HELIX Environmental Planning

RE Slate Solar Project

Draft Initial Study/Mitigated Negative Declaration

June 2019 | REC-06.02

Prepared for:

Kings County Community Development Agency
Planning Division
1400 W. Lacey Boulevard, Building #6
Hanford, CA 93230

Prepared by:

HELIX Environmental Planning, Inc.
11 Natoma Street, Suite 155
Folsom, CA 95630

RE Slate Solar Project

Draft Initial Study/Mitigated Negative Declaration

Prepared for:
Kings County Community Development Agency
Planning Division
1400 W. Lacey Boulevard, Building #6
Hanford, CA 93230

Prepared by:
HELIX Environmental Planning, Inc.
11 Natoma Street, Suite 155
Folsom, CA 95630

June 2019 | REC-06.02

ENVIRONMENTAL DETERMINATION (TO BE COMPLETED BY LEAD AGENCY)

On the basis of this initial evaluation:

☐	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
■	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☐	I find that the proposed project MAY have a significant effect on the environment, and an environmental impact report is required.
☐	I find that the proposed project MAY have a "potential impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect I) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

6-12-19
Date

Chuck Kinney
Printed Name:

Deputy Director - Planning

This page intentionally left blank

TABLE OF CONTENTS

TABLE OF CONTENTS (cont.)

LIST OF APPENDICES

TABLE OF CONTENTS (cont.)

LIST OF TABLES

LIST OF ACRONYMS AND ABBREVIATIONS

AADT	average annual daily traffic
AB	Assembly Bill
AC	alternating current
AFB	Air Force Base
AG	General Agricultural
amsl	above mean sea level
APN	Assessor's Parcel Number
AX	Exclusive Agriculture
BMPs	best management practices
bgs	below ground surface
BTU	British thermal units
CA DWR	California Department of Water Resources
Cad tel	Cadmium telluride (also known as CdTe)
CAISO	California Independent System Operator
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CCS	cryptocrystalline silicate
CdTe	Cadmium telluride (also known as "cad tel")
CDA	Kings County Community Development Agency
CDC	California Department of Conservation
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	Kings County
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CUP	Conditional Use Permit

LIST OF ACRONYMS AND ABBREVIATIONS (cont.)

CVP	Central Valley Project
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
dBA	A-weighted decibel
DC	direct current
DOF	California Department of Finance
DOGGR	Division of Oil, Gas, and Geothermal Resources, California Department of Conservation
DPM	diesel particulate matter
DTSC	Department of Toxic Substance Control
EERE	U.S. Department of Energy, Energy Efficiency and Renewable Energy
EIR	Environmental Impact Report
ESA	Environmental Site Assessment
ESS	energy storage system
EWSID	Empire West Side Irrigation District
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FMMP	Farmland Mapping and Monitoring Program
gen-tie	generation intertie
GHG	greenhouse gas
GWMP	Groundwater Management Plan
GWP	global warming potential
HCP	Habitat Conservation Plan
HELIX	HELIX Environmental Planning, Inc.
HMBP	Hazardous Materials Business Plan
hp	horsepower
I-5	Interstate-5
IS/MND	Initial Study/Mitigated Negative Declaration
JLUS	Naval Air Station Lemoore Joint Land Use Study
KART	Kings Area Rural Transit
KCAG	Kings County Association of Governments
KCFD	Kings County Fire Department
KCSD	Kings County Sheriff's Department
KRCD	Kings River Conservation District
kV	kilovolt

LIST OF ACRONYMS AND ABBREVIATIONS (cont.)

KWRA	Kings Waste and Recycling Authority
L_{EQ}	equivalent continuous sound level
L_{MAX}	maximum noise level
LOS	level of service
LRA	Local Responsibility Area
MLD	most likely descendant
MRZ	Mineral Resource Zone
MSW	Municipal Solid Waste
MW	megawatt
MWh	megawatt-hours
N_2O	nitrous oxide
NAHC	Native American Heritage Commission
NAS Lemoore	Naval Air Station Lemoore
NHTSA	National Highway Traffic Safety Administration
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
O&M	Operations and Maintenance
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OEM	Kings County Office of Emergency Management
OSHA	Occupational Safety and Health Administration
OVP	Old Valley Pipeline
Pb	lead
PCE	passenger car equivalent
PFC	perfluorocarbon
PG&E	Pacific Gas and Electric Company
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PPV	peak particle velocity
PRC	Public Resources Code
project	RE Slate Solar Project
project applicant	RE Slate, LLC
PV	photovoltaic
PVC	polyvinyl chloride
PM	particulate matter
RPS	California Renewable Portfolio Standard
RWQCB	Regional Water Quality Control Board
ROG	reactive organic gases

LIST OF ACRONYMS AND ABBREVIATIONS (cont.)

SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition System
SCAQMD	South Coast Air Quality Management District
SF_6	sulfur hexafluoride
SGMA	Sustainable Groundwater Management Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SJVRR	San Joaquin Valley Railroad
SO_2	sulfur dioxide
SoCalGas	Southern California Gas Company
SO_X	sulfur oxides
SPRR	Southern Pacific Railroad
SR	State Route
SRA	State Responsibility Area
SSJVIC	Southern San Joaquin Valley Information Center
SWPPP	Storm Water Pollution Prevention Plan
TAC	Toxic Air Contaminant
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
VMT	vehicle miles traveled
VOC	volatile organic compound
WMA	Water Management Area
WSA	Water Supply Assessment
WWD	Westlands Water District

This page intentionally left blank

INITIAL STUDY AND ENVIRONMENTAL EVALUATION

Project Title:	Conditional Use Permit No. 18-01 RE Slate Solar Project
Lead Agency Name and Address:	Kings County Community Development Agency 1400 West Lacey Boulevard, Building #6 Hanford, CA 93230
Contact Person and Phone Number:	Chuck Kinney, Deputy Director (559) 852-2674 Chuck.Kinney@co.kings.ca.us
Project Applicant:	RE Slate LLC 3000 Oak Road, Suite 300 Walnut Creek, CA 94597
2035 General Plan Designation: Exclusive Agriculture, 40-acre minimum	**2035 Zoning:** Exclusive Agricultural (AX) General Agricultural, 40-acre minimum (AG-40)

This page intentionally left blank

1.0 INTRODUCTION

This document is an Initial Study and Mitigated Negative Declaration (IS/MND) prepared pursuant to the California Environmental Quality Act (CEQA) for the proposed RE Slate Solar Project (proposed project). This IS/MND has been prepared in accordance with the CEQA Public Resources Code (PRC) Sections 21000 et seq., and the State CEQA Guidelines. Pursuant to the State CEQA Guidelines Section 15367, Kings County (County) is the lead agency for CEQA compliance.

An Initial Study is conducted by a CEQA lead agency to determine if a project may have a significant effect on the environment. In accordance with the State CEQA Guidelines Section 150649(a)(1), an Environmental Impact Report (EIR) must be prepared if the Initial Study indicates that the proposed project may have a potentially significant impact on the environment. According to State CEQA Guidelines Section 15070, a Negative Declaration or Mitigated Negative Declaration shall be prepared when either:

(a) The Initial Study shows there is no substantial evidence, in light of the whole record before the agency, that the proposed project may have a significant effect on the environment, or

(b) The Initial Study identified potentially significant effects, but:

    (1) Revisions in the project plans or proposals made by or agreed to by the applicant before the proposed negative declaration is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and

    (2) There is no substantial evidence, in light of the whole record before the agency, that the proposed project as revised may have a significant effect on the environment.

If revisions are incorporated into the proposed project in accordance with the State CEQA Guidelines Section 15070(b), a Mitigated Negative Declaration is prepared. This document includes such revisions in the form of mitigation measures. Therefore, this document is a Mitigated Negative Declaration and it incorporates all of the elements of the accompanying Initial Study.

2.0 PROJECT BACKGROUND

RE Slate, LLC (project applicant) seeks a Conditional Use Permit (CUP) from Kings County to construct, operate, maintain, and eventually decommission a photovoltaic (PV) electricity generating and energy storage facility and associated infrastructure for the RE Slate Solar Project (project). The project would generate 300 megawatts (MW) of alternating current (AC) electricity on approximately 2,490 acres of privately-owned land in unincorporated western Kings County (project site; see Figure 1 in Appendix A). The project would provide solar power to utility customers by interconnecting to the nearby regional electricity grid at Pacific Gas and Electric Company's (PG&E) existing Mustang Switching Station located west of the project site (on the site for the operational RE Mustang Solar Generation Facility), utilizing a future shared generation intertie electric transmission line (gen-tie line) that will be built as part of the approved RE Mustang Two Solar Generation Facility directly south and west of the project site (the project has been approved, but not yet constructed). The properties composing the proposed project site are owned by Westlands Water District (WWD) and Sandridge Partners L.P.

Components of the project would include:

- Solar arrays including PV modules and steel support structures, electrical inverters, transformers, cabling, fencing, and other infrastructure;

- Electrical substation(s), a switching station, and appurtenant equipment;

- Other necessary infrastructure, including one permanent operation and maintenance building, septic system and leach field, supervisory control and data acquisition (SCADA) system, meteorological data system, buried conduit for electrical wires, overhead collector lines, on-site driveways, a shared busbar, other shared facilities, and security fencing;

- A 300-MW energy storage system (ESS) with a 4-hour capacity or approximately 1,200 MW hours, consisting of battery or flywheel enclosures and electrical cabling and appurtenant equipment; and

- A short gen-tie connection line consisting of power poles, conductors, insulators, optical fiber cables and safety equipment which would connect ("tie-in") to the future RE Mustang Two substation which will be located south of the unimproved Kent Avenue alignment near the western project site boundary. The tie-in would connect the project to a gen-tie interconnection line to the PG&E Mustang Switching Station which would be shared with the RE Mustang Two Solar Project.

An analysis of impacts as a result of the RE Mustang Two Solar Project gen-tie line to the PG&E Mustang Switching Station is included in the CEQA document prepared for the approved RE Mustang Two Solar Generation Facility (HELIX 2017) and those potential impacts are not analyzed as part of this project. Refer to Figure 2 in Appendix A for the project site on an aerial image, and Figure 3 for the project site and short gen-tie connection to the shared gen-tie interconnection line with the PG&E Mustang Switching Station.

Construction of the proposed project is expected to begin as early as October 2020 and could occur in phases. Project construction is expected to take 14 months. The project would operate year-round to generate solar electricity during daylight hours and would store and dispatch power at the ESS during both daylight and non-daylight hours. The anticipated operating life of the facility is up to 40 years. Following the operating period, the facility would be decommissioned. The project is not planned to be repowered.

3.0 PROJECT DESCRIPTION

3.1 Project Location

The 2,490-acre project site is located in unincorporated Kings County, 0.2 mile southeast of Naval Air Station Lemoore (NAS Lemoore), 3.2 miles southwest of the City of Lemoore, and 10.5 miles west-southwest of the City of Hanford (Figure 1). The project site is generally bound by Avenal Cutoff Road to the northwest, Jackson Avenue to the north, the Kings River floodplain to the east which trends north-south between 22nd Avenue and 23rd Avenue, and Laurel Avenue to the south. The western site boundary generally follows unnamed agricultural driveways. The project site occupies parts of Sections 25, 26, 34, 35, and 36 of Township 19 South, Range 19 East and Sections 1, 2, 11, 12, and 13 of Township 20 South, Range 19 East, Mount Diablo Base and Meridian. The majority of the project site is located within the "Westhaven, CA" and "Stratford, CA" USGS 7.5-minute quadrangles, with a portion of the northernmost parcels located within the "Lemoore, CA" 7.5-minute quadrangle. The project site consists of twenty-three Assessor's Parcel Numbers (APNs): 024-190-008, 024-190-019, 024-190-033, 024-190-037, 024-190-045, 024-190-047, 024-190-049, 024-190-057, 024-190-060, 024-190-062, 024-190-072, 024-200-012, 024-200-017, 024-200-018, 024-200-020, 026-020-012, 026-020-017, 026-020-018, 026-020-019, 026-020-020, 026-040-011, 026-040-016 and 026-110-001.

The project would include a short (approximately 500-foot-long) gen-tie electrical transmission line that would connect ("tie-in") to another gen-tie line to the PG&E Mustang Switching Station (to be constructed as part of the approved RE Mustang Two Solar Generation Facility) at a point off of the project site, south of the unimproved Kent Avenue alignment near the western project site boundary. Refer to Figure 2 in Appendix A for an aerial map of the project site, Figure 3 for the project site, the short gen-tie connection, and the route of the shared gen-tie line to the PG&E Mustang Switching Station, and Figure 4 for the project site on a USGS 7.5-minute quadrangle map.

3.2 Environmental Setting

The project site is irregularly shaped and located in a rural, agricultural area of the Central Valley. Surrounding land uses include active and fallow agriculture, operational and planned solar PV facilities, transportation, NAS Lemoore, and open space associated with the Kings River. Refer to Figure 2 for an aerial image of the project site and surrounding land uses.

The area is characterized by relatively flat topography with no remarkable elevation contours or geological features. Highways, local roadways, and canals transect the area and transmission lines are visible along parcel boundaries and roadways throughout the area. The Kings River is a natural hydrological feature that trends south to north through the area. The floodplain and riparian corridor have been modified by adjacent land uses and the banks have been modified by levees. The riparian habitat associated with the river is largely restricted to within the banks of the river. The project site is located outside of the floodplain of the river.

State Route (SR)-198 is an east-west trending major transportation route north of the project site, and the Avenal Cutoff Road and SR-198 interchange is near the northwest boundary of the project site. Site access would be provided via the unimproved Kent Avenue alignment, Murphy Ranch Road, and Laurel Avenue from Avenal Cutoff Road. Regional access would be provided by Interstate-5 (I-5), SR-41, SR-198, and Avenal Cutoff Road.

NAS Lemoore is north of SR-198, northwest of the project site. The navy base includes the census designated community, Lemoore Station, with residences and schools, and the naval airport. Lands west of the project site include wastewater treatment basins for NAS Lemoore located directly across Avenal Cutoff Road from the project site, active and fallow agricultural lands and several existing and planned solar facilities. Lands south and east of the project site include active and fallow agriculture. Agriculture residences are located east and southeast of the project site, approximately 0.25 to 0.6 mile from the nearest site boundary. As previously mentioned, the Kings River flows east of the project site and the project site is outside of the river's floodplain. All vegetation in the vicinity of the project site is associated with active and fallow agriculture except for native and naturalized riparian communities in the Kings River riparian corridor and canals, and small patches of landscaping associated with NAS Lemoore.

A number of existing and planned solar facilities surround the project site. Existing and planned solar facilities south and west of the project site include the currently undeveloped 150 MW RE Mustang Two Solar Generation Facility directly adjacent to the project site (construction is anticipated to commence in 2019 and will construct the gen-tie line to the Mustang Switching Station which will be used by the proposed project), the fully operational 20 MW Kent South, 20 MW Orion, and 160 MW Mustang Solar Generation Facilities, the partially constructed 22 MW Westside Assets Solar Generation Facility west of the project site (Phase I of construction is complete), and the approved but currently undeveloped American Kings Solar Generation Facility directly across Avenal Cutoff Road from the project site. Refer to Figure 10 in Appendix A and Table 7.21-1 in Section 7.21, *Mandatory Findings of Significance*, for the locations and details of the existing and planned solar facilities in relation to the project site.

The project site is predominantly flat with elevations ranging from approximately 200 feet above mean sea level (amsl) in the northern and eastern portions of the project site to approximately 220 feet amsl in the western portion of the site. The regional topographic gradient trends east-southeast towards the Kings River. There is an extensive system of canals and drains in and around the project site that convey water obtained from the Central Valley Project (CVP), State Water Project, local water projects, and groundwater. A system of Irrigation canals managed by Kings River Conservation District (KRCD), WWD, and Empire West Side Irrigation District (EWSID) transect the project site north-to-south in the eastern portion of the site and provide water to nearby agricultural fields. The system also includes a canal carrying treated sewage owned by the City of Lemoore. Additional canals through the site are managed by local property owners (e.g., Sandridge Partners L.P.). Existing low-voltage (70-kilovolts [kV]) electrical transmission lines follow the southern boundary along Laurel Avenue, the southwestern boundary along the unimproved Kent Avenue alignment and along Murphy Ranch Road and within the northernmost extent of the project site. The northern portion of the site is traversed by an existing 30-foot-wide Southern California Gas Company (SoCalGas) gas line easement. There are no existing buildings located on the project site. There are several agricultural wells on the project site (Stantec 2017).

The project site is used for various agricultural uses – for the past eight years, the project site has been alternately cropped and irrigated, grazed, and left fallow. Following 2014, the majority of the project site was left uncultivated and used as pastureland or fallowed. The most recent crop data provided by the Kings County Agricultural Commissioner's office indicate that the project site was previously used to cultivate wheat, alfalfa, corn, cotton, watermelon, pastureland, safflower, and pistachios between 2009 and 2016 (Kings County 2017).

3.3 General Plan Land Use Designation and Zoning

The 2035 Kings County General Plan (CDA 2010) land use designation is Exclusive Agriculture, 40-acre minimum, for the APNs in which the project site is located. The Kings County Development Code and Zoning Plan identifies zoning designations for unincorporated territory of the County as zoning districts. Project site APNs 026-020-020, 026-020-019, 026-040-011, and 026-110-001 are within the General Agricultural (AG-40) zone district, and the nineteen remaining APNs are within the Exclusive Agricultural (AX) zone district. Refer to Figures 5 and 6 in Appendix A for the land use and zoning designations by APN (respectively).

3.4 Need

The California Renewable Portfolio Standard (RPS) legislation enacted in 2002 (Senate Bill 1078) and accelerated in 2006 required retail sellers of electricity to obtain 20 percent of their supply of electricity from renewable energy sources, such as solar, by 2010. Subsequent recommendations advocated a goal of 33 percent by 2020, which Governor Arnold Schwarzenegger set as a statewide goal when he signed Executive Order S-14-08. The following year, Executive Order S-21-09 directed the California Air Resources Board (CARB), under its Assembly Bill (AB) 32 authority, to enact regulations to achieve the goal of 33 percent renewables by 2020 (CEC 2015). The 33 percent goal was enacted into law by Governor Brown in 2011 with his signing of Senate Bill 2X. The California Public Utilities Commission (CPUC) states that the state's investor-owned utilities (including PG&E, SoCalGas, and San Diego Gas & Electric) collectively served approximately 34.8 percent of their 2016 retail electricity sales with renewable energy sources, and that they have all exceeded the contractual requirements for reaching 33 percent by 2020 (CPUC 2018). In 2015, Governor Brown signed Senate Bill 350, known as the Clean Energy and Pollution Reduction Act of 2015, which increased California's RPS to 50 percent by 2030.

California AB 2514 was enacted in 2010 and required that the CPUC adopt energy storage procurement targets for the state's investor-owned utilities. The CPUC subsequently began a rulemaking process which established the Energy Storage Procurement Framework and Program. The rule considered recommendations included in the California Energy Storage Roadmap, an interagency guidance document which was jointly developed by the California Independent System Operator (CAISO), the California Energy Commission (CEC) and the CPUC. In 2013, the CPUC adopted the framework and established an energy storage target of 1,325 MWs for investor-owned utilities by 2020, with installations required no later than the end of 2024. The decision further established a target for Community Choice Aggregators and Electric Service Providers to procure energy storage equal to one percent of their annual 2020 peak load by 2020 with installations no later than 2024.

Power generated by the project would be delivered directly via the CIASO electrical transmission system pursuant to the terms of one or several power purchase agreements.

3.5 Project Objectives

The project applicant and the CEQA lead agency (Kings County) have identified the following objectives for the proposed project:

- Generate up to 300 MW of clean electricity to assist the State of California in achieving the 50 percent renewable portfolio standard for 2030 by providing a significant new source of wholesale renewable energy;

- Assist California utilities in meeting their obligations under the CPUC's Energy Storage Framework and Design Program, including the procurement target of 1,325 MWs by 2020, by providing up to 300 MW of storage capacity;

- Facilitate grid interconnection of intermittent and variable PV generation and minimize line losses associated with off-site storage by collocating substantial electrical storage capacity at the PV facility site;

- Realize economies of scale inherent in constructing a utility-scale solar facility on contiguous lands in the immediate vicinity of a high-voltage interconnection to the CAISO-controlled grid;

- Bring living-wage skilled jobs to Kings County through project development, construction, and operation;

- Site the project to minimize agricultural and biological impacts by being located on land with lower agricultural value and with minimal or no habitat value for regionally occurring sensitive species.

3.6 Project Features

The proposed project would be comprised of a solar facility, an ESS, and a gen-tie line connecting to shared facilities off-site.

Solar PV generating facilities consist of individual modules which are arranged in rows to form solar arrays. The arrays are combined to form larger units called solar blocks or array blocks. For large-scale utility applications, hundreds of array blocks are interconnected as part of the solar power generation facility. Each array block is served by an electrical inverter, which can be located centrally within the array block or distributed within the array footprint. The inverters convert the direct current (DC) output from the array to AC which is then conveyed to the substation and switchyard which steps up the voltage to match the collection system.

The solar facility of the proposed project would consist of solar PV modules and support structures; the energy collection system which would include electrical inverters and intermediate voltage transformers to step up the voltage to 34.5 kV to match the internal collection system voltage; and an ESS (as described in Section 3.5.2 below) which would include electrical enclosures, electrical wiring, transformers, and associated equipment. The proposed project includes one or two electrical substations, which would receive electricity from consolidated intermediate voltage cables from the energy collection system and would step the voltage up to 230 kV via high voltage transformers located in the individual PV substation or shared facilities. Each substation area would include an electrical control building and would connect with a shared switching station. Either the switching station or the project substation(s) would tie into PG&E's high-voltage 230 kV Mustang Switching Station via infrastructure for the planned RE Mustang Two Solar Generation Facility. Due to the relatively short length of gen-tie to the shared infrastructure, no transmission lines are proposed to be constructed for the proposed project.

Other necessary infrastructure would include one permanent operations and maintenance (O&M) building, a SCADA system, meteorological data system, fiber optic telecommunications infrastructure, access driveways, a gen-tie line, and security fencing. Buildings, internal driveways, equipment pads, and

footings would total approximately 167 acres of impervious surfaces (approximately 6.7 percent of the site). The PV modules would cover approximately 847 acres (34 percent) from an aerial perspective when fully horizontal (parallel to the ground).

The project site is transected by existing easements, canals, and the unimproved Kent Avenue alignment. The solar facility layout would be contained within discrete areas delineated by the various existing infrastructure and easements. Each discrete area of the solar facility would be enclosed by perimeter fencing, with the existing infrastructure and easements fully accessible outside of the facility fencing. Refer to Figure 3 for the site plan.

3.6.1 Solar Photovoltaic Systems

The solar facility would include an estimated 3 million to 5 million solar modules. The ultimate decision for the module types and racking systems would depend on market conditions and environmental factors, including the recycling potential of the modules at the end of their useful lives.

Types of modules that may be installed include thin-film modules (including cadmium telluride [CdTe or "cad tel"] and copper indium gallium diselenide technologies), crystalline and amorphous silicon (c-Si) modules, or any other commercially available PV technology. Solar thermal technology is not being considered. Module mounting systems that may be installed include either fixed-tilt or tracking technology, depending on the PV modules ultimately selected. Multiple types of modules and racking systems may be installed across the site. The PV modules would be manufactured at an offsite location and transported to the solar facility site. Module faces would be minimally reflective, dark in color, and highly absorptive.

The solar arrays would be arranged in 2-MW array blocks (refer to Sheet C1.0 in Appendix B for a conceptual array block). For single-axis tracking systems, the length of each array (row) would be approximately 300 feet long along a north/south axis with the modules tracking east to west to follow the movement of the sun. For fixed-tilt systems, a row would consist of multiple tables (generally four modules high by 10 modules wide, depending on design) and each table would be approximately 65 feet along the east/west axis, with one-foot spacing between each table. The modules of fixed-tilt arrays generally face south and would be fixed at an approximate 20- to 60-degree angle or as otherwise determined necessary during final project design. For either system type, spacing between each row would be a minimum of 14 feet and the maximum height of the module system measured from ground surface would be 12 feet. Details 1 - 4 in Sheet C3.0 in Appendix B show typical elevation drawings of solar panels and tracking systems.

3.6.2 Energy Collection and Storage

Energy Storage Systems

The proposed project could include, at the applicant's option, a battery or flywheel storage system capable of storing up to 300 MW of electricity and conducting energy to the regional electricity grid. If provided, the storage system would consist of battery or flywheel banks housed in electrical enclosures and buried electrical conduit. The project could use one of a number of commercially available energy storage technologies, including but not limited to Lithium-ion (Li-ion), flow batteries, sodium sulfur or mechanical fly wheels. Battery systems are operationally silent, and flywheel systems have a noise rating of 45 A-weighted decibel (dBA).

The ESS would either be dispersed throughout the project site, connected to the PV array via direct current ("DC-coupled"); or concentrated in one location on the site, connected to the PV array via alternating current ("AC-coupled"). Whether a DC-coupled system or an AC-coupled system is chosen for installation will depend on market conditions and the availability of commercial options at the time of construction.

As described in Section 3.5.3, *Substation(s), Switching Station, and Gen-Ties*, the solar facility would be laid out in PV array blocks, with each block containing an inverter and transformer equipment area. For a DC-coupled system, energy storage containers and a DC to DC converter/optimizer would be co-located at the inverter and transformer equipment areas within the individual array blocks throughout the site. These containers would include a heating, ventilation, and air conditioning system and monitoring, controls, and operational management systems that will maintain normal battery operation and provide alerts in the case of malfunction. A typical energy storage container would measure approximately 8.5 feet by 40 feet by 8.5 feet high on a concrete foundation. The combined inverter and energy storage equipment area would be located on an equipment pad measuring approximately 10 feet by 90 feet. Refer to Detail 2 in Sheet C3.1 in Appendix B for a typical energy storage container and Detail 3 for a DC-coupled inverter and energy storage equipment area.

For an AC-coupled system, the typical energy storage containers with related equipment (minus the DC to DC converter/optimizer) would be grouped together in one area on the site totaling between 9 and 15 acres, comprising multiple containers that would be enclosed within a warehouse-like building.

The monitoring, controls, and operational management systems would connect to the overall solar facility management system and use sensors to monitor the performance of the ESS, detect malfunctions or conditions requiring maintenance, and provide plant operators with notification of these conditions in real time. The containers will likely include fire suppression systems, or be designed with physical protections such that added fire protection systems may not be necessary. Flow battery containers will include secondary containment, as necessary, for circulating fluid systems.

Energy from the storage system would be conducted to the grid through the PV system inverters in the case of a DC-coupled system, or directly to the grid from the storage system in the case of an AC-coupled system. With the use of bi-directional inverters with electricity backflow preventers, both DC-coupled and AC-coupled ESSs could also be charged by the electrical grid (as well as being charged by the PV modules), and therefore provide grid support.

Energy Collection

Each array block of the solar facility would include a centrally located inverter and transformer equipment area. Each inverter and transformer equipment area would be constructed on a concrete pad or steel skid measuring either approximately 40 feet by 10 feet for a typical AC-coupled system (if the ESS is AC-coupled) or approximately twice this size (if the ESS is DC-coupled). However, the final size ultimately would depend on available technology and market conditions. Refer to Details 2 and 3 on Sheet C3.1 in Appendix B for a typical PV array block with an AC-coupled ESS, and a typical PV array block with a DC-coupled ESS, respectively.

Each inverter and transformer equipment area would contain a DC combiner (which would collect DC electrical power from the PV modules), up to four inverters, a transformer, an auxiliary power transformer, an energy storage enclosure (in the event of DC-coupled energy storage), and an

approximately 8- to 10-foot high switchboard (i.e., auxiliary power panel). If required based on site meteorological conditions, a shade structure would be installed at each pad. The shade structure would consist of wood or metal supports and a durable outdoor material shade structure (metal, vinyl, or similar). The shade structure would extend up to 10 feet above the top of the inverter pad. Inverter pads would result in an estimated maximum of 4 acres of impervious surfaces at the solar facility site. Refer to Detail 1 on Sheet C3.1 in Appendix B for a typical inverter and transformer equipment area and Detail 3 for a DC-coupled inverter and energy storage equipment area. Inverters could be uni-directional (most common), or bi-directional, depending on whether battery charging from the grid would take place.

