated with waxy appearance. Flake measures 2.5 x 1.3 x 0.4 cm.
ISO-MN-11	One whole mano of fine-grained black granitic material. Mano measures 8.7 x 8.9 x 5.9 cm.
ISO-MN-12	One groundstone fragment measuring 9.5 x 8.8 x 9.2 cm and one fragment of fire-cracked rock.
ISO-MN-13	One rhyolite core measuring 10 x 5 x 3.5 cm. Two fire-cracked rocks are located 10-15 meters (m) east of the isolate.
ISO-MN-14	One rhyolite core measuring 11 x 9 x 4 cm and one groundstone fragment measuring 5.8 x 6.7 x 4.7 cm. A piece of fire-cracked rock was noted in the area.
ISO-MN-15	One large, primary decortification flake of rhyolite measuring 7 x 6 x 2.8 cm.
ISO-MN-16	One piece of rhyolite shatter measuring 4.9 x 4.3 x 2.5 cm.
ISO-MN-17	Partially buried metate measuring 20.3 x 23.2 x 9.4 cm.
ISO-MN-18	Large rhyolite primary flake measuring 17.2 x 7.5 x 6.9 cm.
ISO-MN-19	One rhyolite flake measuring 5.1 x 2.4 x 0.5 cm.
ISO-MN-20	Well-shaped granitic pestle fragment (distal end) measuring 8.7 x 6.7 x 5.3 cm.
ISO-MN-21	One rhyolite core measuring 11.8 x 10.9 x 5.7 cm.
ISO-MN-22	One rhyolite primary flake measuring 4.0 x 5.2 x 0.7 cm.
ISO-MN-23	One rhyolite flake and one rhyolite flake fragment.
NL-NO ISO-1	One ryholite flake measuring 7 x 4 x 2 cm.
NL-NO ISO-2	One ryholite flake measuring 4.5 x 2 x 2.1 cm.

[1] The isolated artifacts listed herein were identified and recorded during the Phase I survey (URS 2010d). The results of the Phase II testing and evaluation program implemented by SRI in November and December 2010 and documented in the SRI Phase II Report (January 2011) include recommendations that all of these isolates be determined “not eligible” for the NRHP and CRHR.

APPENDIX D
STATE SPECIAL-STATUS SPECIES DETECTED IN PROJECT AREA

No California Endangered Species Act (CESA)-listed species have been detected within the Project site or along the proposed transmission line route. However, a total of 17 species with state sensitivity designations were identified, including 10 CSC species, four Special Animals (SA), and three Watch-List (WL) species. The species with state sensitivity designations that were detected are described below, including an assessment of their habitat affinities and likely use of the Project site and/or transmission line, as applicable.

Blainville's Horned Lizard (*Phrynosoma Blainvillii*, CSC). The Blainville's horned lizard ranges throughout the southern South Coast Peninsular and Transverse Ranges, the foothills of the Sierra Nevada and the Tehachapi Mountains. The species occupies a variety of open habitats including coastal scrub, oak savanna, coniferous woodland, and grasslands. It is most commonly found in lowlands, along sandy washes with scattered low bushes and along dirt roads, and frequently found near ant hills. The species requires open areas for sunning, bushes for cover, patches of loose soil for burial, and an abundant supply of native ants and other insects for forage. Agricultural practices, such as plowing, are very harmful to this species (BLM 1999).

One Blainville's horned lizard was observed on the Project site on March 24, 2009. This individual was found on sandy substrate within Drainage C, located in the southeastern corner of the Project site within the wildflower field habitat. A sighting was recorded in CNDDB approximately 2 miles south of the Project site in habitat similar to that found on the site. Based on these facts, and because the entire Project site provides suitable habitat for this species, it is presumed that the coast horned lizard may potentially be an uncommon resident throughout the Project site.

Tricolored Blackbird (*Agelaius Tricolor*, CSC When Nesting in Colonies). This species breeds from the central California coast inland through the Central Valley, in coastal southern California from Ventura County southward, in the western Mojave Desert, and locally in northeastern California. Aside from scattered small breeding colonies in Oregon, Washington, and Nevada, this species is restricted to California and Baja California, where it occurs year-round. Tricolored blackbirds nest in colonies that sometimes exceed 10,000 birds, and will nest as early as mid-March (Hamilton 1998). However, flocks of birds not attached to any breeding colony, and non-breeding birds attached to breeding colonies, may be encountered during the early breeding season. Some birds may arrive at colonies to begin nesting in May or even later, and birds nesting at one location may move to other locations to breed later in the season (Hamilton 1998). Some tricolored blackbirds in the Central Valley have been known to nest in the fall, from September to November (Beedy 2008). Tricolored blackbirds place their nests near fresh water, preferably in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herbs. They forage on the ground in croplands, in grassy fields, in flooded land, and along pond edges, where they feed on insects and spiders, especially during the nesting season, and on seeds and cultivated grains. Most individuals forage within three miles of their nesting colony, but

some may range to nearly ten miles away (Beedy and Hamilton 1999). Three sites in the Antelope Valley hosted nesting colonies within seven miles of the Project site in 2008: Fairmont Reservoir, 3.2 miles south of the site (30 individuals); the Munz Ranch Aqueduct, 4.6 miles south southeast of the site (100 individuals); and Holiday Lake, 7.0 miles west of the site (550 individuals).

The lack of wetlands with emergent vegetation and other thickets makes the Project site unsuitable for nesting by colonies of tricolored blackbirds. However, known colonies may be near enough to the site that birds from those colonies may occasionally forage on-site. Tricolored blackbirds were detected once on the Project site, when 18 were observed flying over point count station B5 on April 22, 2009, before landing on the site south of SR-138. A single bird was detected during surveys of the proposed transmission line route, on June 10, 2009, on the east side of 170th Street West south of Gaskell Road in Kern County. These birds may have been traveling from a nesting site to forage, or they may have been non-breeding birds.

Burrowing Owl (*Athene Cunicularia*, CSC). This species is a year-round resident in the Central Valley, San Francisco Bay region, Carrizo Plain, Imperial Valley, and scattered areas in the southern deserts of California (Miller et al. 2003). Outside the state, the species breeds in northern Mexico, throughout the Great Basin and the U.S. Southwest, in much of the Rocky Mountain region, and in the Great Plains north to southern Canada. Numbers in California are likely augmented by birds from elsewhere in western North America in winter (Gervais et al. 2008). Migrants enter California from the north in September and October and generally leave the state in March and April (Haug et al. 1993). Burrowing owls prefer open, dry, annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. They usually nest in the old burrow of a ground squirrel, badger, or other small mammal, although they may dig their own burrow in soft soil. In the nesting season, they frequently forage hundreds of yards from their burrow, and some have been recorded foraging nearly two miles from their nests (Gervais et al. 2003; Rosenberg and Haley 2004). Prey consists mostly of insects, small mammals, reptiles, birds, and carrion.

During the wintering bird surveys, one burrowing owl was recorded, at point count station W12, in the northeastern corner of the site, on January 14, 2009. Three additional observations of burrowing owls were recorded during other biological surveys in December 2008–February 2009. During the breeding bird surveys, a single burrowing owl was observed near a burrow entrance at point count station B6 on April 22 and May 7, but was not seen during the breeding bird survey on June 9. This individual was also observed at length during Phase III protocol burrowing surveys (CBOC 1993) on April 21, April 30, and May 6, but not on June 9. It is unclear whether this bird was paired. During other biological surveys, a single burrowing owl was first observed at a burrow 150 feet south of the Project site, in Drainage C, on January 18, 2009. It was seen again during the initial Phase III protocol burrowing owl survey, on April 21. A pair of burrowing owls was observed repeatedly

leaving and entering the burrow at this location during Phase III protocol burrowing owl surveys on April 30, May 6, and June 9, 2009. On the latter date, six juvenile owls were seen near the burrow as well. However, none of the owls observed in Drainage C were observed on the Project site itself.