The individual modules would be electrically connected using wiring secured to the module racking system. Underground cables, either rated for direct bury or installed inside a polyvinyl chloride (PVC) conduit, would convey the DC electricity from the modules via combiner boxes located throughout the PV arrays, to the inverters to convert the DC to AC. The transformers would step up the voltage to 34.5 kV to match the collection system voltage. The power output from the inverter and transformer equipment areas would be conveyed to the on-site substations via collection cables. The 34.5-kV collection cables would be buried underground or installed overhead on wood poles typically 50 feet tall but up to 70 feet tall at up to 250-feet intervals. Some of the wood poles could be located at the outside edge of the property line, but a majority of these poles are expected to be located interior to the site. Pole diameters would typically be 12 to 14 inches.

3.6.3 Substation(s), Switching Station, and Gen-Ties

Substation

The project would include up to two substations which would transform voltage from 34.5 kV to 230 kV. Each substation would occupy an approximately 27,000-square-foot (150 feet by 180 feet) area enclosed by an approximately 8-foot-high chain link fence topped with one foot of barbed wire. The substations would be located in the western portion of the site, near the intersection of Avenal Cutoff Road and the unimproved Kent Avenue alignment (refer to Sheet C2.1 in Appendix B for the potential location and Details 1 - 3 on Sheet C3.2 for the substation plan and elevations). Each substation would collect consolidated intermediate voltage via cables from the PV collector system. The substations would deliver the increased voltage to a project switching station which would connect with the future RE Mustang Two Solar Generation Facility (refer to the discussions of the switching stations and the gen-tie line in the following sections).

Electrical transformers, switchgear, and related substation facilities would be designed and constructed to transform medium-voltage power from the project's delivery system to the 230-kV transmission lines via the gen-tie line (described below) and to connect to the existing PG&E Mustang Switching Station.

Structural components in each substation area would include:

- Power transformers (approximately 25 feet by 40 feet, and 25 feet high);
- Footings for power transformers;
- Pre-fabricated control buildings (each approximately 40 feet by 12 feet, and 11 feet high) to enclose the protection and control equipment, including relays and low voltage switchgear;

- Footings (up to 12 feet deep) for the control enclosure structure;
- Metering stand;
- Capacitor bank(s);
- Circuit breakers and air disconnect switches;
- Fiber optic telecommunications infrastructure;
- Lightning mast approximately 70 feet high; and
- Dead-end structure(s), approximately 70 feet high, to connect the project substations (or alternatively a switchyard facility) with the RE Mustang Two Solar Generation Facility combined gen-tie, which would connect to the PG&E Mustang Switching Station.

Because each of the substation transformers would contain oil as an insulating fluid, the substations would be designed to accommodate an accidental spill of transformer fluid using containment-style mounting. Each of the dead-end structures would require foundations excavated to a depth of 20 feet or more.

Switching Station

The project may include construction of a 230-kV switching station. The switching station equipment would be located in an approximately 33,750-square-foot (225 feet by 150 feet) switchyard enclosed by an approximately 8-foot-high chain link fence topped with one-foot barbed wire. The switching station would collect 230 kV electricity from the substations and would connect with the future 230 kV RE Mustang Two Solar Generation Facility via the 230-kV gen-tie line described in the following section. The switching station would include a control enclosure approximately 20 feet by 12 feet, and 11 feet high, 65-foot-high dead-end structures, transformers, circuit breakers, and shield wires. Like the substation described above, the switching station would be designed to accommodate an accidental spill of transformer fluid using containment-style mounting. Each of the dead-end structures would require foundations excavated to a depth of 20 feet or more.

Gen-Tie Line

The project includes constructing a short (approximately 500-foot-long) 230 kV gen-tie line that would connect the project substations and/or switchyard to the approved RE Mustang Two Solar Generation Facility combined gen-tie, which would connect to the approved PG&E Mustang Switching Station that will be constructed as part of the RE Mustang Two Solar Generation Facility (anticipated to begin construction in 2019). The connection would be located south of the unimproved Kent Avenue alignment near the western project site boundary. The shared portion of the gen-tie line would be considered to be components of both the RE Slate project conditional use permit and the RE Mustang Two project conditional use permit. The line would consist of wooden H-frame or steel monopole structures, electrical conductors, insulators, optical ground wires, and telecommunications fibers. Up to two power poles approximately 135 feet high would be installed. Pole foundations would be up to 35 feet deep. The line would be installed as an overhead line over the unimproved Kent Avenue alignment, and long-term surface disturbance would be limited to poles, pole foundations, and

compacted dirt access driveways, and short-term surface disturbance would include wire stringing areas and staging areas.

3.6.4 Support Facilities

Operation and Maintenance Building

An O&M building to accommodate up to six permanent operation and maintenance staff would be required for the project. The building would be approximately 2,000 square feet in size (approximately 40 feet by 50 feet) and 15 feet high at its tallest point) and located in either the northwest or southwest portion of the project site. The building would consist of a prefabricated building set on a concrete slab-on-grade foundation. The O&M building would include permanent plumbing and restroom facilities for use by the staff. The facility would include an operations yard for storage for operational equipment, vehicles and materials, and would include parking and maneuvering areas for staff vehicles, delivery trucks, and service vehicles. The operations yard would be between 2 and 4 acres in size and would be the minimum size required to support operations. Refer to Detail 5 on Sheet C3.2 in Appendix B for the O&M building.

Small quantities of potable water would be required for drinking and other uses. Potable water would be delivered by a water delivery service or would be brought to the site by workers. Domestic wastewater disposal would be provided by the septic system and leach field described in the following section. Additional personnel occasionally on-site to perform periodic module washing (up to four times per year) would be provided with portable restrooms serviced by a licensed provider, as well as bottled water for drinking and hand washing. Refer to Section 3.7.4, *Water and Wastewater During Operation*, for more information about water use and wastewater generation during operation of the facility.

Septic System and Leach Field

A septic system and leach field would be installed adjacent to the O&M building to support the restroom facilities and sewage needs of the six permanent staff working eight hours per day at the O&M building during operation.

Project Entrances and Internal Driveways

Access to the project site would be provided via the unimproved Kent Avenue alignment, Murphy Ranch Road, and Laurel Avenue from Avenal Cutoff Road (refer to Sheet T1.0 in Appendix B for the access locations). Each entrance would have gated access to the site. The project entrances would be designed and constructed in accordance with the Kings County Improvement Standards.

As required by the County for all solar projects, permanent access would be provided by driveways along the interior perimeter of each of the fenced areas of the facility, and internal driveways would be located between the array blocks. Perimeter and internal driveways would provide fire buffers, accommodate project O&M activities such as washing the solar modules, and facilitate on-site circulation for emergency vehicles. The perimeter driveways would be approximately 20 to 30 feet wide, and the internal driveways would be approximately 20 feet wide, to allow passage of emergency and maintenance vehicles, and would be spaced per Kings County Fire Department (KCFD) standards. Perimeter and internal driveways would be surfaced and maintained to provide a durable, dust free surface in accordance with Table 2013, Rural Access Lane Design Standards, of the Kings County

Improvement Standards, and would be permeable to allow percolation of rainfall. This would not involve lime treatment but would likely involve surfacing with gravel, compacted native soil, or a dust palliative (refer to the discussion of "Project Entrances and Internal Driveways" in Section 3.6.1, *Solar Facility Construction*).

As described under "Perimeter Fencing," below, the bed and banks of canals transecting the project site would remain outside the project fences; however, pre-fabricated bridges may be installed to cross the existing canals to augment site access and circulation.

A 20-foot-wide emergency access driveway would be provided along the north side of the SoCalGas gas line easement through the project site and would be fully accessible outside of the solar facility fencing. Like all other driveways on the site, the easement emergency access driveway would be designed and constructed in accordance with the Kings County Improvement Standards.

Perimeter Fencing

As previously mentioned, the project site is transected by existing easements, canals managed by other property owners, and the unimproved Kent Avenue alignment. The solar facility layout would be contained within discrete areas delineated by the various existing infrastructure and easements. Each discrete area of the solar facility would be securely fenced and gated to prevent unauthorized access, with the existing easements, canals, and Kent Avenue alignment fully accessible outside of the facility fencing. The perimeter fencing would be located around areas on the site as shown in Figure 3. The fencing would be set back approximately 10 feet from the toe of slope of the canals, 5 feet from the northern boundary of the 20-foot wide emergency access driveway along the north side of the SoCalGas easement, and 5 feet from the southern SoCalGas easement boundary through the project site. The fence design would consist of 6-foot-high chain-link galvanized metal fence topped by three strands of barbed wire approximately 1 foot high. Refer to Details 2 and 3 on Sheet C3.0 in Appendix B for the typical perimeter fencing.

Exterior Lighting

Exterior lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties. Lighting would be installed along perimeter fencing, at the facility entrances and interior gates, the O&M facilities, the inverter and transformer equipment areas, and the substations/switching stations. The lighting may be either motion sensitive or light activated to automatically come on in the evening and shut off in the morning. All lighting also would conform to applicable Kings County rules and regulations for outdoor lighting.

Signage

During all phases of the project, signage for safety and identification would be posted around the perimeter of the project site, and safety signage at the electrical equipment. During the construction and decommissioning phases, temporary directional signage would be installed, as needed. No large billboards or other forms of advertising signage are proposed. All signage would conform to Article 14 of the Development Code.

Supervisory Control and Data Acquisition System

The facility would be designed with a comprehensive SCADA system to allow remote monitoring of facility operation and/or remote control of critical components. The fiber optic or other cabling required for the monitoring system typically would be installed in buried conduit, leading to a SCADA system cabinet centrally located within the project site or a series of appropriately located SCADA system cabinets constructed within the O&M buildings. The dimensions of each cabinet would be approximately 20 feet by 8 feet, and 9 feet high. External telecommunications connections to the SCADA system cabinets could be provided through wireless or hard-wired connections to locally available commercial service providers.

Telecommunications Facilities

The project's SCADA system would interconnect to the fiber optic network at PG&E's Mustang Switching Station, and no additional disturbance associated with telecommunications is anticipated.

Meteorological Data Collection System

The project would include a meteorological (met) data collection system. Each met station would have multiple weather sensors: a pyranometer for measuring solar irradiance, a thermometer to measure air temperature, a barometric pressure sensor, and wind sensors to measure speed and direction. The 4-foot horizontal cross-arm of each met system would include the pyranometer mounted on the left-hand side and the two wind sensors installed on a vertical mast to the right. The temperature sensor would be mounted inside the solar shield behind the main mast. Each sensor would be connected by cable to a data logger inside the enclosure.

3.6.5 Concomitant Agricultural Uses

The applicant plans to maintain a majority of the site in agricultural operation for the duration of the life of the solar facility. Solar facilities have a minimal development footprint, which allows for concomitant sheep grazing. Because the solar panels (modules) are installed on a system of racks, the ground below the modules remains undeveloped. Additional areas within the project site include grassy areas between the rows and undeveloped portions of the site that will remain as open space for the life of the project. Following development, approximately 2,246 acres of the 2,490-acre project site would be available for sheep grazing. Of that land, 1,827 acres of land in Farmland Security Zones and designated as Farmland of Statewide Importance would be used for sheep grazing. The remaining land may be grazed for vegetation management or left fallow. The breakdown of areas not able to be grazed and grazable areas within the project site is presented in Table 3.6-1.

TABLE 3.6-1
AREAS AVAILABLE AND NOT AVAILABLE FOR GRAZING DURING OPERATION

Area	Acres
Total Project Site	2,490
Not Available for Grazing	
Buildings/Driveways/Equipment Pads/Footings	167
Easements and Public Rights-of-Way	77
Total Area Not Available for Grazing	***244***
Grazing Areas	
Aerial solar panel cover	490
Grassy area between rows/Open Space	1,684
Other (Setbacks/Drill Pads)	72
Total Area Available for Grazing	***2,246***

During operation of the solar facility, the dry farm seasonal livestock grazing (sheep), as well as other vegetation management methods, would be implemented pursuant to a Vegetation and Agricultural Management Plan (refer to the discussion of "Vegetation and Agricultural Management" in Section 3.7.3, *Site Management During Operation*).

3.7 Construction

Construction of the proposed project is expected to begin as early as October 2020 and could occur in phases which would include: (1) site preparation, (2) installation of the PV system, and (3) installation of the inverters, transformers, substation(s), switching station and the gen-tie line. Phase 3 would also include site restoration and revegetation. The ESS would be constructed separately and would also occur in three phases which would include: (1) site preparation, (2) foundations, structures and systems, and (3) installation of the inverters, substation, and connection. The construction phases, including construction of the ESS and site restoration and revegetation, would overlap and the total duration for construction of the project is expected to take 14 months. Refer to Section 3.6.7, *Construction Workforce, Equipment, and Trip Generation*, for a detailed description of the anticipated overlap as a worst-case scenario.

Excavation activities would be associated with trenching for utilities, building pads, and footings. Most excavation activities would be less than 6 feet in depth; however, some excavations, such as those for the installation of electricity collector poles and dead-end structures, may reach depths of 20 feet, or more.

The substation equipment, inverters, collector system, and PV array systems would undergo testing, calibration of equipment, and troubleshooting prior to commencement of commercial operations. Upon completion of successful testing, the equipment would be energized.

3.7.1 Solar Facility Construction

Site Preparation

Pre-construction Activities

Pre-construction activities include surveying and staking for the various project features, such as driveways, array blocks, utility trenches, equipment pads, and support structures. Temporary work areas would also be laid out.

Site preparation activities that occur prior to general construction include: site clearing and grading, preparation of construction staging areas, and construction of the main internal driveways.

Clearing and Grading

Prior to construction, the site would be cleared of vegetation and minimally graded and compacted. Site clearing and soil preparation would occur incrementally and would not commence until the area is needed for construction or for equipment access. Vegetative cover would be retained as for as long as possible, with overall ground disturbance minimized to the maximum extent practicable.

As the site is nearly flat and has been historically leveled and disked, project-related grading would be minimal and occur only as necessary to level dips and hills. The site cut-and-fill would be approximately balanced, or minimal import/export would be necessary. Compaction would only occur at the equipment pads and along the internal driveways. Due to the generally level ground, no mass grading is planned or anticipated, and the existing topsoil would not be removed. During site preparation, an average of 30-50 acres in various portions of the site would be disturbed daily at any given time. The final grades would be designed to provide for positive drainage, and measures for storm water management and sediment control would be implemented, as described in the discussion of “Storm Water Management and Erosion Control,” below.

Construction Staging Areas

One main staging area would be located either in the northwest or southwest portion of the site and would be at the location of the O&M building. The staging area would be used for construction offices, worker parking, first aid station, material and equipment storage and assembly, and parking area for vehicles and equipment. Additional staging areas may be located throughout the site for temporary material storage and assembly during construction. The staging areas would encompass up to 10 acres and would be secured with an 8-foot-high fence. As needed, temporary power would be provided via mobile generators or local distribution lines.

Project Entrances and Internal Driveways

The project’s on-site circulation would include the project entrances, internal perimeter driveways, and internal driveways. The driveways would have 95 percent relative compacted subgrade, and four inches of gravel or equivalent. Driveway construction would proceed as follows: the ground would be grubbed (cleared of vegetation), scarified (loosened), moisture conditioned, compacted, and graded with a crown in the center. If gravel is used, it would be spread on the driveway surfaces to a depth of up to four inches.

Temporary driveway aprons to points of ingress/egress during construction may be up to 80 feet wide to accommodate construction traffic; however, permanent driveway aprons would be built according to Kings County Improvement Standards. During decommissioning of the facility, it is anticipated that the same access driveways would be used for removal of the facility components.

Several canals cross the project site. While the existing levee roads along the canals could be used during construction, the bed and banks of the canals would be completely avoided by the construction and operation of the solar facility and would remain outside of the project fences. As previously mentioned, pre-fabricated bridges may be installed to cross the existing canals to augment existing site access and circulation. These pre-fabricated bridges would fully span any canal, avoiding any impacts to canal banks and canal waters, and would be constructed in a manner to ensure that no fill is placed within canal limits. Similarly, improvements to existing canal crossings would completely avoid any impacts to the banks and any water within the canals and would also be constructed in a manner to ensure that no fill is placed within the canal limits, with the exception that replacement of the existing culvert in the canal at Murphy Ranch Road may be required by the County.

Solar Photovoltaic System Installation

Prior to the installation of solar arrays, the perimeter of each area would be securely fenced and gated to prevent unauthorized access. As previously mentioned, the perimeter fencing would consist of 6-foot-high chain-link galvanized metal fence topped by three strands of barbed wire approximately 1 foot high. Fence posts would be spaced approximately 10 feet apart, drilled and grouted or driven pneumatically into the soil profile up to an estimated five feet deep.

Construction of the solar arrays would begin with installation of the steel piles (e.g., cylindrical pipes, H-beams, or similar), which would be driven into the soil using pneumatic techniques, similar to a hydraulic rock hammer attachment on the boom of a rubber-tired backhoe excavator. The piles would typically be spaced 10 feet apart. For a single-axis tracking system, piles typically would be installed to a reveal height of approximately 4 feet above grade, while for a fixed-tilt system the reveal height would vary based on the racking configuration specified in the final design. For single-axis tracking systems, following pile installation the associated motors, torque tubes, and drivelines (if applicable) would be placed and secured. Some designs allow for PV modules to be secured directly to the torque tubes using appropriate module clamps. For some single-axis tracking systems and for all fixed-tilt systems, a galvanized metal racking system, which secures the PV modules to the installed foundations, would then be field-assembled and attached according to the manufacturer's guidelines.

Construction of the ancillary facilities such as the O&M building, septic system and leach field, exterior lighting, signage, SCADA, telecommunications, and meteorological data collection system may also be installed with the solar arrays.

Installation of Energy Collection, Substation(s), Switching Station, and Gen-Ties

Energy Collection

Underground cables to connect arrays would be installed using ordinary trenching techniques, which typically include a rubber-tired backhoe excavator or trencher. Wire depths would be in accordance with local, state, and federal requirements, and would likely be buried at a minimum of 18 inches below grade, by excavating a trench approximately 3 to 6 feet wide to accommodate the conduits or direct

buried cables. After excavation, cable rated for direct burial or cables installed inside a PVC conduit would be installed in the trench, and, the excavated soil would likely be used to fill the trench and lightly compressed. All cabling excavations would be to a maximum depth of 10 feet.

Medium voltage collection line crossings under several canals on the site, as well as under the SoCalGas gas pipeline easement, would be installed via boring and directional drilling. Up to ten crossings may be installed via boring, with the cables encased within a 34- to 36-inch wide polymer casing. Entry and exit pits would be excavated on either side of the canal being crossed and would be placed to avoid the canal banks and levee roads. Each pit would be approximately 400 square feet in size, and approximately 10 feet deep or more to achieve a minimum depth of 3 feet below the bottom of the canal. Refer to Figure 7 for an example cross section of an underground cable crossing.

All electrical inverters and transformers would be placed on concrete foundation structures or steel skids. In lieu of steel skids or pre-cast concrete foundations, foundations for the transformer and inverter locations would be formed with plywood and reinforced with structural rebar and would use poured-in-place concrete.

Substation

One or two substations may be constructed. Each substation would occupy an approximately 27,000-square-foot (150 feet by 180 feet) area. The substation areas would be graded and compacted to an approximately level grade. Foundations for the substation would be formed with plywood and reinforced with structural rebar and would use poured-in-place concrete, and the remaining area would be graveled to a maximum depth of approximately 6 inches. Concrete for foundations would be brought on-site from a batching plant in Fresno or the surrounding area. Each of the dead-end structures would require foundations excavated to a depth of 20 feet or more.

Switching Station

If installed, the switching station equipment would occupy an approximately 33,750-square-foot (225 feet by 150 feet) area. Like the substation features described above, the switching station area would be graded and compacted to an approximately level grade. Concrete pads would be constructed for the switching station equipment and the remaining area would be graveled to a maximum depth of approximately 6 inches. Each of the dead-end structures would require foundations excavated to a depth of 20 feet or more.

Gen-Tie Line

Overhead structure foundations would be installed by excavating foundation holes to a depth of approximately 35 feet using a truck-mounted drill rig. The size of the footprint for construction of the pole foundation would be approximately 100 square feet. Poles/support structures would be delivered on a flat-bed trailer and hoisted into place by a crane. The annular space between poles and holes would be backfilled with concrete or soil. Conductors would be strung between poles with heavy-duty trucks. After the conductors are pulled into place, the conductor sag between the structures would be adjusted to a pre-calculated level, and the line would then be set with a minimum ground clearance that meets applicable requirements. The conductors would be attached to the end of each insulator, the sheaves removed, and the vibration dampers and other accessories installed.

3.7.2 Energy Storage System Installation

Construction of the ESS would include: (1) site preparation, (2) installation of the foundations, structures, and systems; and (3) installation of the inverters, substation, and connection.

If the ESS is DC-coupled, the energy storage equipment would be co-located at the inverter and transformer equipment areas within the individual array blocks throughout the site. Site preparation would likely occur during installation of the inverter and transformer equipment areas. As previously mentioned, the combined inverter and energy storage equipment area would be located on a concrete foundation (or equipment pad) measuring approximately 10 feet by 90 feet. For an AC-coupled system, the energy storage equipment would be concentrated in a single location in 8.5-foot by 40-foot containers on concrete foundations. The total area of an AC-coupled system would be between 9 and 15 acres, comprising multiple containers that could be enclosed within a warehouse-like building. The site would be cleared and graded prior to installation. The ESS would be largely assembled off-site and delivered to the project site for final installation. Heavy trucks and other equipment would be used to deliver and install the infrastructure and battery or flywheel enclosures. After a system is installed, it would be tested and commissioned. The ESS may be installed during installation of the PV arrays, or it could be installed later while the facility is in operation. If constructed later while the facility is in operation, temporarily disturbed areas of the site would be re-seeded/revegetated and the site restored as described in Section 3.6.5, *Site Restoration and Revegetation*.

3.7.3 Site Management During Construction

Dust Suppression

During construction, water would be used for dust suppression and soils conditioning during ground disturbing activities. Trucks containing water tanks would be used to spray water onto the surface of unpaved driveways in the project site and disturbed soils to minimize dust released into the air. Refer to Section 3.6.4, *Water Use and Supply During Construction*, for the anticipated water use and sources during construction activities.

Construction Hazardous Materials and Waste Management

Construction of the project would involve the use of hazardous materials, such as fuels and greases, to fuel and service construction equipment. Such substances may be stored in temporary aboveground storage tanks or sheds located on the project site. The fuels stored on-site would be in a locked container within a fenced and secure staging area. A Hazardous Materials Business Plan (HMBP) would be developed prior to construction. Trucks and construction vehicles would be serviced at off-site facilities. The use, storage, transport, and disposal of hazardous materials used in construction of the facility would be carried out in accordance with federal, state, and county regulations. No extremely hazardous substances (i.e., those governed pursuant to Title 40, Part 335 of the Code of Federal Regulations [CFR]) are anticipated to be produced, used, stored, transported, or disposed of as a result of project construction. Material Safety Data Sheets for all applicable materials present on-site would be made readily available to on-site personnel.

Construction materials would be sorted on-site throughout construction and transported to appropriate waste management facilities. Recyclable materials would be separated from non-recyclable items and

stored until they could be transported to a designated recycling facility. It is anticipated that at least 20 percent of construction waste would be recyclable, and at least 50 percent of those materials would be recycled. Wooden construction waste (such as wood from wood pallets) would be sold, recycled, or chipped and spread on the project site for weed control as appropriate. Other compostable materials, such as vegetation, might also be composted off-site. Non-hazardous construction materials that cannot be reused or recycled would likely be disposed of at municipal county landfills. Hazardous waste and electrical waste would be transported to a hazardous waste handling facility (e.g., electronic-waste recycling). All contractors and workers would be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste.

Storm Water Management and Erosion Control

Construction activities would result in ground disturbance, and soil stabilization and storm water management would be required to prevent erosion and sedimentation. As construction of the project would result in disturbance of an area greater than one acre, the applicant would be required to enroll for coverage under the Storm Water Construction General Permit for the National Pollution Discharge Elimination System program. To enroll under this permit, the applicant would prepare a single or multiple Storm Water Pollution Prevention Plans (SWPPPs), which would be based on the final engineering design and the project phase.

The SWPPP would be prepared by a qualified engineer or erosion control specialist and would be implemented prior to any ground disturbing activities. The SWPPP would be designed to reduce potential impacts related to erosion and surface water quality during construction and decommissioning activities and throughout the life of the project. It would include project information and best management practices (BMPs). Typical BMPs would include: diversion of runoff from disturbed areas, protective measures for sensitive areas, temporary soil stabilization measures, storm water runoff quality control measures, concrete waste management, watering for dust control, and installation of perimeter silt fences, as needed. Refer to Section 7.10, *Hydrology and Water Quality*, for a detailed discussion.

3.7.4 Water Use and Supply During Construction

During construction, it is anticipated that up to 260-acre-feet[1] would be used for dust suppression and other purposes. Water used for construction and decommissioning could come from an on-site or adjacent site WWD well, be trucked from a well located approximately 50 miles northwest of the site, be purchased from a private well located on-site or on an adjacent property, or be imported from the City of Lemoore. Restrictions on groundwater pumping for construction is not anticipated; however, if curtailment occurs, the applicant has identified the various potential water sources described above to meet the water needs of the project construction. See Section 7.10.1 for a detailed list of the potential water sources for the proposed project and Appendix H for the Water Supply Assessment.

Potable water would be delivered by a water delivery service or would be brought to the site by workers.

[1] The volume of water that would cover one acre to a depth of one foot.

3.7.5 Site Restoration and Revegetation

Following the completion of major construction, exposed soils on the project site would be re-seeded/re-vegetated with a County-approved seed mix to prevent erosion and provide dust control, as required by the County and the San Joaquin Valley Air Pollution Control District. The species used would be low water use, low-growing plant species that would minimize fire hazards and provide non-toxic forage value for seasonal sheep grazing (refer to the discussion of "Vegetation and Agricultural Management" in Section 3.7.3, *Site Management During Operation*).

Site restoration activities would include:

- On-site repurposing or removal of all vegetative material from grubbing, clearing, and pruning;
- Removal of all trash and construction debris;
- Removal of temporary construction fencing marking the perimeter of environmentally sensitive areas (examples may include sensitive habitats, set- aside areas, or cultural areas); and
- Removal of all construction equipment and any supplies and materials that were not consumed on-site.

Following the completion of site restoration maintenance activities, the temporary construction staging areas would be restored to their original condition by the planting of appropriate species as described above.

3.7.6 Construction Schedule

Construction of the solar facility would commence as early as the fourth quarter of 2020. Total duration of construction is anticipated to be approximately 14 months. Construction of the various project components discussed above could occur simultaneously, sequentially, or some combination thereof. Refer to Section 3.6.7, *Construction Workforce, Equipment, and Trip Generation*, for the detailed phasing of construction and the resulting overlap of workforce, equipment, and trip generation.

Construction equipment would operate between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, for up to a maximum of eight hours per piece of equipment, daily. Weekend construction work is not expected to be required, but may occur on occasion, depending on schedule considerations. All construction work, including any weekend work, would comply with the policies and requirements established in the Noise Element of the 2035 Kings County General Plan.

3.7.7 Construction Workforce, Equipment, and Trip Generation

The anticipated construction workforce and trip generation are described in the following sections based on phasing.

Solar Facility

The duration and phasing of construction of the solar facility is as follows:

- *PV Phase 1*, Site Preparation, would extend for a duration of up to 10 weeks, or 49 working days.
- *PV Phase 2*, PV System Installation, would extend for a duration of up to 49 weeks, or 246 working days, and may overlap Phase 1 by approximately two weeks.
- *PV Phase 3*, Installation of Energy Collection, Substation(s), Switching Station, Gen-Ties; Site Restoration and Revegetation, would extend for a duration of up to 35 weeks, or 173 working days, and may overlap Phase 2 by about 21 weeks.

Table 3.7-1 presents the length of each construction phase (in work days) for the solar facility as well as the average and maximum number of workers. Because of overlaps in the construction phases, the total number of construction workers at any given time would range between 17 and 1,003, with the peak number of workers on the site during the two weeks that PV Phases 1 and 2 overlap. The majority of the labor force is expected to come from the surrounding communities with a maximum round-trip commute of 80 miles.