In addition to the owl sightings, seven burrows with owl sign (pellets and whitewash) were found on the Project site during Phase I burrowing owl habitat assessment, six within Drainage A and one within Drainage C. An additional 10 burrows with owl sign were found during the Phase II burrow search, but only the two burrows mentioned in the previous paragraph (one in Drainage A and one just south of the Project site, Drainage C) appeared to be active. Further details on the occurrence of this species within the Project site are presented in the Biota Report (URS 2009b). No burrowing owls or burrows with owl sign were detected in the proposed transmission line route.

Long-eared Owl (*Asio Otus*, CSC When Nesting). This species occurs widely, but uncommonly, throughout California. In western North America, the species breeds from the Southwestern states north to southern Canada and winters from northern Mexico north to Washington State, Idaho, and Montana. The species does not breed in most of the Central Valley, most of the Imperial and Coachella Valleys, and parts of the immediate coast. "Irregular wanderings" occur in California (Grinnell and Miller 1944), although it is unclear to what extent these are movements of birds within the state or influxes from elsewhere. Breeding occurs in the state from February through July (Hunting 2008). Long-eared owls forage over open spaces, feeding mostly on mice and kangaroo rats, but occasionally on small birds and rabbits. Long-eared owls roost and nest in riparian and other dense woodlands where suitable nest platforms are present. They do not build their own nests, instead using old nests of magpies (*Pica* spp.), American crows (*Corvus brachyrhynchos*), common ravens, hawks, squirrels, and woodrats. The species also nest occasionally in mistletoe brooms and tree cavities and on natural platforms and cliffs (Hunting 2008).

No long-eared owls were observed during any biological surveys on the Project site. However, on June 10, 2009, a primary wing feather of a long-eared owl was found near point count station B13, indicating that this species uses the Project site for foraging. On February 3, 2009, URS biologists searched the trees around the ranch house on SR-138 for roosting owls, and to assess the potential of the area for roosting and nesting by owls and hawks. The biologists searched this area again on June 10, and also walked the nearby pistachio orchard for evidence of nesting long-eared owls. No long-eared owls or sign were found during either of these visits. The only suitable nest structure observed was an active common raven nest in the orchard. However, some trees in the orchard and in the immediate vicinity of the house may have the potential to host nesting by this species, if nest structures become available.

Northern Harrier (*Circus Cyaneus*, CSC When Nesting). The northern harrier breeds in widely scattered locations over much of California, but is absent from most desert areas, the

high Sierra, and most of the Coast Ranges. Most migrants and winter visitors are present in the Project region from September into March, but some may occur as early as mid-August or as late as April. Migrants in California may breed as far north as the Arctic or winter as far south as Central America and northern South America. Northern harriers are found mostly in flat, or hummocky, open areas of tall, dense grasses and moist or dry shrubs. They use tall grasses and forbs in wetlands, or at wetland/field borders, for cover, and roost and nest on the ground. Northern harriers feed on voles and other small mammals, as well as birds, small reptiles, crustaceans, and, rarely, fish. The species is known to nest in the Antelope Valley near Lancaster, but during the field effort for the Los Angeles County Breeding Bird Atlas, none were recorded nesting in atlas blocks in the immediate vicinity of the Project site (Davis and Niemela 2008; LACBBA unpublished data). However, one individual was observed in the vicinity of the northwestern part of the Project site on May 22, 1999, well outside the date range during which migrating individuals would be expected in the region.

This species was seen regularly and throughout the Project site during wintering bird surveys and other biological surveys from December 2008 to February 2009, with as many as three individuals seen in a day (3 males on February 3, 2009). During breeding bird surveys, a single northern harrier was observed at point count station B4 on April 22, 2009. During other spring biological surveys, single harriers were observed south of SR-138 on April 17 and north of Drainage A on April 30. All sightings were of a subadult, and the same individual may have been involved in all three sightings. No harriers were detected during bird surveys in May and June, and the April sightings may have involved one or more migrants or lingering wintering birds. Because of the lack of suitable wetlands and dense ground vegetation on-site, it is highly unlikely that this species nests within the Project site. However, given the May 1999 observation and confirmed breeding near Lancaster, this species may sometimes breed near the Project site and forage on-site.

Loggerhead Shrike (*Lanius Ludovicianus*, CSC When Nesting). This species can be found in lowlands and foothills throughout California. It is absent or rare in the state in the highest mountain ranges and the north coast. Breeding populations in the north are migratory. The species is a year-round resident in the southern deserts, parts of the south and central coasts, and the Central Valley, where numbers are augmented by migrants from November to February (Heindel 2000; Yosef 1996). It was widely recorded in the Antelope Valley during surveys for the Los Angeles County Breeding Bird Atlas in 1995–1999 (Humple 2008; LACBBA unpublished data). Loggerhead shrikes prefer open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches, and require impaling sites, such as thorns, sharp twigs, or barbed wire, for skewering and manipulating their prey. The species nests in densely foliated trees or shrubs and feeds on “arthropods, amphibians, small to medium-sized reptiles, small mammals and birds” (Yosef 1996).

During wintering bird surveys, two individuals were recorded in the orchard on the Project site on January 14, 2009, and one was recorded here on February 3–4, 2009. By April 22,

during the breeding bird surveys, this pair had raised two young to the fledgling stage. During other winter biological surveys, an individual was sighted in Joshua tree woodland adjacent to the northern boundary of the central portion of the Project site on January 13, 2009. Possibly the same bird was seen at this location and south to point count station B15 during breeding bird surveys on June 10, 2009. Another was recorded in winter at the edge of the Project site on February 4, 2009, along 170th Street West and north of West Avenue C. Other breeding season sightings included a pair observed within the Project site just north of SR-138, along 160th Street West near the Project boundary, on May 7, 2009. One of these individuals was observed carrying a food item, presumably to feed nestlings or fledglings; however, the nest may have been off-site, east of 160th Street West. Other sightings included an individual observed in the northeastern part of the site on April 16 and 22, 2009 (but not during a subsequent visit to refind this bird, on May 7), and an individual near point count station B3 on June 9, 2009. Loggerhead shrikes nest relatively early in the season, usually laying eggs before June (Kiff and Irwin 1987). Thus, observations during the month of June may not involve breeding activity.

During breeding bird surveys of the proposed transmission line route, a single shrike was observed on the east side of 170th Street West, near West Avenue A-8, on both April 23 and June 9, 2009. On May 8, 2009, another individual was observed on the east side of 170th Street West, in Kern County, north of West Avenue A, when it was flushed from a nest with four eggs in a planted tree. Possibly the same bird was observed near here on June 10. Two other sightings, in the Joshua tree woodland south of Avenue B on the west side of 170th Street West, on June 10, and on the east side of 170th Street West on April 8, may have involved a single bird.

Vaux's Swift (*Chaetura Vauxi*, CSC When Breeding). This species breeds in the Coast Ranges fairly commonly from Sonoma County north, and very locally south to Monterey County; it also breeds in the Sierra Nevada and possibly in the Cascade Range. Most migrants pass through southern California from mid-April to mid-May and from September to mid-October, on the way to and from breeding sites in California and northward. Vaux's swifts prefer redwood and Douglas fir habitats with nesting sites in large hollow trees and snags, especially tall, burned-out stubs. They feed primarily on flying arthropods during the breeding season. Two Vaux's swifts were recorded on May 8, 2009, flying overhead near point count station B12 (see URS 2009b). This sighting occurred during the migratory window for this species, which is "fairly common" as a migrant in the region (Heindel 2000). The Project site is well outside of the geographic breeding range for Vaux's swift and lacks suitable woodland breeding habitat.

Vesper Sparrow (*Pooecetes Gramineus*, SBS When Wintering). In Los Angeles County, this species is found in grasslands, agricultural lands, and open brushlands in valleys, and desert regions (LACSBSWG 2009). It breeds east of the Cascade-Sierra Nevada crest, south to the White and Inyo Mountains. It winters in the Owens Valley, in the Central Valley and

adjacent foothills, and locally in the southern deserts and coastal southern California. It occurs on the breeding grounds from April through September. Birds arrive on their wintering grounds in September and leave in April or March. The Vesper sparrow uses scattered shrubs and patches of tall herbs for cover. It feeds mainly on grass and forb seeds in the winter, and on insects and spiders during the breeding season. A subspecies of the vesper sparrow, the Oregon vesper sparrow (*P. g. affinis*), is a CSC that winters from the central California valleys south to Baja California (Erickson 2008). Its range overlaps extensively with the more common Great Basin vesper sparrow (*P. g. confinis*).

During the wintering bird surveys, two vesper sparrows were seen in the southern part of the Project site on December 18, 2008, and one was seen in this area on January 14, 2009. During other 2008-2009 winter biological surveys, two were observed at the edge of the pistachio orchard on the Project site on February 3, 2009. A total of eight were recorded on the Project site, including six in the northeastern corner of the site, on April 15-16, 2009, during the migratory period for this species. It is not possible to determine in the field whether any of these observations involved the Oregon vesper sparrow or the Great Basin vesper sparrow.

Yellow Warbler (*Dendroica Petechia*, CSC When Nesting). This species breeds widely across California, but is absent from the high Sierras, most of the southern deserts, and most of the Central Valley. It breeds only very locally in the southern deserts, was not recorded in atlas blocks covering the Project site during the Los Angeles County Breeding Bird Atlas surveys of 1995–1999, and is absent as a breeder in the Antelope Valley (LACBBA unpublished data; Heath 2008). The species is largely absent from the state in winter. Spring migrants pass through from April through early June, and fall migrants occur from late July to mid-October (Heindel 2000). Yellow warblers breed primarily in deciduous riparian woodlands, including those dominated by cottonwoods, willows, and alders, up to 8000 feet; they also breed in montane chaparral and open conifer forests. They place their nests in the upright fork of a shrub, sapling, or tree and feed on a variety of insects and spiders (Lowther et al. 1999; Heath 2008).

One yellow warbler was detected in trees at a residence on the west side of 170th Street West, near Gaskell Road in the vicinity of the proposed transmission line route, on May 8, 2009, during the migratory period for this species. No suitable nesting habitat for this species exists on the Project site or the proposed transmission line route. The nearest breeding populations of yellow warblers are in the Sierra Pelona to the south and the Tehachapi Mountains to the north.

Yellow-breasted Chat (*Icteria Virens*, CSC When Nesting). The yellow-breasted chat is an uncommon summer resident species in coastal California, occurring in the foothills of the Sierra Nevada, and in northern California inland to the Cascades, and in scattered, isolated riparian areas in the southern deserts. The Los Angeles County Breeding Bird Atlas surveys

of 1995–1999 found no chats in atlas blocks overlapping the Project site, and the species is not known to breed in the Los Angeles and Kern County portions of the Mojave Desert (LACBBA unpublished data; Comrack 2008; Garrett and Dunn 1981). Spring migrants from Mexico and Central America pass through southern California from mid-April through May; fall passage is mainly from late August to late September (Dunn and Garrett 1997; Heindel 2000). Yellow-breasted chats require riparian thickets of willow and other brushy tangles near watercourses for cover. They normally place their nests in dense shrubs near streams or rivers. The species feeds mainly on small insects and spiders.

One yellow-breasted chat was detected in trees near a residence along the proposed transmission line route, on the west side of 170th Street West on May 8, 2009, during the migratory period for this species. The dense woodland habitat required for this species is lacking on the Project site and along the proposed transmission line route. This species breeds fairly commonly along the Santa Clara River east of Interstate 5, in Los Angeles County, approximately 25 miles south southwest of the site, but is absent from the western Mojave Desert except for scattered locations in San Bernardino County (Comrack 2008; Myers 1998).

Ferruginous Hawk (*Buteo Regalis*, CDFG Watch List Species). The ferruginous hawk is an uncommon winter resident and migrant at lower elevations and open grasslands in the Modoc Plateau, Central Valley, and Coast Ranges. It is also a fairly common winter resident of grasslands and agricultural areas in southwestern California, including in the Antelope Valley, but is not known to breed in the state. Ferruginous Hawks breed in the Great Basin, Rocky Mountains, and Great Plains, generally arriving in California beginning in September and departing by mid-April. They roost in open areas, usually in a lone tree or utility pole. The species feeds on rabbits, ground squirrels, and mice, and also on birds, reptiles, and amphibians. The California annual grasslands and wildflower fields within the Project site and proposed transmission line route include an ample supply of prey, including black-tailed jackrabbits, and ferruginous hawks are expected to forage there.

Brewer's Sparrow (*Spizella Breweri*, SA When Nesting). This species breeds east of the Cascade-Sierra Nevada crest, in mountains and higher valleys of the Mojave Desert, and in those bounding the southern end of the San Joaquin Valley. It winters from central Mexico north to southern New Mexico and Arizona and the southeastern California deserts, including the Antelope Valley. Peak northward passage in the Project region is from mid-April to early May; southward passage occurs principally from late August to October (Heindel 2000; Garrett and Dunn 1981). This species is not currently known to breed in the low-lying portions of the western Antelope Valley, with breeding confined to the southern slopes of the mountain ranges bordering the valley (K. Garrett, personal communication). Also, it was not found in the area surrounding the Project site during the Los Angeles County Breeding Bird Atlas surveys in 1995–1999 (LACBBA unpublished data). Brewer's sparrows prefer treeless shrub habitats, especially in sagebrush (*Artemisia* spp.), with canopy cover usually of less

than five feet high. They typically place their nests in sagebrush or other shrubs, rarely on the ground. They feed on small insects gleaned from the foliage and bark of shrubs, as well as on seeds taken from the ground (Rotenberry et al. 1999).

Brewer's sparrows were recorded in small numbers on the Project site in rabbitbrush scrub habitat during winter biological surveys, but not during the wintering bird surveys. Four were encountered near the northern boundary of the site on January 13, 2009. A total of five Brewer's sparrows were detected during breeding season point counts on April 22–23, 2009, at stations B14, B15, and B16. Only two were detected during point counts on May 7–8, both at station B16. None were detected subsequently. Brewer's sparrows were detected singing during other biological surveys in April, including large numbers in areas north of SR-138 on April 13–16, 2009. No Brewer's sparrows were detected in the proposed transmission line route during biological surveys. This species' decline in numbers on the Project site in spring, and its eventual disappearance from the site, show a pattern consistent with the presence of lingering wintering birds and migrants in April and early May.

Chipping Sparrow (*Spizella Passerina*, SA When Nesting). The chipping sparrow is a common migrant and summer visitor throughout most of California, excluding the Central Valley, the southern deserts, and parts of the southern and central coast. It does not breed in the Mojave Desert (Grinnell and Miller 1944; Garrett and Dunn 1981). The species winters in Mexico and Central America and across North America in the southern tier of states, where its breeding range overlaps with its wintering range; it breeds northward through the subarctic. Most migrants pass through southern California in April and May and from late July through September (Heindel 2000; Middleton 1998). Chipping sparrows nest in conifers, but also in deciduous trees and shrubs, and frequent open woodlands with sparse or low herbaceous cover and a low density of shrubs. They feed on seeds of grasses and annuals and supplement their diet with insects and other invertebrates during the breeding season (Middleton 1998).

One chipping sparrow was observed near a residence along the proposed transmission line route, on the west side of 170th Street West, on May 8, 2009, during the migratory period for this species. The Project site and surrounding area are considered to be outside the geographic breeding range for this species, and the Project site lacks the woodland habitat required for nesting.