TABLE 3.7-1
SOLAR FACILITY CONSTRUCTION PHASING, WORKFORCE AND AVERAGE TRIP GENERATION

Construction Element	Construction Phase		
	Phase 1: Site Preparation	**Phase 2: PV Installation**	**Phase 3: Energy Collection, Substation(s), Switching Station, Gen-Tie; Site Restoration and Revegetation**
Phase Duration (work days)	49	246	173
Workforce			
Average Number of Workers	421	332	17
Maximum Number of Workers	561	442	23
Average Daily Trip Generation			
Workers[1]	842	664	34
Water Truck[2]	66	8	8
Construction Truck[3]	20	18	4
Freight Truck[3]	40	4	0

[1] Passenger vehicle; [2]Medium truck; [3]Large truck

All materials for project construction would be delivered by truck. The majority of truck traffic would occur on designated truck routes and major streets. Flatbed trailers and trucks would be used to transport construction equipment and construction materials to the site. Project components would be assembled on the site. Traffic resulting from construction activities would be temporary and could occur along area roadways as workers and materials are transported to and from the project site. It was assumed that materials deliveries during construction would travel up to 40 miles one way from the source to the project site.

Equipment to be used for the construction of the solar facility is presented in Table 3.7-2.

TABLE 3.7-2
SOLAR FACILITY ON-SITE EQUIPMENT AND VEHICLE USE BY CONSTRUCTION PHASE

Equipment	Estimated Usage		
	Units	Hours/Day	Total Days Per Unit
Phase 1: Site Preparation			
Pickup Truck	18	4	36
Bulldozers	104	7	37
Water Trucks (10,000 gallon)	63	4	38
Graders	4	7	33
Flatbeds	32	4	37
Skid Steers	18	7	36
Front End Loaders	3	7	44
Roller Compactor	9	7	49
Backhoe	1	7	5
Instrument	18	7	36
Gravel Trucks (20 cubic-yard)	168	4	44
Phase 2: PV Installation			
Water Trucks (10,000 gallon)	4	4	246
Flatbeds	64	4	183
Skid Steers	6	7	164
Pile Drivers	6	7	164
Forklifts	22	4	173
Welders	44	4	173
Trenchers	6	4	147
Phase 3: Energy Collection, Substation(s), Switching Station, Gen-Tie; Site Restoration and Revegetation			
Bulldozers	1	7	9
Water Trucks (10,000 gallon)	1	4	9
Graders	1	7	8
Flatbeds	1	4	8
Skid Steer	2	7	38
Front End Loaders	1	7	8
Roller Compactor	1	7	8
Water Buffalo	1	4	8
Pile Drivers	2	7	38
Trenchers	3	4	173
Backhoes	2	7	81
Cranes	2	4	165
Aerial Lifts	3	4	50
Directional Drill Rig	1	7	20
Concrete Trucks (10 cubic-yard)	31	4	1

Energy Storage System

Construction timing and phasing of the ESS is as follows:

- *ESS Phase 1*, Site Preparation, would extend for a duration of approximately 8 weeks or 40 working days, and may commence concurrently with PV Phase 1.

- *ESS Phase 2,* Foundations, Structures, and Systems, would extend for a duration of up to 35 weeks or 174 working days, and may overlap ESS Phase 1 by up to one month.

- *ESS Phase 3,* Inverters, Substation and Connection, would extend for a duration of approximately 26 weeks or 131 working days and may overlap ESS Phase 2 by up to one month.

Table 3.7-3 presents the length of each construction phase (in work days) for the energy storage facility as well as the average and maximum number of workers. The average number of workers would range from 45 to 57 and the maximum numbers of workers could be 147 during the month that ESS Phases 2 and 3 overlap.

TABLE 3.7-3
ENERGY STORAGE SYSTEM CONSTRUCTION PHASING AND WORKFORCE

Construction Element	Construction Phase		
	Phase 1: Site Preparation	**Phase 2: Foundations, Structures, and System Installation**	**Phase 3: Installation of Inverters, Substation, and Connection**
Phase Duration (work days)	40	174	131
Workforce			
Average Number of Workers	45	57	54
Maximum Number of Workers	59	76	71
Average Daily Trip Generation			
Workers[1]	90	114	108
Water Truck[2]	0	0	0
Construction Truck[3]	6	6	4
Freight Truck[3]	68	70	0

[1] Passenger vehicle; [2]Medium truck; [3]Large truck

Equipment to be used for the construction of the solar facility is presented in Table 3.7-4.

TABLE 3.7-4
ENERGY STORAGE SYSTEM ON-SITE EQUIPMENT AND VEHICLE USE BY CONSTRUCTION PHASE

Equipment	Number of Units	Work Days per Unit	Hours per Day
Phase 1: Site Preparation			
Pickup	6	4	19
Bulldozers	9	7	30
Water Trucks (10,000 gallon)	6	4	40
Graders	6	7	15
Flatbeds	3	4	12
Skid Steers	1	7	5
Front End Loaders	3	7	25
Roller Compactor	3	7	25
Instrument	4	7	28
Gravel Trucks (20 cubic-yard)	78	4	33
Phase 2: Foundations, Structures, and System Installation			
Pickup	4	4	66
Water Trucks (10,000 gallon)	3	4	87
Skid Steers	3	7	87
Trenchers	2	4	65
Crane	4	4	109
Phase 3: Inverters Substation, and Connection			
Skid Steer	2	7	37
Pile Drivers	2	7	37
Trenchers	7	4	131
Backhoes	3	7	29
Cranes	3	4	77
Aerial Lifts	2	4	56
Concrete Trucks (10 cubic-yard)	3	4	1

[1] Direct Current; [2]Alternating current

Overlapping Construction

The ESS may be installed during installation of the solar facility, or it could be installed later while the facility is in operation. The worst-case scenario would occur if the construction phases fully overlap. Overlapping phases resulting in the greatest numbers of workers and the worst-case scenarios described are as follows:

- PV Phase 2 may overlap ESS Phases 1 and 2 for up to one month.
- PV Phase 2 may overlap ESS Phases 2 and 3 for up to one month.
- PV Phase 2 and 3 may overlap ESS Phase 2 for up to five months.

Table 3.7-5 presents the average daily trips during the overlapping phases (worst-case scenario), including the trips during the a.m. and p.m. peak hours.

TABLE 3.7-5
OVERLAPPING CONSTRUCTION TRIP GENERATION

Overlapping Phase	Overlapping Duration	Vehicle	Average Daily Trips[4]		
			Total	AM	PM
PV Phase 2 (100%) + ESS Phases 1 (100%) and 2 (100%)	Up to 1 Month	Workers[1]	868	44	86
		Water Truck[2]	8	1	1
		Construction Truck[3]	60	4	5
		Freight Truck[3]	142	14	22
		Total	**1,048**	**63**	**114**
PV Phases 2 (100%) and 3 (100%) + ESS Phases 2 (100%) and 3 (100%)	Up to 1 Month	Workers[1]	920	46	91
		Water Truck[2]	16	2	2
		Construction Truck[3]	32	3	6
		Freight Truck[3]	74	7	12
		Total	**1,042**	**58**	**111**
PV Phases 2 (100%) and 3 (100%) + ESS Phase 2 (100%)	Up to 5 Months	Workers[1]	812	41	80
		Water Truck[2]	16	2	2
		Construction Truck[3]	28	3	5
		Freight Truck[3]	74	7	12
		Total	**930**	**53**	**99**

ESS = energy storage system, PV = photovoltaic solar facility

1 Passenger vehicle;

2 Medium truck;

3 Large truck;

4 Approximately 10 % of workers will arrive during the a.m. peak hour (90% will arrive before the a.m. peak hour) and approximately 20% of workers will depart during the p.m. peak hour (80% will depart before the p.m. peak hour). Approximately 20% of water, construction, and freight trucks will arrive in the a.m. peak hour, approximately 30% of water, construction, and freight trucks will depart in the p.m. peak hour, and the remaining water and construction trucks will arrive/depart outside of the peak-hour periods.

3.7.8 Construction Personnel Training

Biological Resources

Prior to construction, a qualified biologist would be retained by the project applicant or construction contractor to conduct environmental awareness training for project personnel. Such training would communicate information related to the protection of sensitive biological resources that might be present at the project site, and would include:

- A description of species of concern and associated habitats.
- The general provisions of applicable environmental regulations and the need to adhere to the provisions of the regulations.

- General measures being implemented to conserve the species of concern as they relate to the project.

- A discussion of the defined access routes to the project site and project site boundaries within which project activities must be accomplished.

Construction employees would strictly limit their activities, vehicles, equipment, and construction materials to the project footprint and designated staging areas and routes of travel. The construction areas would be the minimal area necessary to complete the project and would be specified in the construction plans. Construction areas would be demarcated on-site, and employees would be instructed to limit activities to these areas.

Cultural Resources

Prior to construction, a qualified archeologist would conduct a training program for construction personnel. The training program would inform the construction personnel about the possibility of encountering buried cultural resources and the proper procedures should cultural resources be encountered. The program may include sensitivity training related to tribal cultural resources by members of the Tachi Yokut Tribe.

Fire Suppression and Safety Training

The project applicant would coordinate with the California Office of the State Fire Marshall and the KCFD to provide training for personnel to safely interrupt electrical power in the event of emergency incidents requiring fire suppression or rescue activities.

To minimize fire risk, combustible vegetation or agricultural products on and around the project site boundary would be actively managed by the project owner or its affiliates. Combustible vegetation would either be limited in height or removed. In addition, fire breaks—in the form of 20-foot-wide perimeter driveways—would be constructed within each fenced area on the site.

The project applicant would implement the following measures during project construction and operation:

- All applicable Kings County Improvement Standards would be followed, to ensure accessibility and ground clearance of emergency vehicles (e.g., fire engines).

- Agricultural vegetation would be maintained to reduce potential fire hazards at the project site.

- Smoking would be prohibited at the project site, except within designated areas.

- Work crews would be required to park vehicles away from flammable vegetation such as dry grass and brush. At the end of each workday, heavy equipment would be required to be parked over mineral soil, asphalt, or concrete, where available, to reduce the risk of fire.

- All heavy equipment would be required to include mechanisms for fire suppression, including spark arresters or turbo-charging (which eliminates sparks in exhaust) and fire extinguishers.

3.8 Operation and Maintenance

Upon commissioning, the project would enter the operation phase. The solar modules at the site would operate during daylight seven days per week, 365 days per year. The ESS would store and dispatch power during both daylight and non-daylight hours as required by grid operators year-round.

Operational activities at the project site would include:

- Solar module washing;
- Vegetation, weed, and pest management;
- Agricultural use of the site (sheep grazing);
- Security;
- Responding to automated electronic alerts based on monitored data, including actual versus expected tolerances for system output and other key performance metrics;
- Occasional equipment repair and replacement;
- Communicating with customers, transmission system operators, and other entities involved in facility operations.

3.8.1 Operation and Maintenance Workforce and Equipment

Up to six permanent staff could be on the site at a time for ongoing facility maintenance and repairs. The duration of scheduled maintenance activities would vary in accordance with the required task but could involve up to 20 workers full-time for up to two weeks up to four times a year for module washing, and a similar number and duration for workers regularly visiting the site for routine maintenance activities, including maintenance of the ESS. Up to 25 workers could visit the site periodically if repairs or replacement of equipment were needed in addition to module washing. A record of inspections would be kept on-site. The maximum number of staff on-site at any time would be 31 (six permanent staff and 25 temporary staff). The personnel and time required for emergency maintenance would vary in accordance with the necessary response.

Most of the operational labor force is expected to be from the City of Fresno and communities surrounding the site with a maximum anticipated commute of 40 miles one way.

Equipment to be used during operation and maintenance of the project is identified in Table 3.8-1.

TABLE 3.8-1
PROPOSED OPERATIONS AND MAINTENANCE EQUIPMENT
(FOR ONE QUARTERLY MAINTENANCE PERIOD)

Equipment	Units	Estimated Usage		
		Hours per Day	Days per Week	Total Days
All-Terrain Vehicles	2	12	5	10
Kubota Tractors	1	3	5	10
Honda Portable Generators	2	6	5	10
Portable Water Trailers with Pump	1	2	5	10
Ford F150s (Routine O&M)	6	30	4	10
Ford F150s (Water Wash Trucks)	2	30	2	10

O&M = operations and maintenance

3.8.2 Automated Facility Control and Monitoring System

The facility would be designed with a comprehensive SCADA system to allow remote monitoring of facility operation and/or remote control of critical components. Infrared security cameras, motion detectors, and/or other similar technology also would be installed to allow for monitoring of the site through review of live footage 24 hours per day, seven days per week.

Each operator would have a maintenance program that would include an industry standard SCADA. The operators would be on call to respond to alerts generated by the monitoring equipment at the project site and would analyze collected data on an ongoing basis to schedule maintenance. The operators or their representatives would continually monitor facility outputs and performance against forecast production to identify equipment failure or abnormalities. Attributes that would be monitored include:

- Energy generated for comparison with expected generation.
- Inverter registers for inverter failures, and inverter voltage and current flow for comparison with expected flows.
- Combiner output current for combiner and re-combiner failures, and comparison with expected current.
- Weather, including horizontal and plane-of-array irradiance, ambient air temperature, wind speed and direction, and back-of-module temperature for: scheduling output to the transmission system operator, comparison with forecasts, and calculation of expected generation and expected currents.

3.8.3 Site Management During Operation

Equipment and Infrastructure Maintenance

The project site maintenance program would be largely conducted during daytime hours. Equipment repairs and preventative maintenance could take place in the early morning or evening when the plant

would be producing the least amount of energy. Key program elements would include maintenance activities originating from the on-site operation and maintenance facilities and/or a regional O&M facility located within Kings County, and on-site maintenance as required to clear weeds for ground-mount systems.

Maintenance typically would include module repairs; module washing; maintenance of transformers, inverters, high-voltage systems and other electrical equipment as needed; maintenance of the oil/water separator system; and road and fence repairs. Visual inspections of the transformers and the oil/water separator system would be conducted monthly. On-site vegetation would be managed to ensure access to all areas of the site.

Solar modules would be washed as needed (up to four times each year) using light utility vehicles with tow-behind water trailers, as needed, to maintain optimal electricity production. No chemical cleaners would be used for module washing.

As part of ongoing operations and maintenance, the ESS would be inspected once a year at minimum. Regular preventative maintenance would include checking security of DC and AC connections, replacement of fans, filters, and pumps as required or recommended, fire suppression system inspection as required, and validating measurements of key electrical and environmental sensors.

Vegetation and Agricultural Management

Approximately 244 acres of the project site would be developed or contain existing easements and public rights-of-way and would not be available for grazing during operation. The remaining 2,246 acres would remain untreated and would support vegetation. Of that land, a minimum of 1,827 acres of land in Farmland Security Zones and designated as Prime Farmland would be used for sheep grazing, and the remaining untreated areas could be grazed for vegetation and weed control or maintained through mechanical methods.

The ground below and surrounding the arrays, and all undeveloped areas would remain permeable (untreated) and would support vegetation. As required, based on site conditions, the site would be planted with an approved seed mix for dust and erosion control, and to provide non-toxic forage value for seasonal sheep grazing. The approved seed mix would contain only “low water use” species that would not require irrigation and would be weed free.

The vegetative cover would generally be kept low to prevent shading of solar panels, minimize buildup of combustible fuel loads which would result in a fire hazard, and to facilitate emergency and maintenance vehicle access. This would be accomplished by using low-growing species on the site and maintaining vegetation with grazing during the growing season and mechanical methods such as mowing, trimming, and hoeing. Grazing would occur from January until the end of the growing season in May, at which time the sheep would be removed from the site. During the grazing season, the grazing may be controlled by enclosing the sheep in temporary enclosures within the targeted grazing area and would be moved progressively throughout the site. The proposed program for concomitant agricultural land uses during operation of the solar facility would be outlined in a Vegetation and Agricultural Management Plan prepared for the project. The Plan would be implemented to sustain agricultural operations on Farmland of Statewide Importance and lands subject to a contract under the Williamson Act (preserved agricultural lands), and to address grazing operations throughout the project site for the

duration of the life of the project. The solar operator would contract with regional sheep operators to implement this aspect of the program.

Weed and Pest Control

The Vegetation and Agricultural Management Plan prepared for the project would comply with the requirements of the Kings County Development Code related to weed abatement and pest control. The Vegetation and Agricultural Management Plan would set action thresholds, identify pests, specify prevention methods as a first course of action, specify control methods as a second course of action, and establish a quantitative performance goal of nuisance reduction to adjacent farmland. Pest management would include measures to prevent and control infestation by rodents such as rats, ground squirrels, gophers, and voles which could damage the facility and spread disease. Methods of pest control that avoid impacts to special status species would be utilized. Vegetation management is a preventative measure that would avoid impacts to special status species of wildlife and would provide enhanced opportunities for predation by hawks and owls which is a natural method of pest control. The use of eradication measures such as application of rodenticides would be employed as a last resort and in accordance with restrictions to prevent impacts to special status species (refer to mitigation measures in Section 7.4, *Biological Resources*).

The Vegetation and Agricultural Management Plan would specify measures to prevent infestation of invasive weed species which would reduce the grazing value of the site, pose a fire hazard, and potentially spread to neighboring farmlands. As previously mentioned, the approved seed mix would be weed-free. Vegetation on the site would be controlled through the as-needed application of approved seed mixes, seasonal grazing, and mechanical methods. Herbicides would be applied, if warranted, by site conditions as specified in the Vegetation and Agricultural Management Plan but would be restricted to targeted, minimal use applied by or under the supervision of a licensed applicator. The Vegetation and Agricultural Management Plan would be submitted to the County and approved prior to issuance of building permits.

Operation Hazardous Materials and Waste Management

Limited quantities of hazardous materials would be used and stored at the solar facility for operation and maintenance. Materials may include oils, lubricants, paint, solvents, degreasers, fire suppressants, dust palliatives, and transformer oil. The transformers proposed to be located at the project substations would use oil as an insulating fluid. As required for routine maintenance of the transformers, the oil would be replaced and disposed of in accordance with applicable regulations. Other materials would be stored in the O&M building. The concrete floor of the O&M building and the concrete foundations of the equipment pads and buildings would prevent against contamination from accidental spills. As previously described under the discussion of “Construction Hazardous Materials and Waste Management” in Section 3.6.3, *Site Management During Construction*, a Hazardous Materials Business Plan would be prepared and implemented for the storage and transport of hazardous materials during operation of the facility. Hazardous material waste generated during operation would be minimal, but all such wastes would be collected by authorized contractors and disposed of or recycled at facilities approved to accept hazardous waste.

3.8.4 Water and Wastewater During Operation

Water Use and Supply During Operation

During operation (which could last up to 40 years), up to approximately 15-acre-feet of water would be required per year for module washing and maintenance, sheep watering (or associated vegetation management), and for the O&M building restroom facilities. The water source would come from an existing on-site or adjacent site WWD well, be pumped from a well located approximately 50 miles northwest of the site, be purchased from a private well located on-site or adjacent property, or imported from the City of Lemoore. Water from wells on the project site may not be appropriate for module washing and maintenance due to salinity and/or sediments. Therefore, the applicant has identified other potential water sources for module washing from a well located approximately 50 miles northwest of the site or imported from the City of Lemoore. See Section 7.10.1 for a detailed list of the potential water sources for the proposed project. As described under "Operation and Maintenance Building" in Section 3.5.4, *Support Facilities*, potable water would be delivered by a water delivery service or would be brought to the site by workers.

Wastewater

A septic system and leach field may be installed adjacent to the O&M building to support the restroom facilities and sewage needs of the permanent staff (eight hours per day) at the O&M building during operation. Personnel who are on-site to perform module washing (up to four times per year) would be provided with portable restrooms serviced by a licensed provider. Anticipated peak flow is less than 300 gallons into the leach field per day during project operation. No surface discharges are proposed, other than natural storm water runoff. A Waste Discharge Permit would not be required from the Regional Water Quality Control Board (RWQCB) because the project would not exceed 2,500 gallons per day of sewage.

3.8.5 Site Safety and Security

Fire Safety

The fire suppression and safety training that would occur during operation of the project would be similar to that described for the construction phase.

The driveways on the project site would be designed to meet County standards for minimum driveway widths, ground clearance, and site accessibility for emergency access. A 20-foot-wide emergency access driveway would be provided along the north side of the SoCalGas easement through the project site and would be fully accessible outside of the solar facility fencing. Refer to the discussion of "Project Entrances and Internal Driveways" in Section 3.5.4, *Support Facilities*. The driveways on the site would be maintained free of vegetation and would provide fire breaks on the site. As previously mentioned under the discussion of "Vegetation and Agricultural Management" in Section 3.7.3, *Site Management During Operation*, vegetation on the site would be maintained to minimize build-up of combustible fuels and to reduce the risk of fire.

All electrical equipment would be subject to fire safety standards and electrical equipment not located within a larger structure would be designed specifically for outdoor installation. Operational procedures for fire prevention and emergency action would be approved by the KCFD. The procedures would

address fire risks including: vehicles and equipment would be parked or stored away from vegetated areas; placement of extinguishers; personnel training in fire prevention and suppression including electrical equipment shut-down.

Controlled Access

The solar facility would be surrounded by a 6-foot-high chain-linked fence topped by 1-foot of barbed wire strands. The solar facility would be accessed by three gated entrances – one at the intersection of 25th Avenue and Avenal Cutoff Road, one at Avenal Cutoff Road near the northern site boundary, and one along Laurel Avenue. The entrances would feature locked gates approximately 7 feet high.

Other Security Measures

Off-site security personnel could be dispatched during nighttime hours or could be on-site, depending on security risks and operating needs. Infrared security cameras, motion detectors, and/or other similar technology would be installed to allow for monitoring of the site through review of live footage 24 hours per day, seven days per week. Such cameras or other equipment would be placed along the perimeter of the facility and/or at the inverters. Security cameras located at the inverters would be posted on poles approximately 20 feet high.

Motion sensitive, directional security lights would be installed along perimeter fencing, at the facility entrances and interior gates, the O&M facilities, the inverter and transformer equipment areas, and the substations/switching stations.

3.9 Decommissioning and Site Reclamation

3.9.1 Decommissioning of Solar Facilities

The solar facility is anticipated to have an operating life of up to 40 years. After this period, the solar facility would be either repowered or decommissioned. Repowering after the operating life is not anticipated at this time; however, if repowering were to be pursued, it would require the facility owner to obtain all required permit approvals. Project decommissioning would occur in accordance with the expiration of the CUP and would involve the removal of above-grade facilities, buried electrical conduit, and all concrete foundations in accordance with a Soil Reclamation Plan. Equipment would be repurposed off-site, recycled, or disposed of in a landfill as appropriate.

After the operating life of the solar facility is complete, the ESS would be decommissioned along with the rest of the solar facility. Batteries may be disposed of as hazardous waste, or recycled, depending on available technology. Li-ion batteries and their constituent parts will likely be recycled. Li-ion batteries contain a variety of valuable metals in addition to lithium, and recycling of these batteries is expected to become increasingly commonplace with the increased use of batteries in consumer goods and electric vehicles. Some batteries may have the capacity at the end of the operating life of the project to be reused. The chemical components of flow batteries may either be disposed of as hazardous waste (i.e., neutralization of the liquid within the battery), or they may comprise valuable elements which would also be recycled or reused.

Decommissioning activities would involve exposure and disturbance of soils; therefore, measures for erosion and sediment control would be implemented in accordance with a separate SWPPP that would be required for decommissioning.

3.9.2 Water Use and Supply During Decommissioning

Water would be required for dust control during decommissioning activities. Because it is anticipated that decommissioning activities would be similar to or less than construction, the water use for decommissioning is assumed to be similar; therefore, during decommissioning, it is anticipated that up to 260-acre-feet would be used for dust suppression and other purposes.

As previously noted for construction activities, water used for construction and decommissioning could come from an on-site or adjacent site WWD well, be trucked from a well located approximately 50 miles northwest of the site, be purchased from a private well located on-site or on an adjacent property, or be imported from the City of Lemoore. The applicant has identified the various potential water sources described above to meet the water needs of the project decommissioning in the event that restrictions on the use of groundwater affect its availability. See Section 7.10.1 for a detailed list of the potential water sources for the proposed project.

Potable water would be delivered by a water delivery service or would be brought to the site by workers.

3.9.3 Decommissioning Schedule

As previously mentioned, the solar facility is anticipated to operate for up to 40 years. Decommissioning would take approximately six months to be completed and would occur in three phases: Phase 1 would involve shutting down the systems and removing hazardous materials and wiring; Phase 2 would include removing the PV modules, inverters, substation(s), switching station, and ESS; Phase 3 would include removing site fencing and driveways and the final soils reclamation process; and Phase 4 would be final decommissioning. Decommissioning phasing is assumed as follows:

- Phase 1, *Safe-off, Hazardous Materials and Wiring Removal*, extends for a duration of up to 6 weeks, or 28 working days, and may overlap with Phase 2 by approximately 3 weeks.

- Phase 2, *Removal of Inverter Blocks and Substation*, would extend for a duration of up to 13 weeks, or 63 working days, and may overlap Phase 3 by approximately 5 weeks.

- Phase 3*, Removal of Site Fencing and Roads and Final Soil Reclamation Process*, would extend for a duration of approximately 17 weeks or 85 working days, and may overlap Phase 4 by one week.

- Phase 4*, Final Decommissioning*, would extend for a duration of approximately 1 week or 5 working days.

3.9.4 Decommissioning Workforce, Equipment, and Trip Generation

Approximately 81 to 87 workers may be on the site at a time for decommissioning activities. Decommissioning would involve the use of heavy equipment similar to that used for construction. Appropriate hazardous materials control and erosion control measures (including obtaining a National

Pollutant Discharge Elimination System [NPDES] permit and implementing a SWPPP) would be used throughout the decommissioning process. It is anticipated that such controls would be substantially similar to those implemented during construction, although the intensity of activities would be much lower. Trips generated by decommissioning include worker vehicle trips, water truck trips and construction truck trips. Decommissioning would generate approximately 318 average daily worker trips, 4 average daily water truck trips, and 40 average daily construction truck trips.

Decommissioning would involve the use of heavy equipment and personnel similar to what was used for construction. Table 3.9-1 presents equipment anticipated to be used during decommissioning tasks.

TABLE 3.9-1
DECOMMISSIONING EQUIPMENT

Reclamation Task	Equipment	Total Units	Total Days
Site Preparation / Removal of On-site Oils, Lubricants	Flat Bed Truck	2	8
Removal and Recycle of Underground Distribution Cables	Backhoe	4	77
	Flat Bed Truck	4	77
Removal and Recycle of Interconnection and Overhead Distribution Cables	Aerial Lift	2	57
	Flat Bed Truck	2	57
Removal and Disposal of PV Panels	Flat Bed Truck	4	251
Removal and Recycle of PV Modules Support Beams and Aluminum Racking	Flat Bed Truck	6	336
Removal and Recycle of Foundation Posts	Backhoe	5	165
Removal and Recycle of Electrical and Electronic Devices (including inverters and substation equipment)	Backhoe	2	24
	Crane	1	2
	Flat Bed Truck	2	24
Removal and Recycle of Fencing	Backhoe	3	111
	Flat Bed Truck	3	111
Removal of Compacted Area (roads, pathways)	Grader	2	7
Disc and Revegetate Project Site	Tractor	5	241
	Water Truck	2	48

3.9.5 Site Reclamation

All driveways and other areas compacted during original construction or by equipment used for decommissioning would be tilled in a manner adequate to restore the sub-grade material to the proper density and depth consistent with adjacent properties. Low areas would be filled with clean, compatible sub-grade material. After proper sub-grade depth is established, locally-sourced topsoil would be placed to a depth and density consistent with adjacent properties. Locally-sourced compost would be applied to the topsoil, and the entire site would be tilled to further loosen the soil and blend in the compost. If requested by the landowner, an appropriate seed mixture would be broadcast or drilled across the site, and a weed-free mulch would be applied to stabilize the soil and retain moisture for seedling germination and establishment.

A Soils Reclamation Plan would be prepared that discusses steps required for restoring the site to pre-project conditions to the extent feasible and would include an estimate for reclamation costs. The project would adhere to Kings County requirements for posting a letter of credit or other security instrument for reclamation costs. Post-project, it is expected that the site would continue in agricultural

use and/or grazing, which is the same as its pre-project use and the same as current use of adjacent parcels.

3.10 References

CDA 2010 — Kings County Community Development Agency (CDA). 2010. Land Use Element, 2035 Kings County General Plan. Kings County, CA. Adopted January 26, 2010.

CEC 2015 — California Energy Commission (CEC). 2015. 2015-2016 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program. May 2015.