Lark Sparrow (*Chondestes Grammacus*, SA When Nesting). The lark sparrow is a resident species in lowlands and foothills throughout coastal California except for the extreme north and portions of the central coast, and is also year-round in the Central Valley, the Sierra foothills, the Imperial Valley, the Blythe area, and the Antelope Valley. It breeds in northeastern California and the Owens Valley, but is absent there in the winter; it also winters in the Colorado River Valley but is absent in most of that region in summer. Outside California, it breeds in British Columbia and the southern Prairie Provinces south to north-

central Mexico and winters from the extreme southern United States south through much of Mexico (Martin and Parrish 2000). Most spring migrants pass through southern California by late May; most fall migrants pass through from late July to late September (Garrett and Dunn 1981). Lark sparrows occupy sparse valley foothill hardwood, valley foothill hardwood-conifer, open mixed chaparral and similar brushy habitats, and grasslands with scattered trees or shrubs. Shrub habitats favored by lark sparrows are generally two to six feet high. Lark sparrows prefer habitats where trees or shrubs provide lookouts and song perches. They feed mostly on seeds and grains in winter, but also feed their young on insects, especially grasshoppers. They nest on the ground and low in shrubs and trees.

No lark sparrows were detected during the wintering bird surveys. However, two singing individuals were found in the pistachio orchard south of the ranch house on February 3, 2009. The only lark sparrow detected during breeding bird surveys was an individual detected during the final visit to point count station B9, on June 9, 2009. However, several individuals were found during other biological surveys. One was just east of 170th Street West, at the north edge of the Project site, on April 8; two were at the northwestern extreme of the site on April 13; and one was in the northeastern part of the site on April 21. Efforts to relocate the individual at the latter location were unsuccessful on May 7. During surveys for the Los Angeles County Breeding Bird Atlas in 1995–1999, this species was recorded as either "confirmed" or "possible" as a breeder in all four atlas blocks covering the Project site (LACBBA unpublished data). The rabbitbrush scrub widespread on the Project site may provide suitable habitat for this species, especially where nearby Joshua tree woodlands provide perching opportunities. Thus it may nest on-site, at least in some years.

One lark sparrow was detected during surveys of the proposed transmission line route: an individual observed on June 10, 2009, on the east side of 170th Street West, in Kern County, near the northern terminus of the route.

Lawrence's Goldfinch (*Carduelis Lawrencei*, SA When Nesting). The Lawrence's goldfinch is erratic and localized in occurrence. The species is fairly common but sporadic in Santa Clara County and on the coastal slope from Monterey County south, and uncommon in foothills surrounding the Central Valley. It ranges from "uncommon to common" as a breeder in the eastern Kern County desert and is a "common but local summer resident" in the Antelope Valley, where it is present from March to September (Heindel 2000; Garrett and Dunn 1981). It was confirmed as a breeder in one of four atlas blocks overlapping the Project site during surveys for the Los Angeles County Breeding Bird Atlas in 1995–1999 (LACBBA unpublished data). Lawrence's goldfinches breed in valley foothill woodland and, in southern California, in desert riparian, palm oasis, pinyon-juniper, and lower montane habitats. They prefer to nest in oaks, but also use cypress or plantings of deodar cedar, riparian thicket, and other species. They most often nest near water in open, arid woodland. They feed mainly on seeds of annual plants, particularly fiddleneck (*Amsinckia* spp.), during

the breeding season, and eat the fruits of chamise (*Adenostoma fasciculatum*) in winter, along with lesser amounts of annual seeds and berries (Davis 1999).

Four Lawrence's goldfinches were detected near the proposed transmission line route, on the west side of 170th Street West and north of Gaskell Road, on May 8, 2009. Over most of the Project site, there is no woodland habitat suitable for nesting, although it is possible that Lawrence's goldfinches could nest in the orchard and in other planted trees near the ranch house on the south side of SR-138. Also, puddling water from irrigation and the planted trees around structures on either side of 170th Street West north of Gaskell Road, near the proposed transmission line route, may provide habitat for nesting Lawrence's goldfinches. The birds detected on May 8 may have been nesting here.

Prairie Falcon (*Falco Mexicanus*, CDFG Watch List Species When Nesting). The prairie falcon is a permanent resident in the Project region. The species ranges from California's southeastern deserts northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada. Prairie falcons are mostly absent from the coast and the higher elevations of the Sierra Nevada. The species is mostly non-migratory, but numbers increase in the Project region from September to February. Prairie falcons inhabit dry, open terrain, either level or hilly, and require breeding sites located on cliffs. They forage over large, undefended areas during the breeding season (Steenhof 1998) and feed on small mammals, small birds, and reptiles.

One individual was recorded on the Project site south of SR-138 on January 14, 2009, during wintering bird surveys, and none were recorded during breeding bird surveys. However, one individual was observed south of SR-138 on April 17, 2009, during burrowing owl Phase II surveys. The species may nest in the rocky outcroppings of the Fairmont Butte area approximately 0.5 miles southeast of the Project site, as well as in the Sierra Pelona, less than 5 miles to the south. Considering the large foraging range of this species, prairie falcons nesting off-site may visit the site regularly during the breeding season. The Project site does not provide suitable nesting habitat for this species.

Merlin (*Falco Columbarius*, SA When Wintering). The merlin is an uncommon winter visitor throughout California, except at very high elevations. It is present in southern California from September into April, with most fall migrants arriving by early November and birds beginning to leave their wintering grounds in February (Heindel 2000). Merlins occupy a variety of habitats, including grasslands, agricultural fields, open scrublands, and open forest. They may forage over an area of more than eight square miles in winter, and they require dense stands of trees for roosting. They feed primarily on small birds.

Individual merlins were observed on the Project site, on January 14, 2009, over the California annual grassland habitat, and on February 4, 2009, along 170th Street West between SR-138 and West Avenue C. The abundance of horned larks on the Project site in

winter (a merlin prey species) provides ample foraging opportunity for merlins. This species may also use the site during migration.

Other Special-Status Species. Because the Project site is located in Los Angeles County, bird species identified as sensitive by the Los Angeles County Sensitive Bird Species Working Group were considered in this environmental analysis. A total of 14 Sensitive Bird Species (SBS) were detected during field surveys for the Project. Some of these species, including the tricolored blackbird, burrowing owl, long-eared owl, northern harrier, loggerhead shrike, vesper sparrow, yellow warbler, yellow-breasted chat, ferruginous hawk, and prairie falcon, also maintain state sensitivity designations and are discussed above. The remaining SBS detected include the following.

Greater Roadrunner (*Geococcyx Californianus*, SBS). This species is a year-round resident in the California deserts, the Central Valley and adjacent foothills, and the southern and central coasts, except for heavily urbanized areas. It lives in "steep foothill canyons, desert woodland, and coastal sage scrub" in Los Angeles County (Los Angeles County Sensitive Bird Species Working Group [LACSBSWG] 2009). It is found most readily in the county in the Antelope Valley, at the base of the San Gabriel Mountains, and in the Puente Hills. It nests in isolated thickets of small trees and shrubs. Nests are approximately one foot in diameter and are usually placed three to ten feet above the ground, although one case has been documented in which the species placed its nest on the ground (Hughes 1996). One greater roadrunner was observed at the northern boundary of the Project site on December 8, 2008, near Joshua tree woodland. This species may nest in the Joshua tree woodland near the Project site and use the Project site for foraging, but the shrubs on-site are smaller than those typically used for nesting by greater roadrunner. No roadrunners were detected in the proposed transmission line route.

Mountain Bluebird (*Sialia Currucoides*, SBS When Wintering). In Los Angeles County, the mountain bluebird is nearly confined to grassland and irrigated pastures on the floor of the Antelope Valley and the adjacent lower slope of the Sierra Pelona (LACSBSWG 2009). It is present from November to March in the San Joaquin Valley and nearby valleys, and locally in the southeastern coastal deserts of southern California. Mountain bluebirds forage for insects on the wing and by stooping from a low perch. In winter, they may also feed on berries and other small fruits.

Mountain bluebird observations on the Project site during the wintering bird surveys included 2 near SR-138 and Avenue C on December 18, 2008; 10 near Drainage A on January 14, 2009; and 51 in the southern portion of the Project site on January 14, 2009.

Western Meadowlark (*Sturnella Neglecta*, SBS). This species occurs year-round in California, except in the higher mountains. It breeds from north-central Mexico north to British Columbia and the Prairie Provinces of Canada. It is mostly absent from Canada and

the northern tier of states in winter, when it ranges south to central Mexico. The species breeds in California from March to August. Numbers are higher in southern California from October to March (Heindel 2000), due to influxes of birds from further north. Western meadowlarks breed in herbaceous and cropland habitats with sufficient ground cover for concealment, and may also use open, wooded habitats that include these features. They use trees, shrubs, fences, and mounds for lookouts and song perches.

This species was found in small numbers on the Project site in the winter of 2008–2009. Western meadowlarks were detected during each breeding bird survey on the Project site, at seven different point count locations, mostly south of SR-138. The extreme northwestern portion of the site also held relatively high numbers in mid-April, as recorded during other biological surveys. Breeding was confirmed on April 29, 2009, when an adult was seen carrying food in the northeastern portion of the Project site. Along the proposed transmission line route, western meadowlarks were seen during each breeding bird survey. On April 23, western meadowlarks were scattered along the proposed transmission line route from the Project site north to Gaskell Road in Kern County. On May 8, only one meadowlark was detected along the proposed transmission line route, between West Avenue A and West Avenue B on the west side of 170th Street West. During the final breeding bird survey, on June 9–10, three were detected east of 170th Street West: one between West Avenue A and West Avenue B on June 9, and two in Kern County, between West Avenue A and Kingbird Avenue on June 10.

REFERENCES

Beedy, Edward C. 2008. Tricolored blackbird (*Agelaius tricolor*). Pp. 437–443 in California Bird Species of Special Concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California, ed. W. David Shuford and Thomas A. Gardali. Studies of Western Birds, no. 1. Camarillo: Western Field Ornithologists; Sacramento: California Department of Fish and Game.

Beedy, Edward C., and Hamilton, William J., III. 1999. Tricolored blackbird (Agelaius tricolor). The Birds of North America Online. A. Poole, ed. Ithaca, NY: Cornell Laboratory of Ornithology. Available at http://bna.birds.cornell.edu/bna/species/423.

California Burrowing Owl Consortium (CBOC). 1993. Burrowing owl survey protocol and mitigation guidelines.

Comrack, Lyann A. 2008. Yellow-breasted chat (Icteria virens). Pp. 351–358 in California Bird Species of Special Concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California, ed. W. David Shuford and Thomas A. Gardali. Studies of Western Birds, no. 1. Camarillo: Western Field Ornithologists; Sacramento: California Department of Fish and Game.

Davis, Jeff N. 1999. Lawrence's goldfinch (*Carduelis lawrencei*). The Birds of North America Online. A. Poole, ed. Ithaca, NY: Cornell Laboratory of Ornithology. Available at http://bna.birds.cornell.edu/bna/species/480.

Davis, Jeff N., and Niemela, Chris A. 2008. Northern harrier (Circus cyaneus). Pp. 149–155 in California Bird Species of Special Concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California, ed. W. David Shuford and Thomas A. Gardali. Studies of Western Birds, no. 1. Camarillo: Western Field Ornithologists; Sacramento: California Department of Fish and Game.

Dunn, Jon L., and Garrett, Kimball L. 1997. A field guide to warblers of North America. The Peterson Field Guide Series. Boston: Houghton-Mifflin.

Erickson, Richard. 2008. Oregon vesper sparrow (*Pooecetes gramineus affinis*). Pp. 377–381 in California Bird Species of Special Concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California, ed. W. David Shuford and Thomas A. Gardali. Studies of Western Birds. no. 1. Camarillo: Western Field Ornithologists; Sacramento: California Department of Fish and Game.

Garrett, Kimball L., and Jon L Dunn. 1981. Birds of southern California: status and distribution. Santa Monica, CA: Los Angeles Audubon Society.

Gervais, Jennifer A., Rosenberg, Daniel K., and Comrack, Lyann A. 2008. Burrowing owl (*Athene cunicularia*). Pp. 218–226 in California Bird Species of Special Concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California, ed. W. David Shuford and Thomas A. Gardali. Studies of Western Birds, no. 1. Camarillo: Western Field Ornithologists; Sacramento: California Department of Fish and Game.

Grinnell, Joseph, and Miller, Alden H. 1944. Distribution of the birds of California. Pacific Coast Avifauna no. 27. Lee Vining, CA: Artemisia Press. Reprint ed. Original publ. Berkeley, CA: Cooper Ornithological Club.

Hamilton, William J., III. 1998. Tricolored blackbird itinerant breeding in California. Condor 100: 218–226.

Haug, E.A., Millsap, B.A., and Martell, M.S. 1993. Burrowing owl (*Athene cunicularia*). The Birds of North America Online. A. Poole, ed. Ithaca, NY: Cornell Laboratory of Ornithology. Available at http://bna.birds.cornell.edu/bna/species/061.

Heath, Sacha K. 2008. Yellow warbler (Dendroica petechia). Pp. 332–339 in California Bird Species of Special Concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California, ed. W. David Shuford and Thomas A. Gardali. Studies of Western Birds, no. 1. Camarillo: Western Field Ornithologists; Sacramento: California Department of Fish and Game.

Heindel, Matt. 2000. Birds of eastern Kern County. Draft manuscript. Available at http://fog.ccsf.org/~jmorlan/eastkern.pdf. Accessed June 1, 2009.

Hughes, Janice M. 1996. Greater roadrunner (Geococcyx californianus). The Birds of North America Online. Alan Poole, ed. Ithaca, NY: Cornell Laboratory of Ornithology. Available at http://bna.birds.cornell.edu/bna/species/244.

Humple, Diana. 2008. Loggerhead shrike (*Lanius ludovicianus*) (mainland populations). Pp. 271–277 in California Bird Species of Special Concern: a ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California, ed. W. David Shuford and Thomas A. Gardali. Studies of Western Birds. no. 1. Camarillo: Western Field Ornithologists; Sacramento: California Department of Fish and Game.

Hunting, Kevin. 2008. Long-eared owl (*Asio otus*). Pp. 234–241 in California Bird Species of Special Concern: a ranked assessment of species, subspecies, and distinct populations of

birds of immediate conservation concern in California, ed. W. David Shuford and Thomas A. Gardali. Studies of Western Birds. no. 1. Camarillo: Western Field Ornithologists; Sacramento: California Department of Fish and Game.

Kiff, L., and Irwin, D. 1987. The breeding season of Los Angeles County birds. Western Tanager 53(7): 4–5.

Los Angeles County Breeding Bird Atlas (LACBBA). Unpublished data.

Los Angeles County Sensitive Bird Species Working Group (LACSBSWG). 2009. Los Angeles County's Sensitive Bird Species. Western Tanager 75 (3): E1–E11.

Lowther, P.E., C. Celada, N.K. Klein, C.C. Rimmer, and D.A. Spector. 1999. Yellow warbler (*Dendroica petechia*). The Birds of North America Online. A. Poole, ed. Ithaca, NY: Cornell Laboratory of Ornithology. Available at http://bna.birds.cornell.edu/bna/species/454.

Martin, John W., and Parrish, Jimmie R. 2000. Lark sparrow (*Chondestes grammacus*). The Birds of North America Online. A. Poole, ed. Ithaca, NY: Cornell Laboratory of Ornithology. Available at http://bna.birds.cornell.edu/bna/species/488.

Middleton, Alex L. 1998. Chipping sparrow (*Spizella passerina*). The Birds of North America Online. A. Poole, ed. Ithaca, NY: Cornell Laboratory of Ornithology. Available at http://bna.birds.cornell.edu/bna/species/334.

Miller, Jeff, et al. 2003. Petition to the State of California Fish and Game Commission and supporting information listing the California population of the western burrowing owl (*Athene cunicularia hypugaea*) as an endangered or threatened species under the California Endangered Species Act. Center for Biological Diversity, Santa Clara Audubon Society, Defenders of Wildlife, San Bernardino Audubon Society, California State Park Rangers Associations, and Tri-County Conservation League. Available at http://www.biologicaldiversity.org/swcbd/SPECIES/b-owl/petition.pdf.