CPUC 2018 — California Public Utilities Commission (CPUC). 2018. California Renewables Portfolio Standard (RPS) – Homepage. Accessed May 7, 2018 and available at http://www.cpuc.ca.gov/RPS_Homepage/.

Kings County 2017 — County of Kings. 2017. Pesticide Permit Crop GIS Data 2009-2016. Provided by Kings County Agricultural Commissioner/Sealer Department. Accessed November 17, 2017.

Stantec 2017 — Stantec Consulting Services Inc (Stantec). 2017. Phase I Environmental Site Assessment: RE Slate LLC. October 2017.

4.0 PERMITS AND APPROVALS THAT MAY BE REQUIRED

A listing and brief description of the regulatory permits and approvals that may be required to implement the proposed project is provided below. Additional permits and approvals may also be required. This environmental document is intended to address the environmental impacts associated with all of the following decision actions and approvals:

4.1 County of Kings

- **Conditional Use Permit.**

- **Building Permits.** The County authorizes construction activities under the master Construction Permit, which includes building construction. Building Permits would be required for the erection, demolition, or conversion of any building or structure. Such permits are ministerial and would be secured prior to the commencement of construction.

- **Encroachment Permits.** The project may require encroachment permits for any work in County road rights-of-way and utility crossings under County roads. As part of the application for the Encroachment Permit, the applicant must submit construction drawings and a traffic control plan for any work that would take place in public right-of-way.

- **Transfer Permit.** Transfer permits are obtained from the Kings County Public Works Department for oversized or excessive loads.

4.2 Other Agencies

- **SJVAPCD:** The following reviews and approvals may be required from the San Joaquin Valley Air Pollution Control District (SJVAPCD): (1) Indirect Source Review for each project phase under Rule 9510; (2) Approval of construction Dust Control Plans for each project phase under Regulation VIII; (3) Portable Equipment Registration, under Rule 2280, for portable generators and compressors used during construction of each project phase; and (4) Permit to Operate, under Rule 2010, for any equipment greater than 50 horsepower (hp) resulting in emissions, e.g., standby generators.

- **Central Valley Regional Water Quality Control Board (CVRWQCB):** A National Pollutant Discharge Elimination System General Permit to Discharge Storm Water Associated with Construction Activity (Construction General Permit) would be required for construction of the proposed project.

- **California Department of Transportation (Caltrans):** Single-trip transportation permits for oversized or excessive loads on State highways. Permits are issued in coordination with the California Highway Patrol.

- **California Public Utilities Commission (CPUC):** General Order No. 131-D preempts local authorities from regulating electric power line and substation projects. If necessary, PG&E will consult with the County to avoid and/or resolve conflicts with existing land uses. Potential

environmental impacts associated with PG&E supporting facilities will be addressed in the CEQA analysis, as these are critical project components. Refer to Section 4.4, *CPUC Jurisdiction over Permitting of PG&E Facilities*, below.

4.3 Project Approvals

The County of Kings has the following discretionary powers related to the proposed project:

- **Adoption of the environmental document:** The Kings County Community Development Agency (CDA) is acting as the lead agency as defined by CEQA and has authority to determine if the environmental document is adequate under CEQA.

- **Approval of project:** The Kings County Planning Commission will consider approval of the project and all entitlements as described above.

4.4 Interconnection to Approved but Not yet Constructed RE Mustang Two Project Gen-Tie Line

The existing Mustang Switching Station is owned and operated by PG&E and is subject to CPUC jurisdiction. While the proposed project would provide solar power to utility customers by interconnecting to the nearby regional electricity grid at the PG&E Mustang Switching Station, the project would not directly interconnect with the facility. Rather, it would connect with an approved shared gen-tie line that will be built as part of the approved RE Mustang Two Solar Generation Facility directly southwest of the project site. The applicant has coordinated with PG&E regarding the proposed project intertie to the shared gen-tie line, and PG&E likely will not construct the short gen-tie line for the proposed project. PG&E may take control over the gen-tie line for the proposed project once the project is in operation. PG&E would then be responsible for coordinating with CPUC regarding jurisdiction of the interconnection.

.

5.0 PREVIOUS RELEVANT ENVIRONMENTAL ANALYSIS

The County has prepared and adopted similar environmental documents for other solar energy projects in the vicinity of the proposed project. IS/MNDs were prepared for the following nearby solar energy projects: RE Mustang Solar Generation Facility (CDA 2013), RE Mustang Two Solar Generation Facility (CDA 2017), RE Orion Solar Generation Facility (CDA 2013), RE Kent South Solar Generation Facility (CDA 2013), RE Kansas Solar Generation Facility (CDA 2012), Java Solar Project (CDA 2016), and Westside Solar Project (CDA 2015). These documents were reviewed during the preparation of this report.

5.1 References

CDA 2017 Kings County Community Development Agency (CDA). 2017. RE Mustang Two Solar Project, Draft Initial Study and Mitigated Negative Declaration. October 2017. Prepared by HELIX Environmental Planning, Inc.

CDA 2016 Kings County Community Development Agency (CDA). 2016. Initial Study and Mitigated Negative Declaration, Java Solar Project CUP 15-03. July 2016. Prepared by Ecology and Environment, Inc.

CDA 2015 Kings County Community Development Agency (CDA). 2015. Initial Study and Mitigated Negative Declaration, Westside Solar Project CUP 14-01. March 2015. Prepared by Bert Verrips, AICP. Environmental Consulting Services.

CDA 2013 Kings County Community Development Agency (CDA). 2013. RE Mustang, RE Orion, and RE Kent South Solar Generation Facilities, Addendum to Mitigated Negative Declaration. December 2013.

CDA 2012 Kings County Community Development Agency (CDA). 2012. CEQA Mitigated Negative Declaration and Initial Study for the RE Kansas LLC Solar Generation Facility. March 2012. Prepared by Ecology and Environment, Inc.

6.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that may require mitigation to reduce the impact from "Potentially Significant Impact" to "Less than Significant" as indicated by the checklist on the following pages. The potential impacts and any potential mitigation required are addressed in the following Initial Study.

An Initial Study is conducted by a Lead Agency to determine if a project may have a potentially significant effect on the environment (State CEQA Guidelines Section 15063). An EIR must be prepared if an Initial Study indicates that further analysis is needed to determine whether a significant impact will occur or if there is substantial evidence in the record that a project may have a significant effect on the environment (State CEQA Guidelines Section 15064(f)).

☐ Aesthetics	■ Agriculture and Forestry Resources	■ Air Quality
■ Biological Resources	■ Cultural Resources	☐ Energy
■ Geology and Soils	☐ Greenhouse Gas Emissions	■ Hazards and Hazardous Materials
■ Hydrology and Water Quality	☐ Land Use and Planning	☐ Mineral Resources
☐ Noise	☐ Population and Housing	☐ Public Services
☐ Recreation	■ Transportation	☐ Tribal Cultural Resources
☐ Utilities and Service Systems	☐ Wildfire	■ Mandatory Findings of Significance

7.0 EVALUATION OF ENVIRONMENTAL IMPACTS

Responses to the following questions and related discussion indicate whether the proposed project would have, or would potentially have, a significant adverse impact on the environment, either individually, or cumulatively with other projects. All phases of project planning, implementation, and operation are considered. The Mandatory Findings of Significance is in Section 7.21.

7.1 AESTHETICS

AESTHETICS: Except as provided in Public Resources Code Section 21099, would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Have a substantial adverse effect on a scenic vista?	☐	☐	■	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	■
c) In non-urbanized areas, substantially degrade the existing visual character or quality of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	■	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	■	☐

7.1.1 Environmental Setting

As described in Section 3.2, *Environmental Setting*, the project site is in a rural area of the County that is primarily characterized by fallowed and active agricultural land uses and existing solar facilities. The area has been heavily modified for the surrounding land uses and generally lacks notable topographical or geological features. The Kings River is located east of the project site, and the eastern project site limits are bound by the floodplain of the river. Due to the surrounding land uses, the area lacks areas of native or natural vegetation outside of the banks of the Kings River. NAS Lemoore and SR-198 are north of the project site and are significant developed features in the project viewshed. Numerous transmission lines transect the area, including those along Laurel Avenue, the unimproved Kent Avenue alignment, and Murphy Ranch Road and within the northernmost extent of the project site.

Sensitive viewers of the project site would be primarily motorists and pedestrians using Avenal Cutoff Road, Laurel Avenue, 25th Avenue, Jackson Avenue, and the segment of SR-198 that passes through the area. Additional sensitive viewers include residents of dwellings on agricultural properties east and southeast of the project site, residents at NAS Lemoore, and NAS Lemoore pilots, who would potentially have an aerial view of the project site during flight exercises. Navy pilots would be particularly sensitive to substantial glint or glare resulting from the project. The residences east of the project site are located along Murphy Ranch Road (approximately 0.4 mile east of the project site); a residence east of the

project site along Laurel Avenue (approximately 0.25 mile east of the project site); and two residences along 22nd Avenue (approximately 0.61 mile east and 0.47 mile southeast of the project site). Residences at NAS Lemoore are approximately 0.4-mile northwest of the project site. Refer to Figure 2 for the locations of residences in the area.

Kings County General Plan

The Open Space Element of the 2035 Kings County General Plan addresses scenic resources within the County. The Open Space Element identifies the portions of the Kings River and Cross Creek in the northern half of the County as scenic natural assets. These portions of these waterways are identified as Natural Resource Conservation in the Land Use Element of the General Plan. The Coast Ranges and Kettleman Hills in the southwestern portion of the County have also been identified as scenic resources, providing a distinctive visual backdrop (CDA 2010). State Routes, I-5, and other County roadways enable outside and local travelers the opportunity to travel through the County within view of the region's natural scenic areas. Segments of SR-41 and SR-33 are identified in the Open Space Element as eligible for designation as State scenic highways. At its nearest point, the project site is approximately 0.15 mile east of the portion of the Kings River that is designated as scenic, approximately 27 miles southwest of Cross Creek, and approximately 20 miles northeast of the Coast Ranges.

The Open Space Element includes goals, objectives, and policies to protect and preserve scenic resources and roadside landscapes within view of scenic highways (CDA 2010). No state or locally designated or eligible scenic highways are located near the project site (Caltrans 2018). The following policies of the Open Space Element apply to the proposed project:

Policy B1.3.1 Require new development to be designed so that it does not significantly impact or block views of Kings County's natural landscape or other important scenic features. Discretionary permit applications will be evaluated against this requirement as part of the development review process. New developments may be required, as appropriate to:

- Minimize obstruction of view from public lands and rights-of-way.
- Reduce visual prominence by keeping development and structures below ridgelines.
- Limit the impact of new roadways and grading on natural settings. Such limits shall be within design safety guidelines.

Policy B1.3.2 Protect the visual access to Kings River and other prominent watercourses by locating and designing new development to minimize visual impacts and obstruction of views of scenic watercourses from public lands and rights-of-way.

7.1.2 Environmental Evaluation of Aesthetics

a) Have a substantial adverse effect on a scenic vista?

Less Than Significant Impact. Two designated scenic areas within Kings County are in the project vicinity: a portion of the scenic segment of the Kings River east of the project site, and the Coast Ranges

area in southwestern Kings County (CDA 2010). The project site is located approximately 20 miles northeast of the Coast Ranges and would therefore not be located within the viewshed of the Coast Ranges' scenic vista.

In the project area, the Kings River corridor is contained within levees that are bound by private lands used for agriculture. Due to the local topography and land uses around the river corridor, public views of the river are generally from immediately adjacent to or within the river corridor. As a result, the river is not viewable from public rights-of-way west of the project site (such as from Avenal Cutoff Road or 25th Avenue) and public lands and rights-of-way with views of the river would be from public roads accessing or crossing the river (e.g., Jackson Avenue, Murphy Ranch Road, 21½ Avenue, and Laurel Avenue). A private road which runs along the Kent Avenue alignment and which is currently undeveloped provides access to the river. Access along this road is low-volume and generally related to agricultural use due to the un-graded and undeveloped nature of the road. 22nd Avenue generally follows the western boundary of the river, and 23rd Avenue is further west of the river, along the eastern project site boundary. For the majority of the stretch of river along the project site, the proposed project would be set back from the river with the levee and agricultural land uses between the river, and the project site and the project would not obstruct views of the river from the publicly accessible viewpoints.

As described in Section 3.5.1, *Solar Photovoltaic Systems,* multiple types of modules and tracking systems may be installed. Types of module mounting systems include either fixed-tilt or tracking technology and the total height of the module system measured from the ground surface would be a maximum of 12 feet. The project site would include perimeter fencing which would be chain-link galvanized metal, up to 6 feet in height and could be topped with standard three-strand barbed wire. Solar PV projects are generally minimally visually intrusive due to the relatively low profile, and lack of solid structures (such as buildings) that may obstruct landscape views. Due to the set back from the river, and the generally expansive views through the area, the effect of the solar modules and support structures on views from the river and in the context of the river viewshed would be negligible and would not block views of the river. Project substations and switching stations would include approximately 65 or 70-foot-high dead-end structures. In addition, two 135-foot-high electrical poles would be installed to connect the gen-tie to the RE Mustang Two Solar Generation Facility via an overhead line. All of these project facilities would be located near the intersection of Avenal Cutoff Road and unimproved Kent Avenue alignment and would not be in the viewshed of the Kings River. Therefore, the project would result in a *less than significant impact* on scenic vistas.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. No state or locally designated scenic highways are located within Kings County, and the project site is approximately 28 miles northeast of a portion of SR-41 that has been proposed as a State scenic highway within the County (Caltrans 2018). Because the project would not be visible from any designated or eligible state scenic highways, there would be *no impact* on scenic resources.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less Than Significant Impact. The project site is located in a non-urbanized area and publicly accessible areas with views of the site would include the surrounding roadways. Therefore, viewer sensitivity to the visual character or quality of the project site would comprise primarily motorists and pedestrians using Avenal Cutoff Road, Laurel Avenue, 25th Avenue, Jackson Avenue, and the segment of SR-198 that passes through the area.

As previously mentioned, the project site and surrounding area has been heavily modified for existing surrounding land uses, and generally lacks notable topographical or geological features. The relatively flat topography allows for expansive views, with distant mountain ranges to the west and east visible from some points in the area. The eastern project site limits are generally bound by the floodplain of the Kings River, and lands between the eastern project limits and the Kings River are used for agriculture. NAS Lemoore and SR-198 are north of the project site and are significant developed features in the project viewshed. Existing numerous transmission lines and towers, and overhead electrical lines and poles transect the area, primarily west of the project site, and are notable features in the viewshed. Additional solar facilities are planned for construction in the area. Constructed and approved solar projects in the immediate vicinity and primarily west of the project site include: American Kings (Approved; 978 acres), Mustang (Constructed; 1,422 acres), Orion (Constructed; 200 acres), Kent South (Constructed; 200 acres), Westside Assets (Partially constructed; 287 acres), and Mustang Two (Approved; 1,450 acres). Refer to Figure 10 for the existing and planned solar development in the project area. The existing visual character of the area surrounding the project site is defined by the extensive agricultural lands and solar facilities in the area, and the existing development associated with NAS Lemoore. Viewers working, residing, and traveling through the area experience expansive views of a combination of utility and agricultural uses.

The project site is currently undeveloped, fallow agriculture land. Development of the project site with a solar facility would result in a change to the visual landscape by introducing structures (e.g., solar panels, fences, ancillary structures) to the currently undeveloped site. The project would introduce temporary visual impacts during construction through the storage of equipment and materials, but the associated disruption to the visual character of the site would be short-term. Construction and operation of the project would result in the conversion of land characterized by rural agricultural land uses to land occupied by rows of solar panels, one or more substation(s) and switching station(s), ESS, and associated equipment in addition to concomitant sheep grazing. As previously mentioned, project substations and switching stations would include dead end structures approximately 65 or 70 feet high. In addition, two 135-foot-high electrical poles would be installed to connect the gen-tie to the RE Mustang Two Solar Generation Facility via an overhead line. All of these project facilities would be located near the intersection of Avenal Cutoff Road and unimproved Kent Avenue alignment. Existing towers, transmission lines, and poles are present along the project site boundaries and are typical in the visual setting of the area.

Although construction of the proposed project would alter the existing visual character of the area, the project is being constructed in an area currently developed with solar facilities, which will be developed with more solar facilities (RE Mustang Two, located south and west of the project site, is planned for construction in 2018). Viewers in the area are accustomed to other solar projects and existing

transmission lines along Avenal Cutoff Road and unimproved Kent Avenue alignment. Therefore, alterations to the visual character from the proposed project would result in a *less than significant impact* on the visual quality of the project area.

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

Less Than Significant Impact. The proposed project would involve installation of lighting and structures with potentially reflective surfaces where there are currently none which would create a new source of light and glare on the project site. However, as described in the discussion of "Exterior Lighting" in Section 3.5.4, *Support Facilities*, and 3.7.5, *Site Safety and Security*, lighting on the project site would be shielded and directed downward to minimize the potential for glare or light spillover onto adjacent property. In addition, lighting associated with the project would be minimized at night, partly through the operation of a motion sensor that would trigger illumination of security lighting, which would reduce the impact of light pollution at night. Permanent nighttime lighting would be installed on the project site as part of the project for safety purposes and would be motion activated. Further, all lighting would conform to applicable Kings County rules and regulations for outdoor lighting. Because the project would use shielded and downward-directed lighting, and because nighttime lighting would be minimized at the site, the project would result in a *less than significant impact* from the introduction of a new source of light.

The project would not create a substantial source of glint or glare from sunlight reflection. As described in Section 3.5.1, *Solar Photovoltaic Systems*, the PV modules feature panels that are designed to maximize absorption and minimize the reflection to increase electricity production efficiency. To limit reflection, solar PV panels are constructed of dark, light-absorbing materials and are given an anti-reflective coating or textured surface which can reduce reflectivity to less than four percent of incoming sunlight (U.S. Department of Energy, Energy Efficiency and Renewable Energy [EERE] 2013). In comparison, the reflectivity of standard glass is over 20 percent.

The potential for the project to create a source of glint or glare that would interfere with operations and flight exercises at NAS Lemoore is discussed in further detail in Section 7.9, *Hazards and Hazardous Materials*. However, due to the low-reflectivity of the panels, the project would result in a *less than significant impact* associated with the introduction of a new source of light and glare from reflective surfaces.

7.1.3 References

Caltrans 2018 — California Department of Transportation (Caltrans). 2018. California Scenic Highway Mapping System. Accessed January 16, 2018 and available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/.

CDA 2010 — Kings County Community Development Agency (CDA). 2010. 2035 Kings County General Plan - Open Space Element. Kings County, CA. Adopted January 26, 2010.

EERE 2013 — U.S. Department of Energy, Energy Efficiency and Renewable Energy (EERE). 2013. Solar Photovoltaic Cell Basics. Available at: https://www.energy.gov/eere/solar/articles/solar-photovoltaic-cell-basics.

7.2 AGRICULTURE AND FORESTRY RESOURCES

AGRICULTURE AND FORESTRY RESOURCES: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	■	☐	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	■	☐	☐
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC section 12220(g)), timberland (as defined by PRC section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	■
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	■
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non- forest use?	☐	☐	■	☐

7.2.1 Environmental Setting

As mentioned in Section 3.2.1, *General Plan Land Use Designation and Zoning*, the 2035 Kings County General Plan (CDA 2010) land use designation for the project site is Exclusive Agriculture, 40-acre minimum. Project site APNs 026-020-020, 026-020-019, 026-040-011, and 026-110-001 are within the AG-40 zone district, and the nineteen remaining APNs are within the AX zone district. Refer to Figures 5 and 6 for the land use and zoning designations by APN.

Farmland Mapping and Monitoring Program

The California Department of Conservation (CDC) California Geological Survey (CGS) administers and maintains the statewide Farmland Mapping and Monitoring Program (FMMP). The California Division of Land Resource Protection FMMP and the Williamson Act programs intend to conserve agricultural land. For the FMMP, the U.S. Department of Agriculture collects soil surveys and uses existing land use observations to determine the nature and quality of farmland in 10-acre minimum units across the state.

The most recent Important Farmland Map published by CGS for the County shows the project site is mapped as Grazing Land and Farmland of Statewide Importance (CDC 2018a; Figure 8 in Appendix A). Approximately 1,617 acres of the site are classified as Farmland of Statewide Importance and the remaining 873 acres are designated as Grazing Land.

CDC defines Grazing Land as land on which the existing vegetation is suited to the grazing of livestock, and Farmland of Statewide Importance is defined as farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture and must have been used for irrigated agricultural production at some time during the four years prior to the mapping date (CDC 2018b).

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 the use of those lands to agricultural or compatible uses. There are two types of contracts available, including Land Conservation contracts, which have a term of 10 years, and Farmland Security Zone contracts, which have a term of 20 years. The Williamson Act stipulates that local governments adopt rules governing the administration of agricultural preserves, including rules related to compatible uses, provided the rules are consistent with the following principles of compatibility (Gov. Code Section 51231).

Gov. Code Section 51238.1 (a) Uses approved on contracted lands shall be consistent with all of the following principles of compatibility:

(1) The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel or parcels or on other contracted lands in agricultural preserve.

(2) The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels or on other contracted lands in agricultural preserves. Uses that significantly displace agricultural operations on the subject contracted parcel or parcels may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel or parcels or neighboring lands, including activities such as harvesting, processing, or shipping.

(3) The use will not result in the significant removal of adjacent contracted land from agricultural or open-space use.

Kings County Williamson Act Implementation Procedures:

As depicted in Figure 8 in Appendix A, a number of APNs in the project site (approximately 1,921 acres) are under Farmland Security Zone contracts. As required under the Williamson Act, the County has established procedures for implementation of the Act at the local level. Those implementation procedures include Uniform Rules for Agricultural Preserves in Kings County, which identifies the uses that shall be permitted as “Commercial Agricultural Uses,” and “Compatible Uses,” on lands under Williamson Act contracts, including Farmland Security Zone contracts. Permitted compatible uses include single-family residences, accessory structures, agricultural processing facilities, sheep grazing, gas and oil wells, and public utility and public service structures and buildings, among other uses.

The current Kings County Williamson Act (Resolution No. 13-058, adopted November 2013) recognizes that “due to reduced surface water deliveries, poor groundwater quality and severe groundwater overdrafts, impaired soil conditions, and regulatory burdens, circumstances exist on agricultural preserves located within that portion of Kings County south of SR-198, west of SR-41, and northeast of I-5 that limit the use of much of the land with the territory for agricultural activities, such that it is reasonably foreseeable that certain parcels located there that currently are used for more intensive

agricultural activities will be used in the near future for less intensive uses, including dry farm seasonal grazing." This Resolution deemed solar farming, as a concomitant use with dry farm seasonal grazing (or similar commercial agricultural activity), is a compatible use within this region of the County if: (1) the applicant provides a soil reclamation plan and financial assurances; and (2) a finding can be made, based upon substantial evidence, and taking into account surface water availability, ground water quality and availability, and soil conditions, that the proposed concomitant commercial agricultural operation is a reasonably foreseeable use of the land (Kings County 2013).

Kings County Priority Agricultural Land Model

The CDA has developed a model that considers additional factors in defining the value of Prime Farmland in order to rank County farmlands on a priority basis. The factors considered in the model include soil classification, crop value, availability of water resources, the need for open space buffers between urban areas, and the planned orderly growth of communities. The Kings County Priority Agricultural Land map shows that designated priority agricultural land within the project site ranges between "Very Low Priority" and "Medium Priority" (CDA 2010a; Figure RC-13).

Kings County General Plan and Development Code

The 2035 Kings County General Plan and Development Code include agriculture preservation policies and measures. Goals and policies for agriculture in the General Plan and Development Code address the preservation of agricultural land and farming uses; the promotion of growth and expansion of farmland; the establishment and maintenance of buffers between urban and agricultural uses; the restriction of nonagricultural uses in farmland areas; the maintenance of non-urban and open space uses in agricultural and rural areas in the County; and the importance of ensuring long-term protection of agricultural production (CDA 2010b). According to Land Use Goal B7 of the Land Use Element of the 2035 Kings County General Plan, Agricultural Open Space areas are compatible with "community benefiting non-agricultural uses" (CDA 2010b). Specifically, Land Use Policy B7.1.3 states, "power generation facilities for commercial markets shall be allowed and regulated through the CUP approval process, and include thermal, wind, and solar PV electrical generating facilities that produce power" (CDA 2010b). In addition, Article 4, *Agricultural Zoning Districts*, of the Development Code prescribes land use regulations for "Agricultural" districts. Under Section 407, *Land Use Regulations*, of Article 4, a CUP is required for "wind and solar PV electrical generating facilities that commercially produce power for sale, which comply with all local, regional, state, and federal regulations" in the AX and AG-40 zoning districts (Kings County 2015a; Sec. 407, Table 4-1). As previously mentioned, the project site is zoned for AX and AG-40 (Figure 7). Article 11, Section 1112.B.2, of the Development Code contains the standards for solar PV electrical facilities for commercial sales and distribution of electrical power in agricultural zoning districts (Kings County 2015b).

7.2.2 Environmental Evaluation of Agriculture and Forestry Resources

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

Less Than Significant Impact with Mitigation. Approximately 1,617 acres of the project site is classified as Farmland of Statewide Importance under the FMMP (Figure 8). Development of the proposed project would result in the conversion of those lands to a utility-scale solar generation land use. The project

would occupy the project site for up to 40 years, and at the end of the productive life of the solar generation facility, the facility would be decommissioned and the land returned to an agricultural state.

During operation of the solar facility, a minimum of 90 percent of the land designated as Farmland of Statewide Importance would be maintained for dry farm seasonal grazing (sheep) pursuant to a Vegetation and Agricultural Management Plan. Solar operations are generally considered compatible with an ongoing agricultural use of the site, such as grazing.

The ground below and surrounding the arrays and all undeveloped areas of the project site would support vegetation which would be available for sheep grazing while the facility is in operation. Of the 1,617 acres of Farmland of Statewide Importance lands, a maximum of 161.7 acres would be covered by impervious surfaces such as internal driveways or contain existing easements and County-right-of way and would not be available for grazing. The remaining 1,455.3 acres (90 percent) of the Farmland of Statewide Importance lands would be maintained for grazing for the duration of operation of the site.

Additional areas of the project site may be used for grazing during operation. As described under item 'b', approximately 1,921 acres of the project site is in a Farmland Security Zone under the Williamson Act (preserved agricultural lands). The majority of land on the project site that is classified as Farmland of Statewide Importance is also in a Farmland Security Zone; therefore, approximately 2,030 acres of the project site are classified as Farmland of Statewide Importance and/or are preserved agricultural lands (refer to Figure 8 for both designations). As described under item 'b', 90 percent of lands in a Farmland Security Zone would also be maintained for grazing for the duration of operation of the site, which would result in a combined total of 1,827 acres of the project site that would be required to be maintained for grazing for the duration of operation.

While the applicant proposes to maintain the site in concomitant agricultural uses during operation of the facility, should the agricultural land uses be unsustainable, or the site is otherwise converted to a non-agricultural use, the impacts would be *potentially significant*.

Mitigation Measure AG-1 (Vegetation and Agricultural Management Plan), Mitigation Measure AG-2 (Soil Reclamation Plan), and Mitigation Measure AG-3 (Financial Assurances) are proposed to prevent permanent conversion of agricultural lands to a non-agricultural land use. Mitigation Measure AG-1 requires that agricultural land uses continue on the project site for the life of the project pursuant to a Vegetation and Agricultural Management Plan prepared for the project. Mitigation Measure AG-2 requires that the project site be restored to its pre-project baseline conditions following decommissioning of the project, pursuant to a Soil Reclamation Plan prepared for the project. Mitigation Measure AG-3 requires establishment of financial assurances so that if the applicant fails to perform pursuant to the Vegetation and Agricultural Management Plan, then the site can be cleared of all improvements and returned to its original state available for agricultural uses as outlined in the Soil Reclamation Plan.

Implementation of the proposed mitigation would require that agricultural uses are maintained on land designated as Farmland of Statewide Importance during operation of the project and that the agricultural viability of the site is maintained after decommissioning. With implementation of the proposed mitigation, potentially significant impacts to farmland would be reduced to a level of *less than significant*.