Myers, Stephen J. 1998. Yellow-breasted chat *Icteria virens*. Account for the West Mojave Habitat Conservation Plan. Available at http://www.blm.gov/ca/st/en/fo/cdd/wemo_species_birds.html.

Rosenberg, Daniel K., and Haley, Katherine L. 2004. The ecology of burrowing owls in the agroecosystem of the Imperial Valley, California. Studies in Avian Ecology 27: 120–135.

Rotenberry, J. T., Patten, M. A., and Preston, K. L. 1999. Brewer's Sparrow (*Spizella breweri*). The Birds of North America Online. A. Poole, ed. Ithaca, NY: Cornell Laboratory of Ornithology. Available at http://bna.birds.cornell.edu/bna/species/390.

Steenhof, Karen. 1998. Prairie falcon (*Falco mexicanus*). The Birds of North America Online, ed. Alan Poole. Ithaca, NY: Cornell Laboratory of Ornithology. Available at http://bna.birds.cornell.edu/bna.

URS Corporation (URS). 2009. Biological Constraints Analysis for the AV Solar Ranch 1 Project. March 2009.

U.S. Department of Interior, Bureau of Land Management (BLM). 1999. Current Management Situation of Special Status Species in the West Mojave Planning Area, West Mojave Planning Team. Prepared March, 1999.

Yosef, Reuven. 1996. Loggerhead shrike (*Lanius ludovicianus*). The Birds of North America Online. A. Poole, ed. Ithaca, NY: Cornell Laboratory of Ornithology. Available at http://bna.birds.cornell.edu/bna/species/231.

APPENDIX E
FARMLAND CONVERSION IMPACT RATING FORMS

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
Lancaster Service Center
44811 N. Date Ave., Suite G
Lancaster, CA 93534-3152
(661) 945.2604 Ext. 110
(661) 942-5503 (Fax)

March 4th, 2011

Douglas P. Boren
NEPA Document Manager
Loan Programs Office
United States Department of Energy, LP-10
1000 Independence Ave., SW
Washington, DC 20585

Dear Mr. Boren:

RE: Farmland Conversion Impact Rating, AV Solar Ranch One (AVSR1)

Please find enclosed a copy of the following:

1) Form 1006, Farmland Conversion Impact Rating
2) Form NRCS-CPA-106, Farmland Conversion Impact Rating for Corridor Type Projects
3) Documentation for Part II and IV for the 1006 and CPA 106 forms.

Soil Inventory

Soil Symbol	Acres	Storie Index	Category
GsA Greenfield sandy loam, 0 to 2 percent slopes	**201.4**	**93**	**Prime, if irrigated**
HaB2 Hanford loamy sand, 2 to 5 percent slopes, hummocky	**42.6**	**74**	**Prime, if irrigated**
HbA Hanford coarse sandy loam, 0 to 2 percent slopes	**952.7**	**88**	**Prime, if irrigated**
Hbc Hanford coarse sandy loam, 2 to 9 percent slopes	**157.2**	**82**	**Prime, if irrigated**
HcA Hanford sandy loam, 0 to 2 percent slopes	**530**	**93**	**Prime, if irrigated**
RcA Ramona coarse sandy loam, 0 to 2 percent slopes	**283.4**	**88**	**Prime, if irrigated**
TOTAL:	**2167.3**		

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
Lancaster Service Center
44811 N. Date Ave., Suite G
Lancaster, CA 93534-3152
(661) 945.2604 Ext. 110
(661) 942-5503 (Fax)

PART IVC, Form Ad-1006, Farmland Conversion Impact Rating

Acres to be converted/acres farmland in county X 100 = 2167.3/49,158 X 100 = **4.409 %**

PART V

	Acres	Storie Index	Product
GsA Greenfield sandy loam, 0 to 2 percent slopes	201.4	93	18,730.2
HaB2 Hanford loamy sand, 2 to 5 percent slopes, hummocky	42.6	74	3,152.4
HbA Hanford coarse sandy loam, 0 to 2 percent slopes	952.7	88	83,837.6
Hbc Hanford coarse sandy loam, 2 to 9 percent slopes	157.2	82	12,890
HcA Hanford sandy loam, 0 to 2 percent slopes	530	93	49,290
RcA Ramona coarse sandy loam, 0 to 2 percent slopes	283.4	88	24,939.2
Totals	2167.3		192,839

192,839.8/2167.3 = 88.98 = Relative Value of Farmland to be Converted on a scale of 0 to 100 Points using the California Storie Index.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
Lancaster Service Center
44811 N. Date Ave., Suite G
Lancaster, CA 93534-3152
(661) 945.2604 Ext. 110
(661) 942-5503 (Fax)

Part IV Form NRCS-CPA-106 for Los Angeles County.
Along the 1.5 miles of corrider (underground line along an existing road right of way) I determined no acres of prime, unique or of locale or statewide importance will be impacted, though the corridor does contain prime, unique statewide or local important farmland.

Part IV Form NRCS-CPA-106 for Kern County.
Along the 1.0 miles of corridor (above ground transmission tower pad and service roads) I estimate approximately 1.13 acres of prime farmland, if irrigated, will be impacted. This is 0.0001% of the prime farmland in Kern County. 1.3 acres /942,827 acres x (100) = 0.0001

If there are any questions, please feel free to contact me.

Sincerely yours

/s/ Hudson Minshew

Hudson Minshew
District Conservationist

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 2/9/11
Name Of Project AV Solar Ranch One Project	Federal Agency Involved Department of Energy, Loan Guarantee Pgm
Proposed Land Use Renewable Solar PV Electric Generation	County And State Los Angeles County, California
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 2/9/11

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☑	No ☐	Acres Irrigated 29,701	Average Farm Size 63
Major Crop*(s)* Alfalfa, Onions, Carrots	Farmable Land In Govt. Jurisdiction Acres: 49,158 % 1.9		Amount Of Farmland As Defined in FPPA Acres: 43,631 % 1.7	
Name Of Land Evaluation System Used California Revised Storie Index	Name Of Local Site Assessment System Los Angeles County		Date Land Evaluation Returned By NRCS 3/4/11	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	2,100.0			
B. Total Acres To Be Converted Indirectly				
C. Total Acres In Site	2,100.0	0.0	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	0.0			
B. Total Acres Statewide And Local Important Farmland	2,167.3			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	4.4			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	**Data Not Available**			
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	89	0	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Nonurban Use	15	15			
2. Perimeter In Nonurban Use	10	10			
3. Percent Of Site Being Farmed	20	0			
4. Protection Provided By State And Local Government	20	5			
5. Distance From Urban Builtup Area	15	15			
6. Distance To Urban Support Services	15	0			
7. Size Of Present Farm Unit Compared To Average	10	10			
8. Creation Of Nonfarmable Farmland	10	10			
9. Availability Of Farm Support Services	5	0			
10. On-Farm Investments	20	0			
11. Effects Of Conversion On Farm Support Services	10	0			
12. Compatibility With Existing Agricultural Use	10	0			
TOTAL SITE ASSESSMENT POINTS	160	65	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	89	0	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	65	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	154	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☒

Reason For Selection:

(See Instructions on reverse side) **Form AD-1006 (10-83)**

This form was electronically produced by National Production Services Staff

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*		3. Date of Land Evaluation Request 2/9/11	4. Sheet 1 of 1
1. Name of Project	AV Solar Ranch One (Transmission Line)	5. Federal Agency Involved	Department of Energy, Loan Guarantee Program
2. Type of Project	Transmission Line for Solar PV Project	6. County and State	Los Angeles County, California

PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 2/9/11	2. Person Completing Form Hudson Minshew
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☑ NO ☐		4. Acres Irrigated 29,701 / Average Farm Size 63
5. Major Crop(s) Alfalfa, Onions, Carrots	6. Farmable Land in Government Jurisdiction Acres: 49,158 % 1.9	7. Amount of Farmland As Defined in FPPA Acres: 43,631 % 1.7
8. Name Of Land Evaluation System Used California Revised Storie Index	9. Name of Local Site Assessment System Los Angeles County	10. Date Land Evaluation Returned by NRCS 3/4/11

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment _____			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	0			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	1			
C. Total Acres In Corridor	1	0	0	0
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland	0			
B. Total Acres Statewide And Local Important Farmland	0			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	0			
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*	0			

PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	Maximum Points				
1. Area in Nonurban Use	15	15			
2. Perimeter in Nonurban Use	10	10			
3. Percent Of Corridor Being Farmed	20	10			
4. Protection Provided By State And Local Government	20	5			
5. Size of Present Farm Unit Compared To Average	10	10			
6. Creation Of Nonfarmable Farmland	25	0			
7. Availablility Of Farm Support Services	5	5			
8. On-Farm Investments	20	10			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	0			
TOTAL CORRIDOR ASSESSMENT POINTS	160	65	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	0			
Total Corridor Assessment (From Part VI above or a local site assessment)	160	65	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	65	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☑

5. Reason For Selection:

Signature of Person Completing this Part: | DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request: 2/9/11
	4. Sheet 1 of 1
1. Name of Project: AV Solar Ranch One (Transmission Line)	5. Federal Agency Involved: Department of Energy, Loan Guarantee Program
2. Type of Project: Transmission Line for Solar PV Project	6. County and State: Kern County, California

PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS: 2/9/11	2. Person Completing Form: Hudson Minshew
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☑ NO ☐		4. Acres Irrigated: 786,255 / Average Farm Size: 1,116
5. Major Crop(s): Alfalfa, Onions, Carrots	6. Farmable Land in Government Jurisdiction: Acres: 942,827 % 18.1	7. Amount of Farmland As Defined in FPPA: Acres: 962,181 % 18.5
8. Name Of Land Evaluation System Used: California Revised Storie Index	9. Name of Local Site Assessment System: Kern County	10. Date Land Evaluation Returned by NRCS: 3/4/11

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	0			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	1			
C. Total Acres In Corridor	1	0	0	0
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland	1.128			
B. Total Acres Statewide And Local Important Farmland	0			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.0001			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	Data Not Available			
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*	Data Not Available			

PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	Maximum Points	Corridor A	Corridor B	Corridor C	Corridor D
1. Area in Nonurban Use	15	15			
2. Perimeter in Nonurban Use	10	10			
3. Percent Of Corridor Being Farmed	20	10			
4. Protection Provided By State And Local Government	20	5			
5. Size of Present Farm Unit Compared To Average	10	10			
6. Creation Of Nonfarmable Farmland	25	0			
7. Availablility Of Farm Support Services	5	5			
8. On-Farm Investments	20	10			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	0			
TOTAL CORRIDOR ASSESSMENT POINTS	160	65	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	0			
Total Corridor Assessment (From Part VI above or a local site assessment)	160	65	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	65	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☑

5. Reason For Selection:

Signature of Person Completing this Part: | DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

APPENDIX F
USFWS CORRESPONDENCE REGARDING FEDERAL SPECIES CONSIDERED IN EA

This appendix presents correspondence dated December 22, 2010 from the U.S. Fish and Wildlife Service (USFWS) (Ray Bransfield) confirming the list of federal species considered and addressed in the EA.

Ray_Bransfield@fws.gov
12/22/2010 01:50 PM

To Christopher_Julian@URSCorp.com
cc
bcc
Subject AV Solar Ranch One Federal Species

In Reply, Please Refer to:
2001-TA-0084

Christopher Julian
Project Biologist/Regulatory Specialist
URS Corporation
130 Robin Hill Rd. Suite 100
Santa Barbara, Ca 93117

Dear Mr. Julian:

We have reviewed the information you have provided regarding federally listed, proposed, and candidate species and critical habitat that could potentially be present at the site of the proposed AV Solar Ranch One project in the Antelope Valley. Our responses to the conclusions you have reached with regard to these species follows:

Desert Tortoise: We concur that desert tortoises do not occur within the AV Solar Ranch One project site. Our conclusion is based on the results of your surveys and our site visit; the habitat onsite is not appropriate for desert tortoises.

California Condor: We concur that California condors may fly over the site of the proposed power plant and the associated transmission line, although we expect that such overflights are rare, based on existing information on their patterns of use. The project site does not contain topographic features that would make it an attractive area for California condors to roost or nest. You have noted that the site does not support large mammals, whose carcasses could provide food for California condors; although California condors frequently feed on much smaller carcasses (e.g., jackrabbits), we expect that the loss of 2,000 acres of potential foraging habitat in this area will not adversely affect California condors because of the large amounts of higher quality foraging habitat available elsewhere.

Mountain Plover: Because of the extensive shrub cover, we concur with your determination that mountain plovers are highly unlikely to occur within the boundaries of the project site.

San Fernando Valley Spineflower: We concur with your determination that the project site does not support the San Fernando Valley spineflower because the site does not contain suitable habitat (in comparison to known locations).

The proposed project is not located within any designated or proposed critical habitat. We do not expect any other federally listed, proposed, and candidate species to be present within the site of

the proposed project or in nearby areas.

The measures contained in the environmental impact report for the protection of migratory birds are adequate.

The Bald and Golden Eagle Act (50 Code of Federal Regulation 22.26, 22.27; Eagle Act) prohibits a variety of actions with respect to eagles, including their "take." "Take" under the Eagle Act is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest or disturb." Anyone who takes an eagle is in violation of the Eagle Act unless the take has been authorized by the Secretary of the Interior. No one is required to seek a permit for any activity; however, where an activity results in take, it is a violation of the Eagle Act unless a permit authorizing that take has been obtained prior to the action. Under the Eagle Act, "disturb," under the definition of take, means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, injury to an eagle, a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior. "Substantial interference" was not defined in regulation but refers to interference at or above the level that causes eagles to abandon their nest or that causes injury or loss of productivity. "Injury" could be the direct result of the interference, such as a nestling being knocked from the nest by a startled adult, or it can be indirect, such as a nestling that is fed inadequately because the adults are agitated when in the vicinity of the nest. Loss of productivity refers to a situation where reproductive output is reduced. Some examples of disturbance causing a loss of productivity include adults abandoning a nesting attempt because of human activity in the vicinity, nestlings failing to survive because the adults are deterred from using their primary foraging area and cannot adequately feed them, and pairs of previously successful breeding eagles being underweight and making no nesting attempt the next breeding season after their wintering concentration area is disturbed. The Service addressed the issue of disturbance in detail in its final regulations defining the term (Federal Register 72: 31132, June 5, 2007).

The Service's new regulations (Federal Register 74: 46835-46879; September 11, 2009) allow the issuance of permits to take eagles under the Eagle Act where "take is associated with, but not the purpose of the activity, and cannot practicably be avoided." The final environmental assessment and finding of no significant impact set the take threshold for golden eagles at zero; therefore, take can only be authorized where it is "compatible with the preservation of the eagle." To achieve no-net loss for the species and stable or increasing breeding populations, applications for take permits for renewable energy projects should include measures to avoid and minimize the potential for take to the degree practicable and, for programmatic permits, to the point where take is unavoidable despite implementation of comprehensive measures called advanced conservation practices developed in cooperation with the Service. Advanced conservation practices are scientifically supportable measures that are approved by the Service and represent the best available techniques to reduce disturbance to and ongoing mortalities of eagles to a level where remaining take is unavoidable. Breeding and non-breeding season surveys and monitoring should be used to assess potential impacts to resident, migrating, wintering, and floater segments of golden eagles and provide rigorous data to address the existing population conditions.