> **Mitigation Measure AG-1: Vegetation and Agricultural Management Plan.** Prior to the issuance of a building permit, the applicant shall submit to Kings County a Vegetation and Agricultural

Management Plan that provides for the ongoing agricultural productivity of the site for the life of the proposed project. The Vegetation and Agricultural Management Plan shall specify that approximately 90 percent of the lands designated as Farmland of Statewide Importance and/or lands subject to Farmland Security Zone Contracts under the Williamson Act shall be used for dry farm seasonal sheep grazing and shall include specific provisions for soil preparation and revegetation. The Vegetation and Agricultural Management Plan shall include detailed provisions to ensure the successful establishment of the planned vegetative cover and shall identify appropriate maintenance activities, including conditions under which herbicides may be used, and particularly the identification and selection of herbicides that are non-toxic to livestock and wildlife. The Vegetation and Agricultural Management Plan shall also prescribe the management practices for sheep grazing. The Vegetation and Agricultural Management Plan shall include provisions for ongoing monitoring and annual reporting of agricultural activity on the site to the Kings County CDA. The Vegetation and Agricultural Management Plan shall also comply with the requirements of the Development Code related to weed abatement and pest control.

The Vegetation and Agricultural Management Plan shall provide that, before grazing or other suitable reasonably foreseeable agricultural use is discontinued on lands designated as Farmland of Statewide Importance and/or lands subject to Farmland Security Zone Contracts under the Williamson Act, the following will need to be completed: (1) Cancel the existing Farmland Security Zone Contracts; and (2) Mitigate for the loss of Farmland of Statewide Importance at a ratio of 1:1 with restrictive covenants which will be effective for the life of the solar project. The agricultural land preserved under the restrictive covenants shall be of equal or greater quality as defined by the CDC's FMMP (i.e., if Farmland of Statewide Importance is converted to solar then the agricultural land preserved must not be in a classification indicating a lower quality than Farmland of Statewide Importance).

Mitigation Measure AG-2: Soil Reclamation Plan. Prior to the issuance of a building permit, the applicant shall submit, for review and approval by the CDA, a Soil Reclamation Plan (Plan) for the restoration of the site at the end of the project's useful life. The Plan shall contain an analysis of general preconstruction conditions of the project site, and the site shall be photographically documented by the applicant prior to the start of construction. The Plan shall contain specific measures to restore the soil to approximate its pre-project condition, including (1) removal of all above-ground and below-ground project fixtures, equipment, and non-agricultural driveways, (2) tilling to restore the sub-grade material to a density and depth consistent with its pre-project condition, (3) revegetation using a Kings County-approved grasses and forbs seed mixture designed to maximize revegetation with noninvasive species (broadcast, drilled, or other method), and (4) application of weed-free mulch spread, as needed, to stabilize the soil until germination occurs and young plants are established to facilitate moisture retention in the soil. Whether the project site has been restored to pre-construction conditions shall be assessed by Kings County staff. Additional seedlings and applications of weed-free mulch shall be applied to areas of the project site that have been determined to be unsuccessfully reclaimed (i.e., restored to pre-project conditions), until the entire project area has been restored to conditions equivalent to pre-project conditions. All waste shall be recycled or disposed of in compliance with applicable law. The applicant shall verify the completion of reclamation within 18 months after expiration of the project use permit with Planning Division staff.

Mitigation Measure AG-3 Financial Assurance. Prior to the issuance of a building permit, the applicant shall post a performance or cash bond, submit a Certificate of Deposit, submit a letter of credit, or provide such other financial assurances acceptable to the County, in an amount provided in an Engineer's Cost Estimate, approved by the CDA, to ensure completion of the activities under the Soil Reclamation Plan. Every five years from the date of completion of construction of the project, the applicant shall submit an updated Engineer's Cost Estimate for financial assurances for the Plan, which will be reviewed every five years by Kings County.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

Less Than Significant Impact with Mitigation. The following discussion begins with a consideration of the Williamson Act, which is followed by a discussion of the applicable provisions of the Development Code.

Williamson Act

Approximately 1,921 acres of the project site are subject to Farmland Security Zone contracts (preserved agricultural lands) under the Williamson Act (Figure 8). The proposed project involves long term use of the project site for utility scale energy generation which would be decommissioned following the 40-year life of the project. As described under item 'a)', above, the proposed project involves long term use of the project site for utility scale energy generation. While the conversion would be temporary (the site would be decommissioned following the life of the project) and agricultural uses would be maintained on approximately 1,729 acres (90 percent) of the preserved agricultural lands for the duration of operation of the project; however, without implementation of appropriate measures to avoid conflicts with the Farmland Security Zone contracts, the impacts would be *potentially significant*.

The proposed agricultural operations and mitigation as they meet the principles of compatibility pursuant to Gov. Code Section 51238.1(a) are discussed in detail below.

Gov. Code Section 51238.1 (a) Uses approved on contracted lands shall be consistent with all of the following principles of compatibility:

(1) The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel or parcels or on other contracted land in agricultural preserves.

Discussion. The productive agricultural capability of Farmland of Statewide Importance and preserved agricultural lands on the project site would be maintained during the life of the project through concomitant seasonal sheep grazing. Mitigation Measure AG-1 requires implementation of a Vegetation and Agricultural Management Plan which would specify the ongoing maintenance of vegetative cover over the site for sheep grazing. Should agricultural uses be discontinued on the site, compensatory mitigation for the loss of agricultural lands would be required as specified in Mitigation Measure AG-1.

As previously mentioned, the ground below and surrounding the arrays and all undeveloped areas of the site would support vegetation. Approximately 90 percent of the Farmland of Statewide Importance and preserved agricultural lands would be used for dry farm seasonal sheep grazing while the facility is in operation. Additional areas within the project site may be used for grazing during operation of the facility. The very light footprint of the solar generating facility upon the site would allow for the preservation of native soil cover and would allow for low impact removal of solar arrays and electrical equipment at the end of the facility's productive life. To ensure that the site is restored to pre-project

conditions after decommissioning, the applicant would also be required to implement Mitigation Measure AG-2, which requires implementation of a Soil Reclamation Plan, and Mitigation Measure AG-3, which requires financial assurances, as described above. Other agricultural parcels in the vicinity would not be impaired by introduction of the solar use because the site would contain a co-located agricultural use. The site would not contain uses, such as housing developments or office structures, that could conflict with adjacent agricultural uses.

(2) The use will not significantly displace or impair current or other reasonably foreseeable agricultural operations. Uses that significantly displace agricultural operations on the subject contracted parcel or parcels may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel or parcels or neighboring lands, including activities such as harvesting, processing, or shipping.

Discussion. In accordance with Gov. Code Section 51231, Kings County has adopted procedures for implementing the Williamson Act at the local government level, including rules related to compatible uses that are consistent with the Williamson Act's principles of compatibility. As discussed in Section 7.2.1, *Environmental Setting*, above, the current Kings County Williamson Act implementing procedures provide specific guidance in considering the compatibility of solar PV facilities in agricultural preserves, which finds that a solar project in the location of the project site (i.e., within that portion of the County south of SR 198, west of SR 41, and northeast of I-5) would be considered compatible if the applicant provides a soil reclamation plan and financial assurances, and if a finding can be made, based upon substantial evidence, and taking into account surface water availability, ground water quality and availability, and soil conditions, that the proposed concomitant commercial agricultural operation is a reasonably foreseeable use of the land.

Mitigation Measure AG-2 requires the implementation of a Soil Reclamation Plan for the proposed project, and Mitigation Measure AG-3 requires the provision of financial assurances for implementation of the Soil Reclamation Plan. Mitigation Measure AG-1 requires the implementation of a Vegetation and Agricultural Management Plan that provides for the ongoing agricultural productivity of the site for the life of the project. Approximately 90 percent of the area of the Farmland of Statewide Importance and preserved agricultural lands would be used for dry farm seasonal sheep grazing during operation of the facility which constitutes a reasonably foreseeable use of the land, as discussed in the first item above.

Additionally, there is substantial evidence that the project site is subject to reduced surface water availability limitations due to groundwater quality and availability, and impaired soil conditions, such that dry farm seasonal grazing is a reasonably foreseeable use of the land. These conditions are discussed in turn below:

Site Water Supply. The project site is located within two administering water districts (Balance 2018). The western portion of the site is within the WWD located in the Westside Subbasin and the eastern portion of the site is within the EWSID located in the Tulare Lake Subbasin. The western portion of the project site is dependent upon imported CVP deliveries through WWD (WWD 2013). For a number of years, the WWD has been subject to curtailment of delivered water, ongoing drought conditions, environmental regulations, and the low priority position of the WWD, compared to other CVP contractors, in receiving its federal contract water during years of water shortage. Consequently, from 2007 through 2015, WWD received an average of 32 percent of its contract water, and in 2016 WWD received five percent allocation of CVP water. The eastern portion of the project site, although located

within EWSID[2], is managed by the KRCD. The KRCD divided their operational area into several water management areas (WMAs) which are managed through the Lower Kings Basin Groundwater Management Plan (GWMP) to reduce or eliminate overdraft. The project site is within WMA C1. Generally, groundwater within the KRCD has shown steady decline since the 1950s, however, WMA C1 has shown periods of decline in dry years followed by rapid recovery in wet years, suggesting WMA C1 conditions have not significantly worsened since the 2006 GWMP was prepared. No surface water entitlements were identified in the Water Supply Assessment (WSA) prepared for the project (Balance 2018). Therefore, with the curtailment of water delivered to WWD in recent years and fluctuating groundwater supply in WMA C1, the entire project site has been subject to reduced water availability in recent years.

Groundwater Availability. According to WWD, the safe yield of the WWD groundwater basin is equivalent to approximately 0.35 acre-feet per acre per year (i.e., safe yield of 200,000 acre-feet over the 568,000 irrigable acres within the WWD service area = 0.35 acre-feet per acre per year; WWD 2013). The KRCD has not established a safe yield, however, estimates by the California Department of Water Resources (CA DWR) suggest around 0.54 acre-feet per acre per year for the Tulare subbasin as a whole (Balance 2018). During years when sufficient supplies of irrigation water were available, the crops typically grown on the project site included wheat and cotton, which require approximately 1.5 and 2.5 acre-feet per acre per year of irrigation water respectively. Thus, during years with curtailment of surface water deliveries, groundwater pumping would not have provided enough water to make up the difference in supporting these crops, and therefore, because of the reduction in CVP water deliveries over the past few years, if typical crops were to be grown again at the site, groundwater pumped from WWD sources would not be available at a rate consistent with the limitations for safe yield for the basin. Over-pumping beyond safe yield results in progressive lowering of the water table and is not sustainable.

Groundwater Quality. According to the CA DWR, groundwater quality throughout the Tulare Lake Hydrologic region is generally suitable for most urban and agricultural uses (CA DWR 2003); however, high salinity levels and the presence of other contaminants, including total dissolved solids, nitrate, arsenic, and organic compounds, have been identified as potential long-term problems for the basin (CA DWR 2003, CVRWQCB 2004). In 2013, the Kings County Board of Supervisors recognized these limitations of groundwater supplies in the area within which the project site is located (Kings County 2013). Groundwater in the project area has high concentrations of sodium, chloride, and boron, which limit the volumes that can be applied to agricultural uses given the limited tolerance of crops to these elements. Therefore, the use of groundwater at the project area for agricultural uses is limited due to quality.

Soil Conditions. Soils on the project site include Gepford clay, Lethent clay loam, Calflax clay loam, Pitco clay, and Tulare variant clay (Figure 9 in Appendix A). According to the Soil Capability Classification System, when not irrigated, these soils have very severe limitations that make them unsuitable for cultivation and restrict their use mainly to pasture, grazing, forestland, or wildlife habitat (NRCS 1961). Even if irrigated, these soils would have moderate to severe limitations, reducing the choice of plants that can be cultivated or requiring special conservation practices. Although these soils would perform better if irrigated, considering the properties' lack of any surface water entitlements and the limited

[2] EWSID does not manage or control groundwater extraction within the area.

availability and quality of groundwater in the project area, these soils are classified as having very severe limitations.

All of these conditions have progressively exacerbated soil salinity levels such that irrigated cultivation is not likely to be feasible on the site in the near-term future. Furthermore, additional water would be needed to "wash" salts out of the root zone, which makes the area further unsuitable for long term sustainable irrigated agriculture (CVRWQCB 2006). Due to the lack of surface water rights and significant impairment of soil quality, the reasonably foreseeable agricultural use of the site with or without the project would be dry land farming with seasonal grazing.

(3) The use will not result in the significant removal of adjacent contracted land from agricultural or open-space use.

Discussion. The majority of the facilities for the proposed project would be constructed within the project site limits and would be surrounded by a perimeter fence to separate the proposed facilities from off-site land uses. Facilities for the proposed project that would directly access off-site areas include installation of the short gen-tie line over the unimproved Kent Avenue alignment to the RE Mustang Two Generation Facility and improvements to roads accessing the site. The unimproved Kent Avenue alignment through the project site is located on private property and is not located within County right-of-way.

The project would include one or two on-site substations at the east corner of APN 024-190-045. The project substation(s) would transmit power utilizing the future shared RE Mustang Two Project's gen-tie line via a short gen-tie connection line. The future RE Mustang Two gen-tie line would interconnect the project to the regional grid at the PG&E Mustang Switching Station located within the existing Mustang Solar Generation Facility site approximately 1 mile west of the project site and is being constructed as part of the RE Mustang Two project. Impacts associated with construction of the future RE Mustang Two gen-tie line are not analyzed as part of the project. Use of the future RE Mustang Two Solar Generation Facility gen-tie line route by the proposed project would not conflict with the long-term productive agricultural capability of the contracted parcels in which it is located. The short gen-tie line route connecting the proposed project with the future share RE Mustang Two gen-tie line would be located entirely within the privately owned parcels for the project site and the RE Mustang Two facility which is planned for solar facility uses. Construction of the short gen-tie line connection would not conflict with the long-term productive agricultural capability of the parcels in which it is located.

Access to the project site would be at Murphy Ranch Road, the unimproved Kent Avenue alignment, and Laurel Avenue via Avenal Cutoff Road. The project does not include construction of new access to adjacent areas outside of the project site, and the internal driveway layout for the project site does not include driveways accessing adjacent off-site areas. As a result, the proposed project would not provide new access to adjacent contracted land, and those lands would not be removed from agricultural use.

The project site would not contain uses, such as housing or commercial developments (i.e., office park), that could conflict with adjacent agricultural uses. Unlike urban development, solar generating facilities are not associated with (i.e., would not result in the development of) ancillary development including that for providing facility support services or those taking advantage of the services provided by the project. Solar generating facilities neither provide nor require urban services and therefore would not attract or induce other development nearby. Moreover, since such urban development would not be permitted on adjacent or nearby lands under the applicable agricultural zoning, the project would not

result in the removal of agricultural preserves from adjacent contracted land through urban growth inducement. The site would contain a co-located agricultural use which would further reduce the incompatibility for adjacent agricultural land uses.

As discussed above in the substantiation for the first compatibility findings under Gov. Code Section 51238.1(a), the low intensity of solar facility operations would generally minimize the potential for operations-related impacts to adjacent agricultural lands. Therefore, the project would not result in the removal of adjacent contracted land by way of introducing an incompatible land use to the site.

Conclusion for Williamson Act Compatibility

In summary, with implementation of Mitigation Measures AG-1, AG-2, and AG-3, the project would satisfy all of the Williamson Act principles of compatibility, as further defined by Resolution of the Kings County Board of Supervisors, for land use proposed for lands under the Farmland Security Zone contract and potentially significant impacts would be reduced to a level of *less than significant*.

County Zoning

As designated in the Kings County Development Code, the 2,490-acre project site is currently zoned as AX and AG-40. As provided in Article 4 of the Development Code, utility-scale PV electricity generation is a conditionally permitted use in the AX and AG-40 zone districts. Therefore, the project would be consistent with the County's agricultural zoning for the site upon the granting of the subject CUP for the proposed project.

Article 11, Section 1112.B.2 of the Development Code requires that the granting of CUPs for solar PV electrical facilities shall be subject to certain specified findings. Most of these findings relate to agricultural land. Failure to meet the required findings would result in a *potentially significant* impact related to compatibility with the agricultural zoning designation. As such, the required findings, and the project's consistency with the findings, are addressed in turn below.

(1) The proposed site shall be located in an area designated as either "Very Low Priority," "Low Priority," or "Low-Medium Priority" land according to Figure RC-13 Priority Agricultural Land (2035 Kings County General Plan, Resource Conservation Element, Page RC-20). "Medium Priority" land may be considered when comparable agricultural operations are integrated, the standard mitigation requirement is applied, or combination thereof.

Discussion. The Kings County Priority Agricultural Land map shows that designated priority agricultural land within the project site ranges between "Very Low Priority" and "Medium Priority" (CDA 2010a; Figure RC-13). As noted in the Development Code finding, lands designated as "Medium Priority" may be considered for solar PV facilities when comparable agricultural operations are integrated or mitigation is applied, or a combination. The parcels designated as "Medium Priority" are located in the eastern portion of the site and are Farmland of Statewide Importance and preserved agricultural lands. With implementation of Mitigation Measure AG-1, approximately 90 percent of the Farmland of Statewide Importance and preserved agricultural lands would be used for dry farm seasonal sheep grazing during operation of the project which constitutes a comparable agricultural operation. Therefore, with implementation of the proposed mitigation, potential impacts would be reduced to below a level of significance.

(2) The proposed site shall be located within 1 mile of an existing 60 KV or higher utility electrical line. Small community commercial solar projects (less than or equal to three MW) may be located more than 1 mile from a 60 kV or higher transmission line subject to the following findings:

a. The project site is located on low or very low priority farmland.

b. The project site is not restricted by a Williamson Act or Farmland Security Zone contract.

c. The project will connect to existing utility infrastructure without building new power lines.

d. The project will not result in any additional easements on agricultural land, other than access easements or easements within the public Right-of-Way.

Discussion. An existing 69 kV PG&E transmission line and an existing 230 kV PG&E transmission line are located within 1 mile of the project site. Therefore, the project would satisfy the finding that it is located within 1 mile of an existing 60 kV or higher transmission line.

(3) Agricultural mitigation shall be proposed for every acre of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance converted for a commercial solar facility. The agricultural mitigation shall preserve at a ratio of 1:1 an equal amount of agricultural acreage of equal or greater quality in a manner acceptable to the County for the life of the project. Agricultural mitigation on land designated "Medium-High" or higher priority land shall preserve an equivalent amount of agricultural acreage at a ratio of 2:1.

Discussion. Much of the project site is mapped as Farmland of Statewide Importance under the FMMP. However, as discussed above, during project operation, 90 percent of the Farmland of Statewide Importance and preserved agricultural lands would be maintained in dry farm seasonal sheep grazing concomitantly with the solar facility use and would not convert the land to a non-agricultural use. Importantly, grazing has been the most recent use of the property except when it has been fallowed, and for reasons explained above, dry farm grazing is the reasonably foreseeable future use of the property if the proposed project is not built. The Vegetation and Agricultural Management Plan, as required under Mitigation Measure AG-1, would ensure the maintenance of seasonal sheep grazing on the site, and on 90 percent of the Farmland of Statewide Importance and preserved agricultural lands, for the life of the project. Mitigation Measures AG-2 and AG-3 would ensure that soils of the project site are reclaimed to pre-project conditions upon decommissioning of the solar facility. With the proposed mitigation, this finding would be satisfied.

(4) The project shall include a reclamation plan and financial assurance acceptable to the County that ensures the return of the land to a farmable state after completion of the project life and retains surface water rights.

Discussion. Mitigation Measures AG-2 and AG-3 would require a Soil Reclamation Plan along with Financial Assurance to ensure its implementation. As discussed above, the project site has no surface water rights; therefore, there are no surface water rights to be retained. Based on these facts, the project would satisfy this finding.

(5) The project shall include a pest management plan and weed abatement plan to protect adjacent farmland from nuisances and disruption.

Discussion. With the implementation of Mitigation Measure AG-1, the applicant would be required to comply with Development Code requirements for implementing a pest management plan and weed abatement plan. Because the project would be required to implement Mitigation Measure AG-1, this finding would be satisfied.

(6) The project shall space internal access driveways per Kings County Fire Department standards.

Discussion. Compliance with this requirement would be a condition of project approval. Moreover, subject to County approval, internal access driveways would be spaced per KCFD standards in a north-south orientation, and the access and interior driveways would be constructed in accordance with Kings County requirements to be at least 20 feet wide and would be maintained to facilitate on-site circulation for emergency vehicles during all weather conditions. Therefore, this finding would be satisfied.

(7) The project shall include a solid waste management plan for site maintenance and disposal of trash and debris.

Discussion. To satisfy this finding, a solid waste management plan would be prepared for the project to prescribe internal procedures for site maintenance and collection and disposal of solid waste during project construction, operation, and decommissioning per Mitigation Measure AG-4.

> **Mitigation Measure AG-4: Solid Waste Management Plan**. To ensure that solid waste generated during project construction and operation is properly disposed of or recycled, prior to issuance of building permits, the applicant shall prepare a Solid Waste Management Plan acceptable to the County pursuant to Section 1112.B.2.g of the Development Code. The non-hazardous waste generated during construction and operation will be segregated on-site for recycling or disposal at a Class III landfill. Hazardous wastes generated during project construction and operation will be either recycled or disposed of at a Class I disposal facility, as required.

(8) The project site shall not be located on Williamson Act or Farmland Security Zone contracted land, unless it meets the principles of compatibility under Gov. Code Section 51238.1(a). Otherwise, the contract shall be proposed for cancellation.

Discussion. As discussed in detail under the Williamson Act subheading of this question, the proposed project would satisfy all the Williamson Act principles of compatibility, as further defined by Resolution of the Kings County Board of Supervisors, for land use proposed for lands under Williamson Act contracts, including Farmland Security Zone contracts.

Conclusion for County Zoning

In summary, the project is consistent with the zoning for the site and would satisfy all of the specific findings required in the Kings County Development Code for the granting of CUPs for solar generating facilities. With implementation of the proposed mitigation, potentially significant impacts would be reduced to a level of *less than significant*.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)), timberland (as defined by PRC Section 4526 (g)), or timberland zoned Timberland Production (as defined by Gov. Code Section 51104 (g))?

No Impact. The project site is not located in an area zoned for forest land, timberland, or timberland production. The proposed project would not conflict with existing zoning for forest or timberlands. *No impact* would occur.

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

No Impact. No forest or timberland is present on the project site or surrounding areas, and no forest or timber land would be affected by the project. *No impact* would occur.

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

Less Than Significant Impact. No forest lands occur in the project area. As discussed under items 'a)' and 'b)' above, the project would implement Mitigation Measures AG-1 through AG-4. Implementation of the proposed mitigation would involve maintenance of agricultural production on the Farmland of Statewide Importance and preserved agricultural lands for the life of the solar generating facility, and additional areas of the project site may be grazed during operation. The site soils would be reclaimed to pre-project conditions upon decommissioning of the solar facility. As also discussed under items 'a)' and 'b)' above, the project would not induce conversion of other farmlands to non-agricultural uses by way of providing excess infrastructure capacities that could facilitate similar development on adjacent or nearby lands, or by way of introducing a land use that is incompatible with agricultural production. The project would involve no other changes that could result in the conversion of Farmland to non-agricultural use. Therefore, the project would result in a *less than significant* impact in regard to other changes converting Farmlands or forests.

7.2.3 References

CA DWR 2003 — California Department of Water Resources (CA DWR). 2003. "Tulare Lake Hydrologic Region." California's Groundwater Update. Bulletin 118: Chapter 7.

CDA 2010a — Kings County Community Development Agency (CDA). 2010a. 2035 Kings County General Plan – Resource Conservation Element. Adopted January 26.

CDA 2010b — Kings County Community Development Agency (CDA). 2010b. 2035 Kings County General Plan - Land Use Element. Kings County, CA. Adopted January 26, 2010.

CDC 2018a — California Department of Conservation (CDC). 2018a. California Important Farmland Finder. Accessed April 20, 2018 and available at: https://maps.conservation.ca.gov/DLRP/CIFF/.

CDC 2018b — California Department of Conservation (CDC). 2018b. Important Farmland Categories. Accessed November 15, 2018 and available

at:https://www.conservation.ca.gov/dlrp/fmmp/Pages/Important-Farmland-Categories.aspx.

CVRWQCB 2006 — California Regional Water Quality Control Board, Central Valley Region (CVRWQCB). 2006. Salinity in the Central Valley. Available at: http://www.waterboards.ca.gov/centralvalley/water_issues/salinity/centralvalley_salinity_alternatives_archives/initial_development/swrcb_02may06_ovrvw_rpt.pdfCA.

CVRWQCB 2004 — California Regional Water Quality Control Board, Central Valley Region (CVRWQCB). 2004. Water Quality Control Plan for the Tulare Lake Basin. Revised May 2018 (with Approved Amendments).

Kings County 2015a — County of Kings. 2015a. Kings County Development Code, Article 4. Available at: http://www.countyofkings.com/departments/community-development-agency/information/zoning-ordinance.

Kings County 2015b — County of Kings. 2015b. Kings County Development Code, Article 11. Available at: http://www.countyofkings.com/departments/community-development-agency/information/zoning-ordinance.

Kings County 2013 — Kings County. 2013. Implementation Procedures for the California Land Conservation "Williamson" Act of 1965 Including Farmland Security Zones. As amended November 27, 2013.

NRCS 1961 — Natural Resources Conservation Service (NRCS). 1960. Land-Capability Classification. United States Department of Agriculture. Available at: https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf. Accessed January 18, 2018.

WWD 2013 — Westlands Water District (WWD). 2013. Westlands Water District –Water Management Plan – 2012. April 4. Available at: http://wwd.ca.gov/wp-content/uploads/2015/09/water-management-plan-2012.pdf. Accessed August 16, 2016.

7.3 AIR QUALITY

AIR QUALITY: Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	■	☐	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	■	☐

AIR QUALITY: Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	■	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	■	☐

This section is based on the Air Quality and Greenhouse Gas Emissions Technical Report prepared for the proposed project (HELIX 2018, Appendix C).

7.3.1 Environmental Setting

The primary air pollutants of concern for the project include ozone (O_3) precursors (NO_X and ROG), carbon monoxide (CO), and suspended particulate matter (PM_{10} and $PM_{2.5}$). Other regulated (or "criteria") pollutants, such as lead (Pb) and sulfur dioxide (SO_2), would not be associated with the proposed project, or project-generated traffic, and air quality standards for them are being met throughout the San Joaquin Valley Air Basin (SJVAB).

Existing Air Quality

The San Joaquin Valley experiences poor air quality conditions, due primarily to elevated levels of ozone and particulate matter.

Ozone

In the upper atmosphere, Ozone serves a beneficial purpose by reducing ultraviolet radiation potentially harmful to humans. However, when it reaches elevated concentrations in the lower atmosphere, it can be harmful to the human respiratory system and to sensitive species of plants.

Ozone is formed in the atmosphere by a complex series of photochemical reactions which involve "ozone precursors" that comprise two families of pollutants: oxides of nitrogen (NO_X) and reactive organic gases (ROG). NO_X and ROG are emitted from a variety of stationary and mobile sources, primarily vehicle exhaust. Ozone concentrations in the San Joaquin Valley are typically higher than in coastal areas because of the greater frequency of hot days and stagnant conditions that are conducive to ozone formation. Ozone precursor pollutants are also carried to the valley from upwind urban areas.

Particulate Matter (PM)

Regulated fractions of particulate matter include PM_{10} which consists of particulate matter that is 10 microns or less in diameter, and $PM_{2.5}$ which consists of particulates that are 2.5 microns or less in diameter. Both PM_{10} and $PM_{2.5}$ can be inhaled and cause adverse health effects. $PM_{2.5}$ (including diesel exhaust particles) is thought to have greater effects on health minute particles are able to penetrate to the deepest parts of the lungs.

Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, wildfires, and atmospheric photochemical reactions. Some sources of particulate matter, such as mining and demolition and construction activities, are more local in nature, while others, such as vehicular traffic, are more regional in their effect.

Toxic Air Pollutants

Besides the "criteria" air pollutants, there is another group of substances found in ambient air referred to as Toxic Air Contaminants (TACs). Particulate matter from diesel exhaust (diesel particulate matter [DPM]) is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs. The vast majority of diesel exhaust particles (over 90 percent) consist of $PM_{2.5}$, which are the particles that can be inhaled deep into the lung.

Valley Fever

Valley Fever is an illness caused by a fungus (*Coccidioides immitis* and *C. posadasii*) that grows in soils under certain conditions. Favorable conditions for the Valley Fever fungus include low rainfall, high summer temperatures, and moderate winter temperatures. In California, the counties with the highest incident of Valley Fever are Fresno, Kern and Kings County. When soils are disturbed by wind or activities like construction and farming, Valley Fever fungal spores can become airborne. The spores present a potential health hazard when inhaled. Individuals in occupations such as construction, agriculture, and archaeology have a higher risk of exposure due to working in areas of disturbed soils which may have the Valley Fever fungus. Most people who inhale the spores do not get sick. Usually, susceptible individuals experience flu-like symptoms and feel better on their own within weeks, although some people require antifungal medication (CDC 2017). In extreme cases, the disease can be fatal. The average annual exposure rate in the San Joaquin Valley is more than 10 in 100,000 people (CDPH 2016).

Ambient Air Quality Standards

At both the state and federal levels, air quality standards have been established for a range of air pollutants. These standards specify the concentrations of each criteria pollutant that the public may be exposed to without adverse health effects. Air quality monitoring data for each criteria air pollutant are used to determine if an air basin is in violation of an ambient air quality standard. Areas that do not violate federal and state ambient air quality standards are considered to have “attained” the standards. The San Joaquin Valley as a whole does not meet State or federal ambient air quality standards for ground level O_3, PM_{10} and $PM_{2.5}$. Accordingly, under the Federal Clean Air Act, the U.S. Environmental Protection Agency (USEPA) classifies the SJVAB as serious nonattainment for the 8-hour O_3 standard and $PM_{2.5}$, attainment for PM_{10}, and attainment/unclassified for CO, Pb, NO_X, and sulfur oxides (SO_X). At the State level, the SJVAB is considered serious non-attainment for 1-hour O_3 and non-attainment for 8-hour O_3, PM_{10} and $PM_{2.5}$, and is considered attainment or unclassified for all other pollutants (CARB 2018).

In response to not meeting the air quality standards for ozone and PM, the SJVAPCD has prepared required attainment plans for each pollutant including the 2016 Plan for the 2008 8-hour Ozone Standard, the 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard, and the 2018 PM Plans. The 2018 PM Plans, adopted November 15, 2018, address the 1997, 2006, and 2012 $PM_{2.5}$ standards and demonstrate attainment of the federal $PM_{2.5}$ standards as expeditiously as practicable. Both the ozone and PM attainment plans include all measures (i.e., federal, state and local) that would be implemented through rule making or program funding to reduce air pollutant emissions (SJVAPCD 2015).

SJVAPCD Rules and Regulations

In order to reduce emissions of ozone precursors (i.e., ROG and NO_X) and PM_{10} from new land use development projects, and achieve the attainment plans for each pollutant, the SJVAPCD adopted the Indirect Source Review Rule (e.g., Rule 9510) in 2005 and amended the rule in 2017. The 2017 revisions became effective in March of 2018. The rule requires projects to reduce both construction and operational period emissions by specified amounts by applying the SJVAPCD-approved mitigation measures and/or paying fees to support off-site mitigation programs that reduce emissions. Fees apply to the unmitigated portion of the emissions and are based on estimated costs to reduce the emissions from other sources plus expected costs to cover administration of the program. Off-site emission reduction projects to be funded through the Indirect Source Review Rule include retrofitting heavy-duty engines, replacing agricultural machinery and pumps, paving unpaved roads and road shoulders, trading out combustion powered lawn and agricultural equipment with electrical and other equipment, as well as a number of other projects that result in quantifiable emissions reductions of PM_{10} and NO_X.

SJVAPCD controls PM_{10} from fugitive dust through several rules collectively known as Regulation VIII (Fugitive PM_{10} Prohibitions). The purpose of these rules is to reduce ambient concentrations of PM_{10} by requiring actions to prevent, reduce or mitigate anthropogenic (human caused) fugitive dust emissions. This applies to activities such as construction and other earthmoving activities, bulk materials, open areas, paved and unpaved roads, material transport, and agricultural areas. Development projects are required to provide dust control plans that meet the regulation requirements. The Air District's required dust control measures are summarized in item 'b)' below. Other Air District rules that apply to construction activities include, Rule 4101 which limits visible emissions; Rule 4102 which limits creation of a nuisance (odors); Rule 4601 which limits volatile organic compound (VOC) emissions from architectural coatings, storage and cleanup; and Rule 4641 which limits emissions form asphalt paving materials.

7.3.2 Environmental Evaluation of Air Quality

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

Less Than Significant Impact with Mitigation. The SJVAPCD has adopted several attainment plans that outline the long-term strategies designed to achieve compliance with the National Ambient Air Quality Standards and California Ambient Air Quality Standards. According to the SJVAPCD (2015, par. 7.12, page 65), "projects with emissions below the thresholds of significance for criteria pollutants would be determined to 'not conflict or obstruct implementation of the District's air quality plan.'"

The project would generate criteria pollutants in the short-term during construction and the long term during operation. To determine whether a project would result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation, a project's emissions are evaluated based on the quantitative emission thresholds established by the SJVAPCD (as shown in Table 7.3-1).

TABLE 7.3-1
SJVAPCD AIR QUALITY SIGNIFICANCE THRESHOLDS

Mass Daily Thresholds (tons per year)		
Pollutant	**Construction**	**Operation**
VOC	10	10
NO_X	10	10
CO	100	100
PM_{10}	15	15
$PM_{2.5}$	15	15
SO_X	27	27
Toxic Air Contaminants		
TACs[1]	Maximum Incremental Cancer Risk ≥ 10 in 1 million Chronic & Acute Hazard Index ≥ 1.0 (project increment)	

Source: SJVAPCD 2015
[1] TACs (carcinogenic and noncarcinogenic)

Construction Emissions

The project would emit the following temporary criteria air pollutants during construction activities:

- Dust (including PM_{10} and $PM_{2.5}$) primarily from fugitive sources such as soil disturbance, and vehicle travel over unpaved surfaces;

- Combustion emissions of air pollutants (including ROG, NO_X, PM_{10}, $PM_{2.5}$, CO, and SO_X) primarily from operation of heavy off-road equipment.

This project's construction emissions were estimated using the emission factors and methods described in the air quality assessment report prepared for the project (Appendix C). Project-specific input was based on general information provided in Section 3.0, *Project Description*, and assumptions to estimate reasonable worst-case conditions. Additional details of phasing, selection of construction equipment, and other input parameters are included in Appendix C.

The results of the calculations for project construction are shown in Table 7.3-2. Emissions are summed annually and presented for comparison with the SJVAPCD thresholds.

As shown in Table 7.3-2, annual NO_X emissions would exceed the SJVACPD threshold during the 2021 construction year. Emissions of all other criteria pollutants related to project construction would be below the significance thresholds. Thus, direct impacts from criteria pollutants generated during construction would be *potentially significant*.

TABLE 7.3-2
ANNUAL CONSTRUCTION EMISSIONS

Activity	Pollutant Emissions (tons per year)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
2020						
Truck Trips	0.10	0.31	1.38	<0.01	1.36	0.35
Worker Commute	0.18	4.08	0.45	0.01	2.72	0.69
PV Phase 1: Site Preparation	0.53	1.98	4.67	0.01	0.21	0.12
PV Phase 2: PV System Installation	0.32	1.54	2.31	<0.01	0.09	0.09
2020 Total	***1.21***	***7.91***	***8.82***	***0.03***	***4.38***	***1.25***
2021						
Truck Trips	0.15	0.54	2.29	0.01	2.59	0.67
Worker Commute	0.21	0.29	0.04	<0.01	<0.01	<0.01
PV Phase 2: PV System Installation	1.09	5.98	8.43	0.02	0.31	0.30
PV Phase 3: Collection, Substation(s), Switching Station, Gen-Ties; Site Restoration and Revegetation	0.12	0.85	1.22	<0.01	0.07	0.06
ESS Phase 1: Site Preparation	0.13	0.42	1.32	<0.01	0.05	0.03
ESS Phase 2: Foundations, Structures, and System	0.07	0.50	0.76	<0.01	0.03	0.03
ESS Phase 3: Inverters, Substation, and Connection	0.13	0.94	1.31	<0.01	0.08	0.07
2021 Total	***1.91***	***9.53***	***15.37***	***0.03***	***3.13***	***1.16***
Max Year Total	**1.91**	**9.53**	**15.37**	**0.03**	**4.38**	**1.58**
SJVAPCD Thresholds	10	100	10	27	15	15
Significant Impact?	*No*	*No*	***Yes***	*No*	*No*	*No*

Source: Modeling data is provided in Appendix C

As shown in Table 7.3-2, annual NO_X emissions would exceed the SJVACPD threshold during the 2021 construction year. Emissions of all other criteria pollutants related to project construction would be below the significance thresholds. Thus, direct impacts from criteria pollutants generated during construction would be *potentially significant*.

Mitigation Measure AQ-1 would require that, whenever feasible, off-road diesel-powered construction equipment greater than 50 hp meet Tier 4 emission standards.

> **Mitigation Measure AQ-1: Tier 4 Off-road Equipment.** The applicant shall ensure that, whenever feasible, off-road diesel-powered construction equipment greater than 50 hp shall meet USEPA-Certified Tier 4 emission standards and shall be outfitted with best available control technology devices certified by the California Air Resources Board (CARB). A copy of each unit's certified tier specification, best available control technology documentation, and CARB or SJVAPCD operating permit shall be provided to the Kings County Community Development Agency at the time of mobilization of each applicable unit of equipment.

The effects of using only construction equipment meeting Tier 4 standards for all off-road diesel powered equipment 50 hp or greater was evaluated to determine the effectiveness in reducing NOx emissions to below a level of significance. The evaluation is presented below.

Construction Emissions with Mitigation

The results of the calculations for project construction with mitigation are shown in Table 7.3-3.

TABLE 7.3-3
ANNUAL CONSTRUCTION EMISSIONS WITH USE OF TIER 4 OFF-ROAD CONSTRUCTION EQUIPMENT

Activity	Pollutant Emissions (tons per year)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
2020						
Truck Trips	0.10	0.31	1.38	<0.01	1.36	0.35
Worker Commute	0.18	4.08	0.45	0.01	2.72	0.69
PV Phase 1: Site Preparation	0.44	2.18	3.74	0.01	0.16	0.07
PV Phase 2: PV System Installation	0.15	1.64	1.46	<0.01	0.02	0.02
2020 Total	***0.86***	***8.21***	***7.03***	***0.03***	***4.25***	***1.13***
2021						
Truck Trips	0.15	0.54	2.29	0.01	2.59	0.67
Worker Commute	0.21	0.29	0.04	<0.01	<0.01	<0.01
PV Phase 2: PV System Installation	0.50	6.46	5.43	0.02	0.06	0.06
PV Phase 3: Collection, Substation(s), Switching Station, Gen-Ties; Site Restoration and Revegetation	0.02	1.02	0.17	<0.01	0.01	<0.01
ESS Phase 1: Site Preparation	0.11	0.52	0.93	<0.01	0.03	0.01
ESS Phase 2: Foundations, Structures, and System	0.02	0.58	0.17	<0.01	<0.01	<0.01
ESS Phase 3: Inverters, Substation, and Connection	0.02	1.05	0.15	<0.01	<0.01	<0.01
2021 Total	***1.03***	***10.45***	***9.18***	***0.03***	***2.70***	***0.75***
Max Year Total	**1.03**	**10.45**	**9.18**	**0.03**	**4.25**	**1.13**
SJVAPCD Thresholds	10	100	10	27	15	15
Significant Impact?	*No*	*No*	*No*	*No*	*No*	*No*

Source: Modeling data is provided in Appendix C

As shown in Table 7.3-3, should all off-road, diesel powered 50 hp or greater construction equipment be Tier 4 standard, impacts to NO_x would be less than significant; however, the applicant has indicated that while it is likely that most or all of the off-road diesel-powered project construction equipment would meet this standard, it cannot guarantee that all off-road diesel-powered project construction equipment greater than 50 hp would meet USEPA-Certified Tier 4 emission standards. Mitigation Measure AQ-2 requires that if the equipment is unable to meet the required standard (Mitigation Measure AQ-1), the applicant shall enter into a VERA to reduce potentially significant impacts to a level of *less than significant*.

> **Mitigation Measure AQ-2: Voluntary Emissions Reduction Agreement.** If the applicant is unable to guarantee that all off-road diesel-powered construction equipment greater than 50 hp will meet Tier 4 emissions standards, then the project applicant will enter into a VERA with SJVAPCD to mitigate or reduce project emissions beyond the requirements of Rule 9510 through the payment of fees (on a per-ton basis) to SJVAPCD. The payment of fees will be made to SJVAPCD based on the fee schedule in the development mitigation contract and the amount of reduction necessary to offset project NO_x emissions below SJVAPCD thresholds.

With the proposed mitigation, construction of the proposed project would not conflict with or obstruct implementation of the applicable air quality plan, and potentially significant impacts would be reduced to a level of *less than significant*.

Operation

Evaluation of operational emissions is analyzed based on the increase of emissions from the proposed project, as discussed in the air quality assessment report prepared for the project (HELIX 2018, Appendix C). As illustrated in Table 7.3-4, the increase of daily maximum operational emissions related to the project would be low and well below the SJVAPCD significance criteria for all criteria pollutants and would not result in a significant direct impact related to operational emissions. Operation of the project would not conflict with or obstruct implementation of the applicable air quality plan. Impacts would be *less than significant* and no mitigation would be required.

TABLE 7.3-4
ANNUAL OPERATION EMISSIONS

Emission Source	Pollutant Emissions (tons per year)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Worker Commute	<0.01	0.05	0.01	<0.01	2.34	0.24
Water Trucks	<0.01	0.05	0.01	<0.01	4.78	0.52
Onsite Equipment	0.01	0.15	0.13	<0.01	0.01	0.01
Total	**0.02**	**0.25**	**0.15**	**<0.01**	**7.13**	**0.77**
SJVAPCD Thresholds	10	100	10	27	15	15
Significant Impact?	*No*	*No*	*No*	*No*	*No*	*No*

Source: Modeling data is provided in Appendix C

Decommissioning

Emissions resulting from decommissioning activities were estimated using the emission factors and methods described in the air quality assessment report prepared for the project (HELIX 2018, Appendix C). The calculations for proposed project decommissioning are shown in Table 7.3-5 below. Emissions are summed annually and presented for comparison with the SJVAPCD thresholds for construction activities (as shown in Table 7.3-1 above).

TABLE 7.3-5
ANNUAL DECOMMISSIONING EMISSIONS

Activity	Pollutant Emissions (tons per year)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Truck Trips	0.01	0.17	0.81	<0.01	1.78	0.44
Worker Commute	0.02	0.84	0.04	<0.01	1.55	0.39
Onsite Equipment	0.03	0.44	0.38	<0.01	0.01	<0.01
Total	**0.06**	**1.45**	**1.23**	**0.01**	**3.33**	**0.84**
SJVAPCD Thresholds	10	100	10	27	15	15
Significant Impact?	*No*	*No*	*No*	*No*	*No*	*No*

Source: Modeling data is provided in Appendix C

As shown in Table 7.3-5, annual emissions during decommissioning would be less than the SJVAPCD significance criteria for all criteria pollutants and would not result in a significant direct impact.

Decommissioning the project would not conflict or obstruct implementation of the applicable air quality plan. Impacts would be *less than significant* and no mitigation would be required.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact. The region where the proposed project would be built is designated as nonattainment for the ozone precursors, PM_{10} and $PM_{2.5}$. The SJVAPCD (2015) states that if project emissions exceed the significance thresholds for the criteria pollutants, then a project would have a project-level and cumulatively, significant impact. This does not imply that if the project is below all significant thresholds, it cannot be cumulatively significant.

The SJVAPCD significance thresholds for PM_{10} and $PM_{2.5}$, presented in Table 7.3-1, are each 15 tons per year, for construction and operational emissions. Tables 7.3-2 and 7.3-3 show that PM_{10} from project construction activities is the pollutant emitted in the greatest quantity. The maximum PM_{10} emission for the year would total 4.38 tons per year before the applicant's mitigation, and 4.25 tons per year after mitigation. Emission levels below the significance thresholds are not expected to cause exceedance of the air quality standards in the vicinity of the source, which is the area of highest concentrations. In the case of the project, because the construction emissions of PM_{10} before the applicant's mitigation are less than the significance thresholds, the ambient air concentrations would also be expected to be below the air quality standards in the vicinity of the source, decreasing even further with distance from the source.

However, in order to assess cumulative impacts, the significance of the incremental effects of the project was estimated in connection with the effects of past, current, and probable future projects within the same geographic area. A list of projects considered for the cumulative analysis was compiled using data provided by the CDA. The projects with a potential to generate emissions that would cumulate with those of the proposed project are all solar generation facilities, either under construction or operational.

Of the projects closest to the project site, the following may be under construction during the same timeframe as the proposed project; American Kings, Westlands Aquamarine, Daylight Solar, and Westlands Solar. Assuming construction activities from these projects would occur during the exact timeframe as the proposed project, the total construction emissions of PM_{10} could be estimated to be about 14.5 tons per year, which is below the significance threshold of 15 tons per year for a project's construction emissions. In addition, the significance thresholds have been designed to provide reference emission levels for the most conservative scenario, which is a single source. Emissions originating from multiple sources distributed over an area have substantially lower air quality impacts compared to a single source. Therefore, it can be reasonably inferred that the cumulative air quality impacts of PM_{10} emissions are expected to be well below the air quality standards and, therefore, would not result in a considerable net increase of PM_{10} levels in the region.

Operational emissions from the proposed project are lower than construction emissions and would cumulate with similar levels of operational emissions from a smaller number of projects compared to the projects under construction in the same area. Therefore, the cumulative impacts from operational emissions of PM_{10} would also be expected to be below the air quality thresholds and, therefore, would not result in a considerable net increase of PM_{10} levels in the region.

The project would not result in a cumulatively considerable net increase of any criteria pollutants for which the region is nonattainment and impacts under this criterion would be *less than significant* and no mitigation is required.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. Sensitive receptors are described as residences, schools, day-care centers, playgrounds, medical facilities, or other facilities that may house individuals with health conditions (medical patients or elderly persons/athletes/students/children) that may be adversely affected by changes in air quality. Impacts to sensitive receptors are typically analyzed for operational period CO hot spots and exposure to TACs. An analysis of the project's potential to expose sensitive receptors to these pollutants is provided below.

Carbon Monoxide Hot Spots

A CO hot spot is an area of localized CO pollution caused by severe vehicle congestion on major roadways, typically near intersections. A quantitative screening is required in two instances: (1) if a project increases the average delay at signalized intersections operating at Level of Service (LOS) E or F; or (2) if a project causes an intersection that would operate at LOS D or better without the project to operate at LOS E or F with the project. Based on the results of Traffic Impact Analysis prepared for the proposed project, with implementation of the recommended trip reduction measure of alternative worker schedules/shifts to eliminate peak-hour trips, the construction of the proposed project is not anticipated to create or exacerbate any significant impacts to the existing study area during any phase of construction, operation, or maintenance (HELIX 2018, Appendix C). Thus, the project would neither cause new severe congestion nor significantly worsen existing congestion. There would be no potential for a CO hot spot or exposure of sensitive receptors to substantial, project-generated, local CO emissions. The impact would be *less than significant,* and no mitigation is required.

Exposure to Toxic Air Contaminants

Construction activities would result in short-term, project-generated emissions of DPM from the exhaust of off-road, heavy-duty diesel equipment. CARB identified DPM as a TAC in 1998. Additionally, the Office of Environmental Health Hazard Assessment (OEHHA) has determined that chronic exposure to DPM can cause carcinogenic and non-carcinogenic health effects. The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer time period. According to the OEHHA, Health Risk Assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 30-year exposure; however, such assessments should be limited to the period/duration of activities associated with the project. As such, the exposure duration for the proposed project was set to the duration of the construction activity, approximately 14 months.

The USEPA's AERMOD dispersion model was used to estimate concentrations of DPM from the construction of the project. The emissions were represented in the model as an area source equal to the size of the project's construction area. An emission release height of 10 feet was also assumed. Receptor locations where construction impacts were calculated focused on residences located east and southeast of the project site (refer to Figure 2 for the locations of the residences). The sensitive receptor nearest to the project site is along Laurel Avenue, approximately 0.25 mile east of the project site. CARB's HARP2 model was then used to process the AERMOD results using OEHHA's recommended

methodology to provide estimates of cancer risk and chronic non-cancer health risk. The AERMOD and HARP2 model outputs are provided in Appendix C (HELIX 2018).

Table 7.3-6 provides the results of the health risk levels at the sensitive receptor nearest to the project site, along with the SJVAPCD's significance thresholds for cancer and non-cancer health risks (SJVAPCD 2016).

TABLE 7.3-6
HEALTH RISK LEVELS FROM PROJECT CONSTRUCTION AT CLOSEST SENSITIVE RECEPTOR (0.25-MILE EAST OF THE PROJECT SITE)

Metric	Dispersion Model Estimate[1]	SJVAPCD Significance Threshold	Exceeds Threshold?
Cancer Risk	1.60 in 1 million	10 in 1 million	*No*
Chronic Non-Cancer Hazard Index	0.00037	1.0	*No*

Source: Health Risk Assessment Modeling data is provided in Appendix C
[1] Computed at the maximally exposed individual

As shown in Table 7.3-6, the cancer risk is estimated to be 1.60 in one million and the hazard index is 0.00037. As such, the project would not exceed the significance thresholds for cancer risk and chronic non-cancer hazard. The impact would be *less than significant,* and no mitigation is required.

In terms of long-term operations, the proposed project does not include any new sources of TACs and therefore, would not generate substantial emissions of TACs.

Valley Fever

Ground disturbing activities during construction and decommissioning have the potential to expose workers to Valley Fever, which would be a potentially significant impact. Although the applicant includes standard practices to reduce fugitive dust in all of their projects, implementation of Mitigation Measure AQ-3 would be required to reduce impacts to a level of *less than significant*.

The following measure is prescribed to reduce exposure to Valley Fever.

> **Mitigation Measure AQ-3: Reduce Valley Fever Exposure.** In order to reduce exposure of the public and workers from Valley Fever spores during ground disturbing activities, the following measures shall be implemented during project construction and decommissioning:
>
> - Implement the Dust Control Plan required to be approved for the project by the San Joaquin Valley Air Pollution District under District Rule 8021 prior to ground disturbing activity.
>
> - When exposure to dust is unavoidable for workers who will be disturbing the top 2-12 inches of soil, provide workers with National Institute for Occupational Safety and Health-approved respiratory protection with particulate filters rated as N95, N99, N100, P100, or HEPA, as recommended in the California Department of Public Health publication "Preventing Work-Related Coccidioidomycosis (Valley Fever)."

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact. Project construction equipment and activities would generate odors. Primary construction odor sources include diesel exhaust emissions from equipment operating on site. There may be situations where construction activity odors would be noticeable by passersby, but these odors would not be unfamiliar or necessarily objectionable. The odors would be temporary and would dissipate rapidly from the source with an increase in distance. Therefore, the impacts would be short-term, would be detectable or noticeable to few people, and would be *less than significant*.

Land uses associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting activities, refineries, landfills, dairies, and fiberglass molding operations. The project does not include land uses typically associated with odor sources. Impacts associated with odor sources are considered *less than significant*.

7.3.3 References

CARB 2018 — California Air Resources Board (CARB) 2018. Area Designations: Activities and Maps. Available at: http://www.arb.ca.gov/desig/adm/adm.htm. Accessed April 2018.

CDC 2017 — Centers for Disease Control. 2017. Fungal Diseases – Valley Fever (Coccidioidomycosis). January. Available at: http://www.cdc.gov/fungal/diseases/coccidioidomycosis/index.html.

CDPH 2016 — California Department of Public Health (CDPH). 2016. Valley Fever Fact Sheet. September. Available at: http://www.cdph.ca.gov/HealthInfo/discond/Documents/VFGeneral.pdf

SJVAPD 2016 — San Joaquin Valley Air Pollution Control District (SJVAPCD). 2016. 2015 Annual Air Toxics Report. March 17. Available at: http://www.valleyair.org/busind/pto/Tox_Resources/2015_annual_toxics-report.pdf.

SJVAPD 2015 — San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. Final Draft – Guidance for Assessing and Mitigating Air Quality Impacts. March 19. Available at: http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf.

7.4 BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	■	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	☐	■
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	■	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	■	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	■
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■

This section is based on the RE Slate Solar Project Biological Resources Technical Report prepared for the project (HELIX 2018; Appendix D).

7.4.1 Environmental Setting

The project site is located within an agricultural region in western Kings County, California. Surrounding lands are primarily a mix of fallow and active agriculture. Other land uses in the project vicinity include solar PV generating facilities, wastewater treatment ponds, and the Kings River, which is used by the public for fishing, shooting, and other recreational activities. Crops grown in the area include cotton, alfalfa, pomegranates, safflower, tomatoes, melons, and wheat. The closest towns/development centers are NAS Lemoore approximately 0.25 mile northwest of the site and the town of Stratford approximately 2.0 miles to the east of the site.

The project site is in the Tulare Lake Basin, which was drained beginning in the late 19th Century, and there is little to no natural topographic relief in the site or the surrounding area outside of the Kings River. Elevations in the site range from approximately 195 to 215 feet amsl.

Soils in the project site are partially drained clays in 5 soil mapping units (NRCS 2018): Gepford clay, Lethent clay loam, Pitco clay, Tulare clay, and Tulare variant clay. These soils are described as alluvium derived from igneous and sedimentary rock, with depths of around 0 inches to the water table. All except Lethent clay loam have depths of greater than 80 inches to a restrictive layer; Lethent clay loam is described as having a natric (saline) restrictive layer at depths of 4-8 inches. All 5 soils are considered farmland of statewide importance.

Hydrology on the site is currently managed for agriculture by WWD. WWD receives water from San Luis Reservoir under contract from the Central Valley Project, and from wells on lands in the district. Since the closure of the Westlands drain in the early 1980s, irrigation runoff in the Westlands region has been treated in detention basins and does not leave the Westlands region. Irrigation water is not currently applied to any part of the project site; some portions are used as dry pasture, and the majority is fallow. The only current source of water for the project site is direct precipitation; groundwater is exported from the site via wells and canals.

Methods

Studies conducted to evaluate potential impacts to biological resources included a literature review to identify sensitive biological resources and/or special-status species with the potential to occur on or in the vicinity of the project site, as well as numerous biological field surveys to document baseline conditions and special-status species and/or their habitats on the site. Field surveys included biological reconnaissance surveys, protocol surveys for Swainson's hawk (*Buteo swainsoni*), burrowing owl (*Athene cunicularia*), and San Joaquin kit fox (*Vulpes macrotus mutica*), and habitat assessments for Tipton's kangaroo rat (*Dipodomys nitratoides nitratoides*), blunt-nosed leopard lizard (*Gambelia sila*), and Buena Vista Lake ornate shrew (*Sorex ornatus relictus*). These methods are presented in the following sections.

Literature Review

The most current available lists of special-status species known to occur and/or having the potential to occur in the project region were reviewed to determine their potential to occur on the project site or otherwise be affected by project-related activities.

For the purposes of this analysis, special-status species are defined as those species meeting one or more of the following criteria:

- Listed as Threatened or Endangered under the Federal Endangered Species Act (FESA);
- Listed as Threatened or Endangered under the California Endangered Species Act (CESA);
- Under review for listing under FESA or CESA (Candidate);
- "Fully Protected" under California Fish and Game Code Section 3511, 4700, 5050, or 5515 (FP);
- Included on the list of Species of Special Concern by the California Department of Fish and Wildlife (CDFW; SSC);

- Included on the Watch List of species that may qualify as a Species of Special Concern by the CDFW (WL), or

- Having a California Rare Plant Rank of 1A (presumed extinct in California and rare elsewhere), 1B (rare in California and elsewhere), 2A (presumed extinct in California but more common elsewhere), or 2B (rare in California but more common elsewhere).

The following databases were reviewed:

- The Sacramento Fish and Wildlife Office list of threatened and endangered species that may occur in the project site and/or may be affected by the project (USFWS 2018).

- The California Native Plant Society (CNPS) list of special-status plants documented in the "Calflax", "Vanguard", "Lemoore", "Hanford", "Huron", "Westhaven", "Stratford", "Guernsey", "La Cima", "Kettleman City", "Stratford SE", and "El Rico Ranch" 7.5-minute quads (CNPS 2018).

- The California Natural Diversity Database (CNDDB; CDFW 2019) list of special-status species documented within 10 miles of the project site.

- The U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2018).

- The U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper.

- The USFWS National Wetlands Inventory Online Mapper.

Field Surveys

Biological surveys conducted at the project site included general reconnaissance surveys, habitat mapping, botanical and wildlife inventories, and focused surveys and studies for special-status species. These surveys are described briefly below; detailed descriptions of methods and results are provided in Appendix D.