The proposed action has the potential to result in the "take" of golden eagles, possibly through

the loss of foraging habitat. We anticipate that, given the nature of the project site, the development of AV Solar Ranch 1 would not result in the loss of nesting habitat. We recommend conducting surveys to identify whether the project area provides important foraging habitat for golden eagles. Such surveys should follow the Service's current guidelines, *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance* (attached); however, we recommend that you coordinate with us to adapt these guidelines to focus on foraging by golden eagles. If surveys demonstrate the area of the AV Solar Ranch 1 site is important foraging habitat for golden eagles, we recommend that you work with us to develop advanced conservation practices, as described in the previous paragraph.

Some potential exists that golden eagles or California condors could be killed because by electrocution or collision with the proposed transmission line. Electrocution of large birds, primarily raptors, has been documented where power poles provide elevated perches from which raptors can hunt. In an effort to reduce this unauthorized take, the Avian Powerline Interaction Committee (APLIC) was formed to develop measures to reduce the electrocution of birds on power structures. The Service recommends that all features of new transmission lines (e.g., above-ground lines, transformers, and/or conductors) be built to specifications outlined by APLIC (1994, 2006) guidance. Large, less maneuverable birds, like California condors, are especially vulnerable to collisions with hard-to-see guy wires and power lines. Poor weather conditions, such as fog, rain, snow, and darkness may make the lines even more difficult to see. A variety of methods can be employed successfully to reduce bird collisions with guy wires and power lines. We recommend that, where possible, power lines be installed underground or on the surface as insulated, shielded wire; when above-ground power lines are necessary, they should be marked with recommended bird deterrent devices at the appropriate spacing intervals (APLIC 1994, USFWS 2000).

If you have any questions, please contact me via email or at (805) 644-1766 x317.

Sincerely,

Raymond Bransfield
Senior Biologist

Avian Power Line Interaction Committee. 1994. Suggested practices for avoiding avian collisions on power lines: state of the art in 1994. Edison Electric Institute and Avian Power Line Interaction Committee, Washington, DC.

Avian Power Line Interaction Committee. 2006. Suggested practices for avian protection on power lines, the state of the art in 2006. Edison Electric Institute, Avian Power Line Interaction Committee, and California Energy Commission. Washington, D.C. and Sacramento, California.

(See attached file: Interim Golden Eagle Technical Guidance Protocols 25 March 2010.pdf)

Christopher_Julian@URSCorp.com

Christopher_Julian@URSCorp.com

12/20/2010 01:22 PM

To Ray_Bransfield@fws.gov

cc

Subject AV Solar Ranch One Federal Species

Ray,

As we discussed in our recent telephone conversation, I'm writing to solicit your opinion regarding federally-protected plants and/or wildlife that may occur within the AV Solar Ranch One photovoltaic power plant site in the Antelope Valley. The project proponent is applying to the Department of Energy to secure a federal grant for the project, and the DOE will be preparing an Environmental Assessment as required by NEPA. The project has already undergone environmental review under CEQA, and Los Angeles County certified an EIR and approved the project on December 7th, 2010. URS Corporation prepared the County's EIR, and has conducted numerous full-coverage biological field investigations of the site. No federally-listed species were detected during those surveys.

As part of the grant application process, and to support the DOE's NEPA analysis, we are providing information to the DOE to demonstrate that our proposed action would not affect any federally listed species or their critical habitat. Based on our understanding of the site's physical and biological characteristics, and of biological resources in the Antelope Valley as a whole, we believe that the desert tortoise (*Gopherus agassizii*, ESA-Threatened), the California Condor (*Gymnogyps californianus*, ESA-Endangered), the mountain plover (*Charadrius montanus*, candidate for ESA listing), and the San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*, candidate for ESA listing) are the only federally listed, proposed, or candidate species that have any potential to occur within the project site or along the associated transmission line route. As stated in the County's EIR, we do not believe these species are present on-site for the following reasons:

Desert Tortoise (Gopherus agassizii, ESA-threatened, CESA-threatened). The

desert tortoise is an uncommon but widespread resident in the Mojave Desert in locations where soils are suitable for burrow construction and herbaceous desert plants provide sufficient food. Although the western antelope valley was once within this species' range, agricultural practices in the 1940s have made the Project vicinity unsuitable for this species. Soils have been disked and ripped, and possibly compacted, and may no longer exhibit characteristics suitable for burrow construction. Current range maps show the geographic distribution of the desert tortoise terminating several miles east of the Project site. Creosote bush (*Larrea tridentata*), the dominant shrub in tortoise's preferred habitat, is absent from the Project site and surrounding area. This species was not detected during full-coverage pedestrian wildlife surveys of the Project site and proposed transmission line route.

California Condor (Gymnogyps californianus, ESA-threatened, CESA-threatened, California Fully Protected) **.** The California condor is a highly mobile species, sometimes foraging several hundred miles from their nesting grounds. The species nests in caves, crevices, and ledges on cliffs, and forages on carrion. Because the Project site is devoid of major topographic features, no suitable nesting opportunities for this species exist on-site. However, the Project site is within foraging range of a known condor population in the Sespe Wilderness, approximately 35 miles southwest of the site. The Project site is unlikely to provide a frequent source of suitable carrion for this species, as the site is not grazed by livestock and shows no signs of use by deer. Thus, while it is possible that condors may occasionally fly over the site during foraging, it is unlikely that this species utilizes habitat within the Project site.

Mountain Plover (Charadrius montanus; ESA Candidate, CSC) **.** The mountain plover is a winter visitor to California, primarily from November through April, with peak numbers in the state occurring between December and February. The species is primarily associated with open habitats such as grasslands and plowed or burned fields with little or no vegetation, and avoids areas with substantial vegetative cover. Mountain plovers are known to winter in the Central Valley and interior coast ranges, and the San Joaquin Valley hosts substantial numbers between Stanislaus and Kern counties. The closest known occurrence to the Project site dates from 1999, when 24 individuals were observed approximately 3.5 miles east of the site. Because the site lacks the sparsely vegetated areas suitable for this species, it is unlikely that mountain plovers winter within the Project site. Some potential exists for this species to winter in agricultural fields in the Project vicinity; however, many seemingly suitable agricultural areas do not

support this species due to microrelief, substrate heterogeneity, soil moisture content, prey availability, and other factors.

San Fernando Valley Spineflower (Chorizanthe parryi var. Fernandina; ESA Candidate, CESA-Endangered) **.** This taxon was believed extinct, until it was rediscovered in Ventura County in 1999. Since that time, another population was discovered in the vicinity of Castaic Junction in Los Angeles County, approximately 25 miles south of the Project site, and this population represents the closest known extant occurrence of this species to the site. (An occurrence dating from 1929 in the vicinity of Lake Hughes is believed to have been extirpated.) Although the Project site may provide suitable habitat for this species, occurrence of the San Fernando Valley spineflower within the Project site is unlikely due to the distance from known populations. Full-coverage, floristic surveys of the site, conducted in accordance with USFWS, CDFG, and CNPS rare plant survey guidelines did not detect this species.

Additionally, based on available maps, we have determined that the project site is not within any designated or proposed critical habitat.

Does your agency concur with these determinations? Additionally, are there any other relevant federal issues we should be addressing, such as additional species that may warrant consideration? (Migratory Bird Treaty Act compliance has been addressed through the County's EIR and the associated mitigation measures, which require pre-construction surveys during the nesting season, surveys for burrowing owl during the winter season, avoidance of all nests detected until after young have fledged, and a biological monitor to be present during ground clearing activities.)

Please let me know at your earliest convenience, so we may communicate any recommendations to the DOE in a timely manner. If you have any questions or require further information, please give me a call at the number below.

Thanks,
Chris

Christopher Julian
Project Biologist/Regulatory Specialist
URS Corporation
130 Robin Hill Rd. Suite 100
Santa Barbara, Ca 93117

(805) 964-6010 x371

This e-mail and any attachments contain URS Corporation confidential information that may be proprietary or privileged. If you receive this message in error or are not the intended recipient, you should not retain, distribute, disclose or use any of this information and you should destroy the e-mail and any attachments or copies.

Interim Golden Eagle Technical Guidance Protocols 25 March 2010.pdf