Biological Reconnaissance Surveys

Biological reconnaissance surveys of the entire project site were conducted by HELIX biologists on April 13 through 15, and April 19, 2016, and April 2 through 6, 2018. Reconnaissance surveys included habitat mapping, botanical and wildlife inventories, and general habitat assessments for burrowing owl, Swainson's hawk, blunt-nosed leopard lizard, San Joaquin kit fox, and Buena Vista Lake ornate shrew. The biological reconnaissance surveys were conducted by car and on foot and included lands within 250 feet of the project boundary.

Focused Special-Status Species Surveys and Habitat Assessments

Protocol-level surveys were conducted between April 2016 and July 2018 for burrowing owl, San Joaquin kit fox, and Swainson's hawk; the timing of each of these surveys is provided in the following sections. Focused habitat assessments were conducted for San Joaquin kit fox, Tipton's kangaroo rat, blunt-nosed leopard lizard, and Buena Vista Lake ornate shrew also during this timeframe. Protocol

survey and habitat assessment reports for each of these species are included as appendices to the Biological Resources Technical Report (Appendix D).

Burrowing Owl

Protocol surveys for burrowing owl were conducted by HELIX biologists on four occasions during the breeding season in 2016 and again in 2018, according to the latest published protocols (CDFW 2012). Each survey comprised 3-4 survey sessions because of the large extent of suitable habitat in the project site. Surveys were conducted by a combination of windshield survey and pedestrian transects, with pedestrian transects focusing on areas of suitable nesting habitat such as canal banks, road berms, and field margins. The entire site was surveyed with the aid of binoculars, and surveys achieved 100-percent visual coverage of the entire site on each occasion. Details of surveys dates and times, as well as results are provided as Appendix K to the Biological Resources Technical Report (Appendix D).

In addition to protocol burrowing owl surveys, numerous biological surveys were conducted that also searched for subterranean holes in use by animals and opportunistically noted species of biological interest on the site. Closely-spaced pedestrian transects were conducted of the entire site for San Joaquin kit fox protocol surveys. During the San Joaquin kit fox transect surveys, the biologists also searched for burrowing owl dens and dens of other subterranean animals such as kangaroo rat, and potentially suitable burrows were noted opportunistically and inspected for signs of occupancy by burrowing owl. Approximately 20 camera stations were also established on the site as part of the San Joaquin kit fox surveys. All photos taken at the camera stations were reviewed for burrowing owl or other special-status species.

Swainson's Hawk

Protocol surveys for Swainson's hawk were conducted by HELIX biologists during the breeding season in 2018, according to the latest published protocol (SHTAC 2000). The initial survey included an assessment of suitable nesting habitat within 0.5-mile of the project site, and subsequent surveys focused on habitat identified in the initial assessment. Surveys consisted of "sit and wait" observations of suitable nesting habitat through binoculars and spotting scopes for presence of Swainson's hawks during morning and evening hours as prescribed in the protocol, as well as documenting observations of Swainson's hawks seen soaring or perching in or near the site at other times of day. Details of surveys dates and times, as well as results are provided as Appendix F to the Biological Resources Technical Report (Appendix D).

San Joaquin Kit Fox

Surveys for San Joaquin kit fox began with an Early Evaluation (habitat assessment) conducted by HELIX in accordance with USFWS protocol (USFWS 1999). A search of the CNDDB was conducted in May 2016 to identify records of San Joaquin kit fox within 10 miles of the project site. The USFWS was also contacted to request any records not included in the CNDDB. The project site was generally surveyed and assessed for suitable kit fox habitat and signs of occupancy during all biological surveys conducted between April 13 and June 3, 2016, including site reconnaissance, vegetation mapping and species inventories, jurisdictional delineation, and during outside-survey window hours on burrowing owl survey visits. A report of the Early Evaluation findings was submitted to the USFWS on June 7, 2016 (Appendix G to the Biological Technical Report [Appendix D]). Following discussions with USFWS, a decision was made to conduct protocol surveys for San Joaquin kit fox.

Protocol field surveys for San Joaquin kit fox were conducted by Californian Environmental Services in August 2016 including transects of the entire site, installation and monitoring of camera/scent stations, and spotlighting of the project site and a 2-mile radius. Details of the survey methods and results are provided in Appendix G to the Biological Technical Report (Appendix D).

HELIX biologists updated the San Joaquin kit fox habitat assessment in April 2018, using pedestrian transects of all canal berms, roadsides, and fields to achieve 100-percent visual coverage of the ground surface in the project site. All burrows of suitable size for San Joaquin kit fox were inspected for evidence of occupancy.

Other Habitat Assessments

Habitat assessments were conducted for Tipton's kangaroo rat and blunt-nosed leopard lizard by Californian Environmental Services. HELIX biologists conducted a habitat assessment for Buena Vista Lake ornate shrew. These reports are appendices to the Biological Technical Report (Appendix D).

Assessment of Wetlands and Other Waters

An assessment was conducted by HELIX on May 25-26, June 2-3, and June 16-17, 2016 in order to determine if waters of the U.S. or waters of the State were present on the project site. The presence/absence of wetlands was determined based on the U.S. Army Corps of Engineers (USACE) three parameter method described in the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0*; USACE 2008). Seven sample points were taken in the project site. Other USACE regulations were used to determine the presence/absence of potentially jurisdictional non-wetland waters in the project site such as the definition of waters of the United States (see 33 CFR 328.3(a)), Supreme Court decisions (e.g., SWANCC and Rapanos), or by other regulation (for further information see the Biological Technical Report [Appendix D]). Aquatic resources in the project site were also evaluated for their potential to qualify as waters of the State subject to RWQCB jurisdiction and/or CDFW jurisdiction. An Aquatic Resources Delineation Map for the project is included as Appendix L of the Biological Technical Report (Appendix D).

General Site Characteristics

Natural Communities

Two biological habitats/land cover types are present in the project site: agricultural land and canals. Both of these habitats/land cover types are characterized by high levels of human disturbance. No special-status natural communities occur in the project site.

Agricultural land comprises the vast majority of the site's land cover and includes fallow and grazed fields, as well as dirt driveways and field margins. Agricultural fields on the site show evidence of past cultivation, including furrows, remnant crop species, and fragments of irrigation hose, but are heavily dominated by weedy non-crop species such as tumble mustard, lamb's quarters, and Mediterranean canary grass. Actively used dirt driveways are generally graded and bare, while unused driveways are mostly overgrown with the same vegetation found in the adjacent fields. Some fields in the project site were intensively grazed by cattle and sheep in 2016, 2017, and 2018.

The project site is divided into distinct sections by active and inactive (dry) irrigation canals and ditches. Vegetation in dry canals is similar to the weedy upland vegetation in adjacent fields; active canals support patches of emergent marsh vegetation that are subject to periodic removal by Westlands Water District.

Active canals carry groundwater pumped from wells located in the project site into off-site canals (to the south) that are part of the regional irrigation system. Active canals on the site are dredged and cleared of vegetation regularly to maintain water-carrying capacity. Active canals support small patches of adventitious freshwater marsh vegetation dominated by cattail (*Typha latifolia*) and tule (*Schoenoplectus acutus*), as well as a narrow band of wetland species such as tall flatsedge (C*yperus eragrostis*), Baltic rush (*Juncus balticus* ssp. *Ater*), saltgrass (*Distichlis spicata*), and barnyard grass (*Echinochloa crus-galli*) at the water line. Because the canals are cleared of vegetation regularly this wetland vegetation was not mapped separately from the canals or considered a separate biological community.

Special-status Species

Database searches and field surveys identified six regionally-occurring special-status species with potential to occur in the project site based on habitat requirements and species ranges (Table 7.4-1). The analysis of regionally-occurring special-status species with the potential to occur in the project site is documented in the Biological Technical Report (Appendix D).

TABLE 7.4-1
SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR

Scientific Name Common Name	Regulatory Status[1]	Status in the Project Site[2]	Suitable Habitat in the Project Site
Birds			
Athene cunicularia burrowing owl	--/--/SSC	Present (foraging)	The project site provides foraging habitat and potential nesting habitat for burrowing owl. A single non-breeding resident burrowing owl was observed in the project site during protocol surveys in 2018. Transient individuals and sign have been observed in the site at various locations since 2016. A breeding pair was observed at a location immediately adjacent to the southern boundary of the site in 2015.
Buteo swainsoni Swainson's hawk	--/ST/--	May occur (foraging)	No nesting habitat for Swainson's hawk is present in or directly adjacent to the project site. Fields provide low-quality foraging habitat for individuals nesting in trees within 10 miles of the project site.
Circus cyaneus northern harrier	--/--/SSC	Present (foraging)	No nesting habitat for northern harrier is present in the project site. Fields provide suitable foraging habitat for individuals nesting in off-site wetland habitat.

TABLE 7.4-1 (cont.)
SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR

Scientific Name Common Name	Regulatory Status[1]	Status in the Project Site[2]	Suitable Habitat in the Project Site
Birds (cont.)			
Eremophila alpestris actia California horned lark	--/--/WL	Present (nesting and foraging)	Disturbed areas along roads and field margins provide suitable foraging and nesting habitat. This species was observed in the project site and was presumed nesting.
Lanius ludovicianus loggerhead shrike	--/--/SSC	Present (nesting and foraging)	Fields with Russian thistle provide suitable nesting and foraging habitat. This species was observed in the project site and was likely nesting.
Mammals			
Vulpes macrotis mutica San Joaquin kit fox	FE/SE/--	Presumed absent	Marginal denning habitat is present along canal banks and road berms and the site provides suitable foraging and dispersal habitat. However, this species was not observed in the project site or within a two-mile radius during protocol surveys.

[1] Regulatory Status is ESA listing/CESA listing/Other state status. FE=Federal Endangered; SE=State Endangered; ST=State Threatened; FC=Federal Candidate; SC=State Candidate; SSC=Species of Special Concern; WL=Watch-list.
[2] Status in the Project Site is based on results of surveys and CNDDB reported occurrences.

Regulatory Setting

Policies, regulations, and plans pertaining to the protection of biological resources in the project site are summarized in the following sections.

Federal Requirements

Federal Endangered Species Act

The USFWS enforces the provisions stipulated within the FESA of 1973 (16 United States Code [USC] 1531 *et seq*.). Species identified as federally threatened or endangered (50 CFR 17.11, and 17.12) are protected from take, defined as direct or indirect harm, unless a Section 10 permit is granted to an entity other than a federal agency or a Biological Opinion with incidental take provisions is rendered to a federal lead agency via a Section 7 consultation. Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally-listed species may be present in the study area and determine whether the proposed project would jeopardize the continued existence of or result in the destruction or adverse modification of critical habitat of such species (16 USC 1536 (a)[3], [4]).

Migratory Bird Treaty Act

Under the Migratory Bird Treaty Act of 1918 (16 USC 703-712; MBTA), migratory bird species and their nests and eggs are protected from intentional take; these species are listed at 50 CFR 10.13. Take that is incidental to an otherwise lawful action not intended for the purpose of taking birds is not prohibited by the MBTA (*Seattle Audubon Soc'y v. Evans,* 952 F.2d 297, 302 [9th Cir. 1991]).

State Requirements

California Endangered Species Act

The CESA (California Fish and Game Code Sections 2050 to 2097) is similar to the FESA. The California Fish and Wildlife Commission is responsible for maintaining lists of threatened and endangered species under CESA. CESA prohibits the take of listed and candidate (petitioned to be listed) species. "Take" under California law means to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch capture, or kill (California Fish and Game Code, Section 86). The CDFW can authorize take of a state-listed species under Section 2081 of the California Fish and Game Code if the take is incidental to an otherwise lawful activity, the impacts are minimized and fully mitigated, funding is ensured to implement and monitor mitigation measures, and CDFW determines that issuance would not jeopardize the continued existence of the species. A CESA permit must be obtained if a project would result in the "take" of listed species, either during construction or over the life of the project. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of the FESA, CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

California Code of Regulations Title 14 and California Fish and Game Code

The official listing of endangered and threatened animals and plants is contained in the California Code of Regulations (CCR) Title 14 Section 670.5. A state candidate species is one that the California Fish and Game Code has formally noticed as being under review by CDFW to include in the state list pursuant to Sections 2074.2 and 2075.5 of the California Fish and Game Code.

Legal protection is also provided for wildlife species in California that are identified as "fully protected animals." These species are protected under Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species at any time. CDFW is unable to authorize incidental take of fully protected species unless any such take authorization is issued in conjunction with the approval of a Natural Community Conservation Plan that covers the fully protected species (California Fish and Game Code Section 2835).

California Environmental Quality Act

Under CEQA (PRC Section 21000 *et seq*.), lead agencies analyze whether projects would have a substantial adverse effect on a candidate, sensitive, or special-status species (PRC Section 21001(c)). These "special-status" species generally include those listed under FESA and CESA, and species that are not currently protected by statute or regulation, but would be considered rare, threatened, or endangered under the criteria included State CEQA Guidelines Section 15380. Therefore, species that are considered rare are addressed under CEQA regardless of whether they are afforded protection through any other statute or regulation. The CNPS inventories the native flora of California and ranks species according to rarity; plants ranked as 1A, 1B, 2A and 2B are generally considered special-status species under CEQA.[3]

[3] The California Rare Plant Rank system can be found online at: http://www.cnps.org/cnps/rareplants/ranking.php

Although threatened and endangered species are protected by specific federal and state statutes, State CEQA Guidelines Section 15380(d) provides that a species not listed on the federal or state list of protected species may be considered rare if it can be shown to meet certain specified criteria. These criteria have been modeled after the definition in FESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals. Section 15380(d) allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the USFWS or CDFW (i.e., candidate species) would occur.

California Native Plant Protection Act

The California Native Plant Protection Act of 1977 (California Fish and Game Code Sections 1900-1913) requires all state agencies to use their authority to carry out programs to conserve endangered and otherwise rare species of native plants. Provisions of the act prohibit the taking of listed plants from the wild and require notification of CDFW at least 10 days in advance of any change in land use (other than changing from one agricultural use to another), which allows CDFW to salvage listed plants that would otherwise be destroyed.

Nesting Birds

California Fish and Game Code Subsections 3503 and 3800 prohibit the possession, take, or needless destruction of birds, their nests, and eggs, and the salvage of dead nongame birds. California Fish and Game Code Subsection 3503.5 protects all birds in the orders of Falconiformes and Strigiformes (birds of prey).

California Food and Agriculture Code Section 403

This section directs the California Department of Food and Agriculture (CDFA) to prevent the introduction and spread of injurious pests including noxious weeds.

CDFA Code Section 7271 designates the CDFA as the lead department in noxious weed management responsible for implementing state laws concerning noxious weeds. Representing a statewide program, noxious weed management laws and regulations are enforced locally in cooperation with the County Agricultural Commissioner.

Under state law, noxious weeds include any species of plant that is, or is liable to be, troublesome, aggressive, intrusive, detrimental, or destructive to agriculture, silviculture, or important native species, and difficult to control or eradicate, which the director, by regulation, designates to be a noxious weed (CDFA Code Section 5004).

Local Plans and Policies

2035 General Plan

The 2035 General Plan outlines several policies intended for the protection of biological resources County-wide, including the following, which apply to the project:

Policy D1.1.1: Evaluate all discretionary land use applications in accordance with the screening procedures contained in the Biological Resources Survey located in Appendix C. If the results of the project screening indicate the potential for important biological resources to exist on the site a biological evaluation (consistent with Appendix C) shall be performed by a qualified biologist. If the

evaluation indicates that the project could have a significant adverse impact, mitigation shall be required or the project would be redesigned to avoid such impacts. Mitigation shall be provided consistent with CEQA, and applicable state and federal guidelines as appropriate. Mitigation may include habitat improvement or protection, acquisition of other habitat, or payment to an appropriate agency to purchase, improve, or protect such habitat.

Policy D1.1.2: Require project applicants to consult with the California Department of Fish and Game and the USFWS and to obtain appropriate authority for any such take pursuant to Endangered Species Act requirements if new development or other actions are likely to result in incidental take of any threatened or endangered species.

Policy D2.1.1: Follow state and federal guidelines for the protection of natural wetlands. Require developers to obtain authorization from the appropriate local, state, or federal agency prior to commencement of any wetland fill activities.

Policy D2.1.2: Use the CEQA process to assess wetland resources and require mitigation measures for development which could adversely impact a designated wetland.

Policy D2.1.3: “Prior Converted Croplands” as defined by state and federal regulations shall be exempt from consideration as wetlands under the County planning process.

Policy D3.1.1: Designate the Kings River as a resource conservation area, implemented by use of the Natural Resource Conservation overlay zone district.

Policy D3.1.2: Encourage the Kings River Conservation District to avoid substantial alteration of the Kings River channel and its riparian vegetation, consistent with their flood control responsibilities.

Policy D3.1.3: Evaluate the potential impact on the riparian environment of proposed development adjacent to the Kings River, beyond the boundaries of the designated floodway. Conservation of fish and wildlife habitat and protection of scenic qualities should be the guiding principle.

Policy D3.1.4: Prohibit development within riparian environments over which the County has jurisdiction. However, allow or consider for approval if it is determined that significant disturbance of the riparian environment would not occur, the following passive uses or activities:

- Streamside maintenance and repair for mandated flood control or water delivery purposes, facilities, and equipment;
- Road and utility line crossings;
- Grazing and similar agricultural production activities not involving structures or cultivation;
- Vegetation removal for integrated pest management programs under guidelines;
- Passive recreational uses such as riverside parks and bikeways.

Policy D3.1.5: Refer all discretionary permit applications for projects along the Kings River and Cross Creek to the appropriate local, state, and federal agencies for review and approval.

Policy E1.1.1: Complete the inquiry process outlined in Appendix C in the initial project review for development permits to determine whether the project is likely to have a significant adverse impact on any threatened or endangered species habitat locations, and to assure appropriate consideration of habitat preservation by development. Maintain current copies of California Department of Fish and Game and USFWS maps showing locations of known threatened and endangered species habitat. If shown to be necessary, require the developer to consult with the California Department of Fish and Game, the USFWS, and the USACE as to potential impacts, appropriate mitigation measures, and required permits.

Policy E1.1.2: Require as a primary objective in the review of development projects the preservation of healthy native oaks and other healthy native trees.

Policy E1.1.3: Maintain to the maximum extent practical the natural plant communities utilized as habitat by threatened and endangered species.

Jurisdictional Waters

Federal Requirements

Any person, firm, or agency planning to alter or work in "waters of the U.S.," including the discharge of dredged or fill material, must first obtain authorization from the USACE under Section 404 of the Clean Water Act (CWA; 33 USC 1344). Permits, licenses, variances, or similar authorization may also be required by other federal, state, and local statutes. Section 10 of the Rivers and Harbors Act prohibits the obstruction or alteration of navigable waters of the U.S. without a permit from USACE (33 USC 403).

Waters of the U.S. are defined as: all waters used in interstate or foreign commerce; all interstate waters including interstate wetlands; all other waters such as intrastate lakes, rivers, streams, mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, where the use, degradation, or destruction of which could affect interstate commerce; impoundments of these waters; tributaries of these waters; or wetlands adjacent to these waters (33 CFR Part 328). With non-tidal waters, in the absence of adjacent wetlands, the extent of USACE jurisdiction extends to the ordinary high water mark – the line on the shore established by fluctuations of water and indicated by a clear, natural line impressed on the bank, shelving, changes in soil character, destruction of terrestrial vegetation, or the presence of litter and debris. Wetlands are defined in 33 CFR Part 328 as:

> "those areas that are inundated or saturated by surface or ground water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

Federal and state regulations pertaining to waters of the U.S., including wetlands, are discussed below.

Clean Water Act (33 USC 1251-1376). The CWA provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.

Section 401 requires that an applicant for a federal license or permit that allows activities resulting in a discharge to waters of the U.S. must obtain a state certification that the discharge complies with other provisions of CWA. The California RWQCB administers the certification program in California and may require State Water Quality Certification before other permits are issued.

Section 402 establishes a permitting system for the discharge of any pollutant (except dredged or fill material) into waters of the U.S.

Section 404 establishes a permit program administered by USACE that regulates the discharge of dredged or fill material into waters of the U.S. (including wetlands). Implementing regulations by USACE are found at 33 CFR Parts 320-332. The Section 404 (b)(1) Guidelines were developed by the USEPA in conjunction with USACE (40 CFR Part 230), allowing the discharge of dredged or fill material for non-water dependent uses into special aquatic sites only if there is no practicable alternative that would have less adverse impacts.

State Requirements

Porter-Cologne Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act, Water Code Section 13000 *et seq*.) is California's statutory authority for the protection of water quality in conjunction with the federal CWA. The Porter-Cologne Act requires the State Water Resources Control Board and RWQCBs under the CWA to adopt and periodically update water quality control plans, or basin plans. Basin plans are plans in which beneficial uses, water quality objectives, and implementation programs are established for each of the nine regions in California. The Porter-Cologne Act also requires dischargers of pollutants or dredged or fill material to notify the RWQCBs of such activities by filing Reports of Waste Discharge and authorizes the State Water Resources Control Board and RWQCBs to issue and enforce waste discharge requirements, NPDES permits, Section 401 water quality certifications, or other approvals.

California Fish and Game Code Section 1602 – Lake and Streambed Alteration Program

Diversions or obstructions of the natural flow of, or substantial changes or use of material from the bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by CDFW, pursuant to Section 1602 of the California Fish and Game Code. The CDFW requires notification prior to commencement of any such activities, and a Lake and Streambed Alteration Agreement pursuant to Fish and Game Code Sections 1601-1603, if the activity may substantially adversely affect an existing fish and wildlife resource. A lake under CDFW jurisdiction is defined as "a permanent natural body of water of any size or an artificially impounded body of water of at least one acre, isolated from the sea, and having an area of open water of sufficient depth and permanency to prevent complete coverage by rooted aquatic plants" (CCR Vol. 18 Title 14, Section 1562.1). Streambeds within CDFW jurisdiction are based on the definition of a stream as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supporting fish or other aquatic life" (CCR Vol. 18 Title 14, Section 1.72).

7.4.2 Environmental Evaluation of Biological Resources

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less Than Significant Impact with Mitigation. The proposed project has potential for substantial adverse effects on special-status species. These impacts would be reduced to *less than significant* by implementation of the mitigation measures provided in this section.

Special-status Plants and Sensitive Vegetation Communities

The project site lacks habitat for special-status plant species due to the historic and ongoing agricultural uses. A complete botanical inventory of the site was conducted during the numerous biological surveys and no special-status plant species were observed. Of the 37 plant species observed in the project site, 20 are non-native species, 17 are native species and none are special-status. Because special-status plant species are absent from the site, the proposed project would not result in significant impacts to special-status plant species and no mitigation is required.

Special-status Wildlife

Special-status Birds

Burrowing Owl

Burrowing owl is a CDFW Species of Special Concern and is protected by special protocols (CDFW 2012). Burrowing owls are often found in open, dry grasslands, agricultural and range lands, disturbed areas, and desert habitats. Burrowing owls nest in burrows in the ground and commonly perch on fence posts or mounds near the burrow. The owls often use ground squirrel burrows or artificial burrows such as abandoned pipes or culverts. The entire project site provides potential foraging habitat for burrowing owl, and mammal burrows along roads and canals throughout the site provide potential nesting habitat.

Burrowing owl was observed in the project site during protocol-level focused surveys conducted in 2018 as well as during other biological surveys conducted for the project (see Figure 6 in Appendix D). A single, non-breeding burrowing owl was consistently observed perching on the fence line along the southern boundary of the project site, occupying burrows at the base of fence posts. This individual was observed during all surveys until late May, after which time it was not seen. A second transient owl was observed once at the western edge of the site along Avenal Cutoff Road; this individual flew off-site to the west and was not seen again. A pedestrian survey of the area found no burrows with sign of recent occupancy by burrowing owl.

Individual transient burrowing owls have been observed at various times throughout the project site during other surveys, and sign of burrowing owl such as pellets and whitewash is present at well heads and burrows in the site. Breeding owls were present outside of the project site at a location immediately adjacent to the southern boundary of the site and these owls foraged in the project site. This evidence suggests that most of the project site is used by burrowing owl for non-breeding residency or dispersal, and that suitable habitat for breeding is present.

In the absence of proposed mitigation measures, potential adverse effects of the proposed project on burrowing owl during construction and decommissioning could include harm to individual burrowing owls, nest disturbance/loss of occupied burrows, and temporary direct loss of foraging habitat to grading, equipment staging, and temporary structures. If dispersing or transient burrowing owl were to occupy mammal burrow(s) in the project site prior to construction of the project or decommissioning, project activities could result in direct impacts to burrowing owl individuals through harm as a result of contact with construction equipment or personnel and/or indirect impacts as a result of habitat destruction or loss of burrows.

Construction of the proposed project would also result in temporary loss of foraging habitat for burrowing owl through noise, vibration, and the presence of construction equipment and personnel.

Project construction activities would include access driveway construction, trenching for low-voltage collection lines, boring for support posts, and installation of solar panel arrays. These construction activities, as well as decommissioning activities, would be considered low-intensity impacts because the construction disturbance (noise, presence of equipment and personnel) would be comparable in nature to the agricultural practices in the region. Operation of the proposed project would not disrupt burrowing owl breeding or foraging in the site, as conditions in the active solar facility would be suitable for burrowing owl occupancy and foraging (i.e., grassland vegetation, undisturbed soils, rodent burrows, prey, suitable perches, and low levels of noise and human presence). There is abundant foraging habitat in the surrounding project area, therefore, temporary loss of foraging habitat for transient burrowing owls would be less than significant. Loss of habitat for breeding pairs that may be relocated would be mitigated by establishment of compensatory habitat as described under Mitigation Measure BIO-1d below.

Implementation of Mitigation Measures BIO-1a, BIO-1b, BIO-1c, BIO-1d, and BIO-1e would reduce the potential for project impacts to nesting burrowing owl to *less than significant*.

> **Mitigation Measure BIO-1a: Avoid Construction- and Decommissioning-related Disturbances During Burrowing Owl Nesting Season.** Construction- and decommissioning-related ground disturbance activities shall begin outside of the burrowing owl nesting season (February 1 through August 31) unless reasonably necessary to stay on schedule, and the site shall be maintained in a manner that is inhospitable to burrowing owl by using methods such as ground squirrel control (the use of poison baits or other substances that could be potentially harmful to San Joaquin kit fox will not be allowed per Mitigation Measure BIO-3c) and maintaining regular site disturbance by construction equipment and personnel. This will discourage burrowing owl from occupying the project site during construction.
>
> **Mitigation Measure BIO-1b: Burrowing Owl Take Avoidance Survey.** No more than 14 days prior to initiation of ground disturbing activities for construction or decommissioning, a qualified biologist shall conduct a Take Avoidance survey of the project site and surrounding areas to a distance of 150 meters in accordance with the methods outlined in the CDFW Staff Report on Burrowing Owl Mitigation (2012) or most recently adopted guidance. The pre-construction survey will cover all areas within 150 meters of the portion of the site in which construction/decommissioning is scheduled to start. Surveys will be phased based on the construction/decommissioning schedule such that the surveys are conducted no more than 14 days ahead of the start of ground disturbance in new areas. If construction/ decommissioning activities in portions of the site cease for a period of 14 days, those portions of the site will be resurveyed for burrowing owls prior to the resumption of construction/decommissioning activities. If no occupied breeding or wintering owl burrows are identified, no further mitigation will be required. If occupied burrows are identified on the site or within 150 meters of the project disturbance area, one of the following actions shall be taken: 1) permanent avoidance of the burrow or 2) establishment of a temporary avoidance buffer followed by passive relocation and compensatory mitigation for loss of habitat in conjunction with the measures below:
>
> - If an occupied wintering burrow is discovered during pre-construction surveys, a 50-meter buffer area will be established around the burrow until the owl leaves on its own (if the burrow is more than 50 meters offsite and/or more than 50 meters from the work area, no buffer is necessary). Ground-disturbing work conducted during the nonbreeding (winter) season (September 1 to January 31) can proceed near the occupied burrow so long as the

work occurs no closer than 50 meters to the burrow, and the burrow is not directly affected by the project activity. A smaller buffer may be established in consultation with CDFW and monitored at the discretion of a qualified biologist. If the 50-meter buffer cannot be maintained for the duration of occupancy by the owl, owls may be excluded from an occupied wintering burrow in accordance with the conditions of a Burrowing Owl Exclusion Plan, which will be submitted for approval by CDFW prior to passive relocation of any burrowing owls.

- If an occupied nesting burrow is discovered during pre-construction surveys, an avoidance buffer of 200 meters shall be established around the burrow location and maintained until a qualified biologist has determined that the nest has fledged or is no longer active (a 200-meter avoidance buffer is appropriate for low-intensity impacts near nesting burrows during breeding season [CDFW 2012]). No project activities shall take place within the 200-meter buffer during the time in which it is in place. A smaller buffer may be established in consultation with CDFW and monitored at the discretion of a qualified biologist.

- If an occupied nest burrow cannot be avoided, and the burrow is not actively in use as a nest, a 200-meter buffer will be established until the burrowing owls can be excluded from burrows in accordance with a Burrowing Owl Exclusion Plan, which will be submitted for approval by CDFW prior to passive relocation of any burrowing owls. The Burrowing Owl Exclusion Plan shall be based on the recommendations made in the Staff Report on Burrowing Owl Mitigation (CDFW 2012) or most recently adopted guidance and shall include the following information for each proposed passive relocation:

    - Confirmation by site surveillance that the burrow(s) is empty of burrowing owls and other species;

    - Type of scope to be used and appropriate timing of scoping;

    - Occupancy factors to look for and what shall guide determination of vacancy and excavation timing;

    - Methods for burrow excavation;

    - Removal of other potential owl burrow surrogates or refugia on-site;

    - Methods for photographic documentation of the excavation and closure of the burrow;

    - Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take;

    - Methods for assuring the impacted site shall continually be made inhospitable to burrowing owls and fossorial mammals.

Mitigation Measure BIO-1c: Off-Site Burrowing Owls. If an occupied burrow is identified off-site within 150 meters of the project disturbance area and passive exclusion is deemed necessary to protect the owls, burrowing owls may be excluded from burrows if permission is granted by the land owner and in accordance with the Burrowing Owl Exclusion Plan, which will be submitted for approval by CDFW prior to passive relocation of any burrowing owls. If burrowing owls

cannot be excluded from an off-site burrow and it is not feasible to maintain an avoidance buffer as stated above, coordination will be conducted with CDFW to determine appropriate measures to minimize impacts to off-site burrowing owls. Such measures could include, but are not limited to: (1) installation of barriers between the construction or decommissioning area and the occupied burrows to block noise and views of construction or decommissioning equipment and personnel, and (2) regular monitoring by a qualified biologist to determine if construction or decommissioning activities are resulting in disturbance of the owls that could lead to nest abandonment or harm to adult owls or their young. If such disturbance was occurring, the biological monitor will have the authority to halt construction or decommissioning activities until further modifications could be made to avoid disturbance of the owls.

Mitigation Measure BIO-1d: Compensatory Mitigation for Lost Breeding Habitat. If burrowing owl pairs are passively relocated, compensatory mitigation for lost wintering/breeding habitat shall be provided either through dedication of 6 acres of suitable habitat (per pair of relocated owls) off-site in accordance with the conditions of a Burrowing Owl Exclusion Plan, or through purchase of credits at a CDFW-approved mitigation bank in the region. The service area of the Kern Water Bank Authority Mitigation Bank includes the project site in Kings County, and burrowing owl mitigation credits are available. No compensatory mitigation is required for passive relocation or eviction of transient, unpaired owls.

Mitigation Measure BIO-1e: Management of Permanent Avoidance Buffers. If permanent avoidance buffers are established, such areas shall be managed for the duration of the project to preserve current values as foraging habitat for burrowing owl. Management shall include: (1) exclusion of all project activities throughout the construction, operation, and decommissioning phases, including staging, parking, driving, or dumping; (2) vegetation management by grazing or mowing to preserve open, low-growing vegetation; (3) fencing to discourage human incursion; (4) signage identifying the area as a biologically sensitive area managed for burrowing owl, and; (5) a worker education and awareness program for all personnel working on the site including contractors and sub-contractors.

Swainson's Hawk

Swainson's hawk is state-listed as threatened and has no federal listing status. Swainson's hawks nest in trees adjacent to suitable foraging habitat, often near the edges of riparian stands, in lone trees or groves of trees in agricultural fields, and in mature roadside trees. Suitable foraging areas for Swainson's hawk include native grasslands or lightly grazed pastures, alfalfa and other hay crops, idle land, certain grain and row croplands, and ruderal lands (CDFW 1994).

Swainson's hawks are closely associated with diverse agricultural landscapes that support an abundance of prey. Foraging habitat use, particularly agricultural foraging habitat, is largely a function of two primary variables: abundance of prey and amount of vegetative cover/vegetative structure that affects access to prey (Estep 2015; Fleischman *et al.* 2016). The type of agricultural land use determines the suitability for Swainson's hawk foraging habitat – those containing high prey abundance and changing vegetation structure throughout the growing season which allows access to prey provide the highest value foraging habitat for the species. Land uses such as perennial grassland, dryland pasture, and fallow fields provide high value foraging habitat for Swainson's hawk (Estep 1989). Swainson's hawk foraging activity is often highest in fields being subjected to active agricultural practices such as mowing,

plowing/disking, harvesting, or burning, as such activities drive prey out of cover (Estep 1989; Swolgaard et al. 2008).

Swainson's hawks have been observed soaring over the project site and perching on utility poles in the project site during biological surveys conducted by HELIX at the site since 2016; however, Swainson's hawk presence in the site is low compared to actively farmed fields around the site, especially east of the Kings River. During a foraging study conducted by HELIX in 2017, Swainson's hawks were observed congregating over wheat fields west and south of the site during harvesting and HELIX biologists have observed Swainson's hawks at relatively high densities in irrigated alfalfa fields east of the Kings River. HELIX biologists have not observed Swainson's hawks actively foraging in the project site despite hundreds of hours spent performing biological surveys since 2016. Approximately 500 acres of the project site have been grazed by sheep (160 acres) and cows (320 acres) periodically since 2016; most of the remainder of the site supports a dense cover of weedy thatch, primarily tumble mustard (*Sisymbrium altissimum*). The dense thatch present in most of the project site reduces the accessibility of prey to soaring raptors such as Swainson's hawk. The most common large raptors on the site are northern harriers (*Circus cyaneus*), which fly very close to the ground, and red-tailed hawks (*Buteo jamaicensis*), which hunt from stationary perches such as utility poles and fences.

Swainson's hawk was observed nesting at one location within 0.5-mile of the project site in 2018, but the site itself is treeless and does not support suitable nesting habitat. A pair of Swainson's hawks documented by HELIX nesting in a tree alongside State Route 198 in 2018 foraged primarily in grain fields north of the highway between NAS Lemoore and the City of Lemoore. A pair documented by HELIX occupying a tree on the east bank of the Kings River in 2018 foraged primarily in an irrigated row crop field immediately to the east of their nest location; this nest apparently failed, as the pair was not seen at that location after mid-May. A pair documented by HELIX nesting in a row of eucalyptus trees along the north side of State Route 198 west of NAS Lemoore in 2017 foraged primarily in an adjacent solar PV generating facility south of the highway and a grain field north of the highway, especially during mowing and harvesting activities on those lands.

Impacts to Nesting Habitat

Because there are no trees in the project site, the project would not remove Swainson's hawk nesting habitat. Project construction/decommissioning activities within 0.25-mile of suitable trees could potentially disturb nesting Swainson's hawks using those trees.

CDFW management protocols for Swainson's hawk (CDFW 1994) stipulate a 0.25-mile buffer for "intensive new disturbances" around active nests, extended to 0.5-mile outside urban areas where disturbance is not a normal occurrence during the nesting season. CDFW (1994) cites heavy equipment operation, use of cranes or draglines, and rock crushing as examples of "intensive disturbance". Normal agricultural operations in the vicinity of the project site include disking and plowing of fields by large (6-8 wheel) tractors and combine harvesters, and periodic presence of scores of agricultural laborers during planting and harvest. Equipment used for construction of the proposed project would include road graders (bladers), small self-contained drill rigs for boring support post holes, front loaders and fork lifts, and semi-trucks. These vehicles and activities would not cause noise, dust emissions, or vibration greater than that typical of large agricultural equipment used in the region, nor would the impacts from such equipment and activities rise to the level of disturbance caused by heavy equipment, cranes or draglines, or rock crushing. Consequently, an extended (0.5-mile) buffer would not be warranted for the

project, and a 0.25-mile buffer would be sufficient to protect active Swainson's hawk nests from disturbance.

There was one documented active Swainson's hawk nest within 0.5-mile of the project site in 2018: in a tree 0.35-mile north of the project site along the Kings River; a second pair attempted to nest in a tree 0.16-mile east of the project site along the Kings River; however, this nest apparently failed and the pair abandoned the location in mid-May (see Figure 6 in Appendix D). A third active nest was documented in a row of eucalyptus trees along State Route 198 2.4 miles northwest of the project site.

Impacts to Foraging Habitat

Based on preliminary design, approximately 657 acres of the project site (26 percent) would be directly impacted by structures, paved surfaces, and solar array modules, and would be considered inaccessible to foraging SHWA. The remaining 1,833 acres (74 percent of the 2,490-acre project site) would remain accessible to foraging SWHAs as dryland pasture between rows in solar arrays and in open space areas on the site during project operation. Given that approximately 1,833 acres of the site that would remain in dryland pasture would provide an equivalent (or greater) foraging value to SWHA when compared to baseline conditions, the total potential impact to SWHA would be 657 acres.

Typical solar arrays consist of uniform rows of PV modules (panels) with a maximum height of 10 feet at full tilt (45°) and a minimum distance of 12 feet between panels at horizontal (and more space between panels when tilted). The collection systems are almost completely underground, and power is delivered to an onsite solar substation. The array configuration of a typical SGF leaves an average of 60-70 percent of the site in open space. For example, similar to the proposed project, the nearby operational RE Mustang Solar site occupies a total footprint of 1,100 acres, of which approximately 288 acres (26 percent) are covered by modules and other structures and the remaining 812 acres (74 percent) are open space. The estimated acres of solar panel coverage are based on an aerial coverage of the site with the panels fully horizontal or parallel to the ground, in which the greatest footprint would occur. The aerial coverage of the site would be reduced when the panels are tilted. Similarly, the structures supporting the modules in a typical solar generation facility are cylindrical pipes or H-beams which leave the areas below the panels open and minimize the footprint on the ground.

As is typical of utility-scale solar generation facilities, the proposed project includes rights-of-way for canals, roads, overhead transmission lines, and underground utility lines and would have a high percentage of open space in the project footprint. Because much of the typical SGF is composed of open areas, there is potential for use of solar projects by SWHA and other raptors for foraging, particularly if the facility is managed to optimize habitat for prey and the area between the panels is managed as perennial grassland vegetation of a suitable height. As previously mentioned, other land uses with a similar structure, such as vineyards, have also been demonstrated to be used by foraging SWHA, so this concept is not completely new. To test the hypothesis that solar arrays provide foraging habitat for SWHA, Estep (2013) conducted a pilot study in Sacramento County in 2012 to evaluate the foraging use of solar arrays by SWHAs and other raptor species relative to the surrounding agricultural landscape.

Estep (2013) quantified Swainson's hawk use of three solar PV generating facilities in Sacramento County ranging from 105 to 200 acres in size and the surrounding agricultural lands. All three of the solar facilities evaluated in the foraging study are located within a diverse agricultural landscape of similarly sized parcels. The study was conducted after the three facilities had been constructed, operation had commenced, and grass cover had been established. The three facilities were being

managed for abundance and accessibility of prey through establishment of grassland vegetation and management of vegetation height by sheep grazing.

Results of the study indicated that the solar array fields were used for foraging by Swainson's hawk similarly to other moderate- to high-value agricultural cover types, and the presence of the solar facilities did not appear to affect the overall use of the landscape by Swainson's hawks. As one element of an otherwise diverse agricultural matrix, the solar facilities provided a consistent and an apparently reasonably accessible source of prey for Swainson's hawks. Surprisingly, the study also found that the solar arrays were used at a higher rate than would be expected based on their availability in the landscape alone, meaning that the solar PV facilities provided higher-value foraging habitat than the average for the landscape as a whole. This was likely due to the fact that the solar sites were managed to provide a continual source of prey that was accessible to the hawks consistently throughout the spring and summer breeding season versus the seasonal availability of prey in agricultural crops due to the planting, growth, and harvesting regime.

Although this was a relatively simple short-term study (i.e., a 5-month study) designed to determine foraging use by SWHAs in 100-200-acre solar arrays within a diverse agricultural matrix, it demonstrated that solar arrays do provide available foraging habitat for SWHAs and are used by this species for foraging. The study also suggests that conversion of otherwise suitable foraging habitat to solar arrays does not necessarily constitute a complete loss of foraging habitat for SWHA and that properly managed solar arrays could provide important foraging habitat for SWHA during periods when surrounding agricultural crops are not suitable.

The foraging study conducted by HELIX (Appendix F of the BTR [Appendix D]) expands on the study by Estep and shows that SWHAs will forage in a large-scale SGF (>1,000 acres) located in an agricultural landscape. In 2017, HELIX biologists conducted a study of SWHA foraging at the RE Mustang SGF, which is west of the project site across Avenal Cutoff Road. The study compared SWHA foraging use of the 1,100-acre solar facility to an approximately 4,800-acre off-site area that included the project site and surrounding active agricultural lands. HELIX found that SWHAs foraged in the operational RE Mustang SGF at a higher intensity (determined by the minutes of forage per unit area) than in surrounding lands and observed no foraging behavior in the vicinity of the project site. This result is consistent with the findings of Estep (2013), suggesting that SGF managed to promote SWHA foraging may provide higher-value foraging habitat than active and idle agricultural lands.

Method for Assessing Impact

The California Department of Fish and Wildlife (CDFW) has developed regional strategies to address land use issues related to SWHA conservation pursuant to both CESA and the CEQA process. The CDFW Region 2 guidelines (CDFW 1994) are often used during CEQA review of proposed projects in the Central Valley. The guidelines recommend acquisition of replacement lands as mitigation for project impacts to SWHA foraging habitat deemed sufficient to be considered a significant impact to the SWHA population under CEQA. The guidelines state that the determining criteria for CEQA significance is removal of any suitable foraging habitat within 10 miles of an active SWHA nest, which is defined as a nest active at any time in the previous 5 years. Compensatory mitigation is recommended at ratios ranging from 1:1 for projects within 1-mile of an active nest, 0.75:1 for projects 1-5 miles from an active nest, to 0.5:1 for projects 5-10 miles from an active nest (CDFW 1994). The guidelines do not consider the size of the potentially affected SWHA population, the amount and quality of existing foraging habitat in the region, or the size of the project relative to the amount of available foraging habitat. However, the guidelines

allow for independent assessment of impacts and development of a conservation strategy as an alternative to the guidelines.

The analysis of potential impacts of the proposed project on foraging habitat for the regional population of SWHA (i.e., nesting SWHA within roughly 10 miles of the project site) builds upon methods that have been used for the analysis of impacts to SWHA foraging habitat on several other approved utility-scale solar projects in the region (reviewed in Estep 2017). This method more effectively addresses CEQA-based impacts to SWHA than the simpler approach employed in the CDFW guidelines. In order to provide a more robust assessment of CEQA impacts, it is necessary to extend the analysis beyond the scale of the project site and the nearest active SWHA nest, which is the scale of analysis employed in the CDFW guidelines. The larger-scale analysis should consider the size and distribution of the regional population of SWHA, availability of suitable foraging habitat for the regional population, and the effect of project implementation on the availability of resources to the regional population.

Appendix M of the BTR (Appendix D) presents a detailed description of a larger-scale analysis of project impacts to Swainson's hawk that is rigorous and biologically realistic. The analysis used methods employed in other studies of regional Swainson's hawk populations, refined to provide additional analytical rigor in response to methodological issues identified in those studies (Estep 2011, 2015, 2017). The refined approach combined field observations, public and proprietary data, and desktop spatial analysis to estimate the acreage of suitable foraging habitat required to sustain the regional population of Swainson's hawk. Impacts were assessed at the project- and cumulative levels. This section provides a summary of the methods and results presented in Appendix M of the BTR (Appendix D).

Land use data were taken from the 2014 CA DWR Land Use Surveys layer, which is available at: https://water.ca.gov/Programs/Water-Use-And-Efficiency/Land-And-Water-Use/Land-Use-Surveys. The data are based on the 2014 Statewide Agricultural Survey conducted by CA DWR and were downloaded on September 5, 2018. Foraging habitat quality data were overlaid on 2017 aerial imagery and visually reviewed by HELIX biologists for recent conversions to unsuitable land uses or changes in foraging quality.

Data on SWHA nest locations in the study area were obtained from three sources: CNDDB records; a ground survey performed in 2016 in the study area for the adjacent RE Mustang 2 solar project (Estep 2017) which, given the relative size and shape of the two projects, is almost entirely included in the study area for this analysis; and data from a survey of SWHA nests in the central San Joaquin Valley (Estep and Dinsdale 2012). Duplicate records for the same locations among these three data sets were combined into a single record for analysis.

Data on other existing, planned, and reasonably foreseeable solar projects (cumulative projects) in the study area were obtained from Kings County and Fresno County.

The amount of foraging habitat needed to sustain the regional population was estimated using a 6,820-acre average home range size for nesting pairs measured in a telemetry study (Estep 1989). The 6,820-acre home range is the average area that an individual hawk will occupy during the course of the breeding season; however, within this area, foraging occurs opportunistically where conditions provide accessible prey (Estep 2015). Average home range size is a useful baseline that can be adjusted to account for factors that affect the amount of the home range that provides the essential resource base for the SWHA nesting territory and thus determines the amount of habitat required to sustain a nesting pair (Estep 2015). Factors considered to adjust the home range size were: (1) amount of overlap among

home ranges in a population, which was estimated at 40 percent (Estep 1989); (2) habitat suitability – most prey capture attempts are in moderate- or high-quality habitat areas (Estep 2105) – which affects the amount of the home range that is likely to provide useful resources to the nesting pair; and (3) foraging outside the study area, which is assumed to increase with distance from the project site as more of the potential foraging habitat available to the nesting pair is outside the 10-mile radius around the project site (Estep 2015). The amount of foraging habitat needed to sustain the regional population was estimated using Equation 1:

$$Y = n \cdot 6{,}820 \cdot p \cdot q \cdot r,$$

where n is the number of SWHA nesting pairs in the regional population; 6,820 is the baseline average home range size; p is the adjustment for average home range overlap (1-average overlap); q is the proportion of the suitable habitat in the study area that is moderate- or high-quality habitat; and r is the weighted average overlap between the study area and the potential foraging areas available to the regional population.

The amount of suitable foraging habitat available in the study area was compared to the total acreage of suitable habitat required to sustain the regional population (Y). The County uses a CEQA significance threshold of 70 percent of the existing surplus habitat for this project, and other similar solar projects in the area, in order to account for variation in the estimates due to interannual variation in the regional population caused by mortality and recruitment, allow for resilience in the regional population to environmental factors outside the scope of this analysis, and to account for other potential sources of error. If the project would result in the surplus of suitable foraging habitat in the study area being reduced to less than 70 percent of the existing surplus, the project would be considered to have a significant impact on the regional population of SWHA under CEQA.

Calculation of Impact and Mitigation

The regional population of SWHA that would potentially be affected by the proposed project is 38 nesting pairs in a 276,048-acre study area. A total of 194,719 acres of suitable foraging habitat were identified in the study area; the remaining 81,329 acres were unsuitable land uses. Overall, 73.3 percent of the suitable foraging habitat was moderate- or high-quality habitat. Land uses in the study area are summarized in Table 7.4-2. The weighted average overlap of the potential foraging area for all nests and the study area was 0.63.

TABLE 7.4-2
SWHA FORAGING HABITAT IN THE STUDY AREA

Habitat Type	Area (ac)	% of Total
Suitable Habitat	194,719	70.4
High Quality (alfalfa)	17,112	8.8
Moderate Quality	125,678	64.5
Low Quality	51,930	26.7
Unsuitable Habitat	81,329	29.6
Orchards/Vineyards	36,868	45.3
Urban/Developed/Other	44,462	54.7
Grand Total	**276,048**	**100.0**

The total acreage of foraging habitat required in the study area to sustain the regional population of SWHA was calculated using Equation 1:

$$Y = 38 \cdot 6{,}820 \cdot 0.6 \cdot 0.73 \cdot 0.63 = 71{,}513,$$

where 38 is the size of the regional population (n); 6,820 is the baseline average home range size; 0.6 is the correction for 40 percent overlap among home ranges (p); 0.73 is the proportion of the suitable foraging habitat in the study area that is moderate- or high-quality (q); and 0.63 is the weighted average proportion of potential foraging area for all nest territories in the regional population that is inside the study area (r).

According to Equation 1, the total amount of foraging habitat in the study area required by the regional SWHA population is 71,513 acres. The total amount of suitable foraging habitat in the study area is 194,719 acres; therefore, there is a surplus of 123,206 acres of suitable foraging habitat in the study area. The CEQA significance threshold selected to be used by the County is 70 percent of the existing surplus, or 86,244 acres (Table 7.4-3).

The proposed project would result in conversion of 2,490 acres of undeveloped land in the study area into a solar PV generating facility. Although properly managed solar facilities have been demonstrated to be used by SWHA for foraging, the entire acreage of solar facilities are considered a land use unsuitable for SWHA foraging for purposes of this analysis. Removal of 2,490 acres of habitat would reduce the surplus SWHA foraging habitat in the study area to 120,716 acres, which is 97.9 percent of the existing surplus, and above the 70-percent CEQA significance threshold (Table 7.4-3).

Including the proposed project, there are a total of 16 existing, planned, or reasonably foreseeable solar projects in the study area. The total area of these cumulative projects is 28,006 acres, of which over 20,000 acres are in the Westlands Solar Park Master Plan area. The proposed project contributes 8.9 percent of the cumulative impact. Development of the cumulative projects would reduce the surplus SWHA foraging habitat in the study area to 95,200 acres, which is 77.3 percent of the existing surplus and above the 70-percent CEQA significance threshold (Table 7.4-3).

TABLE 7.4-3
PROJECT IMPACTS AND CEQA SIGNIFICANCE THRESHOLD

Foraging Habitat in Study Area	Existing	Remaining After Impact			
		Project 2,490	% of Existing	Cumm. 28,006	% of Existing
Suitable Foraging Habitat	194,719	192,229	98.7	166,713	85.6
Foraging Habitat Required	71,513	--	--	--	--
Surplus	123,206	120,716	97.9	95,200	77.3
CEQA Significance Threshold	86,244	--	--	--	--
Less than Significant Impact[1]	36,962	34,472	93.3	8,956	24.2

[1] Impact acreage that would be below the CEQA threshold of significance, or 123,206·(0.3) = 123,206-86,244 = 36,962

Project-Level Impacts

The project-level impact to foraging habitat available to the regional population would be less than significant, as the project impact (2,490 acres) represents only 2.1 percent of the surplus foraging habitat available to the regional population (123,206 acres). Therefore, the project would only reduce

the surplus foraging habitat available to the regional population of SWHA to 97.9 percent of the existing surplus, which is well above the 70-percent threshold of significance. Therefore, impacts would be *less than significant*, and no compensatory mitigation would be required for project-level impacts to SWHA foraging habitat.

As discussed previously, studies have demonstrated that SWHA will forage in solar facilities (Estep 2013, HELIX 2018). Because development of the project site as a solar facility would not completely eliminate its value as SWHA foraging habitat, the actual project impact to SWHA foraging habitat may be much less than 2,490 acres.

Cumulative Impacts

Including the 2,490-acre project impact with the 25,516 acres of existing, planned, and reasonably foreseeable solar energy projects in the study area, the project would contribute to a cumulative impact to SWHA foraging habitat of 28,006 acres. Removing this amount of foraging habitat from the existing surplus of 123,206 acres would reduce the surplus foraging habitat in the study area to 95,200 acres, which is 77.3 percent of the existing surplus and above the 70-percent threshold of significance. Therefore, the project would not contribute to a significant cumulative impact on the regional population of Swainson's hawk and no compensatory mitigation would be required.

The project would potentially result in significant impacts to nesting Swainson's hawks. Implementation of Mitigation Measure BIO-2 would reduce the potential for project impacts to Swainson's hawk to *less than significant*.

> **Mitigation Measure BIO-2: Swainson's Hawk Nest Avoidance.** Prior to initiation of construction/decommissioning activities during the Swainson's hawk breeding season (March 1 through September 15), the applicant shall determine the presence of active Swainson's hawk nests within 0.25-mile of the project site using the most recent published survey protocols (i.e., 3 surveys by a qualified biologist in each of the two periods preceding the construction start date; SHTAC 2000). If an active Swainson's hawk nest is discovered, the applicant shall initiate consultation with CDFW prior to starting any construction-related activities within 0.25-mile of the nest(s). Construction-related activities may commence in parts of the project site greater than 0.25-mile from the nest(s). If no active nests are discovered, no further action is required.

Northern Harrier

Northern harrier is widespread throughout North America from southern Canada to northern Mexico and is a CDFW Species of Special Concern. Northern harriers breed in a variety of open habitats including marshes, wet meadows, weedy shorelines, grasslands, weed fields, pastures, sagebrush flats, desert sinks, and croplands. Northern harriers nest on the ground in patches of dense, tall vegetation in undisturbed areas (Shuford and Gardali 2008). Northern harrier was observed foraging in the project site during biological surveys in 2016 and 2018. Individuals were observed foraging over open fields in the spring, but were not observed after early May, indicating they may be winter visitors and not resident breeding birds. No nests or nesting pairs were observed. There are no CNDDB reported occurrences of nesting northern harrier within 10 miles of the project site.

The project would not have significant adverse effects on northern harrier nesting habitat, as there is no suitable nesting habitat in the project site. The lands surrounding the project site consist of active agriculture subject to routine disturbance, which does not generally provide suitable nesting habitat for

northern harrier, and there is a lack of open undisturbed habitats. Due to the lack of suitable nesting habitat on the project site and in the region combined with the lack of harrier sightings on the site during the breeding season (indicating the harriers observed on the site are likely winter visitors) and the lack of reported occurrences of nesting northern harrier within 10 miles of the project site, this species is expected to occur in very low numbers in the project region and may not be breeding in proximity to the site.

For the reasons stated above, loss of foraging habitat as a result of the proposed project would have a *less than significant impact* to northern harrier and no mitigation is required for loss of northern harrier foraging habitat.

Yellow-headed Blackbird

Yellow-headed blackbird breeds commonly in California east of the Cascades and Sierra Nevada, the Central Valley, and the Imperial and Colorado River valleys. It is uncommon in the Central Valley during winter; most populations migrate south to the Imperial Valley. This species nests in dense freshwater marsh vegetation, usually near deep water, and forages in agricultural fields, grasslands, and along shorelines. Nests are always constructed over water, and most foraging is on moist ground. Canals in the project site provide nesting habitat and fields provide foraging habitat.

Yellow-headed blackbird was observed in canals along 23rd Avenue during surveys in 2016 and 2018, nesting in large numbers. These individuals inhabited patches of freshwater marsh vegetation in the canals and foraged in fields in the project site. This species was not observed during surveys conducted after mid-June. There are no other CNDDB reported occurrences of yellow-headed blackbird within 10 miles of the project site.

The project would have no potential for significant adverse effects to yellow-headed blackbird nesting habitat due to the proposed avoidance of canals by project activities. Impacts would be *less than significant* and no mitigation is required.

California Horned Lark

Horned lark is considered a Watch List species by CDFW, having potential to qualify as a Species of Special Concern. Horned larks occupy a variety of open habitats from coastal grasslands to alpine dwarf shrub habitats. Nests are built on the ground in areas of low, sparse vegetation; breeding occurs from March through July (CDFW 1990). Horned larks were observed in the project site during surveys in 2016 and are presumed to be nesting in the project site. Individuals were seen along roads and in disturbed areas at the margins of fallow fields. There are no CNDDB reported occurrences of horned lark within 10 miles of the project site.

Project activities (construction and decommissioning) during the horned lark breeding season (March through July) have potential to disturb nests both directly and indirectly. Disturbance leading to destruction of nests, eggs, or chicks, or to abandonment of active nests would be a significant adverse effect.

Implementation of Mitigation Measure BIO-4 (general nesting bird avoidance) would reduce the potential for adverse effects on horned lark to *less than significant*.

Loggerhead Shrike

Loggerhead shrike is a CDFW Species of Special Concern that is found throughout the U.S. and southern Canada and is a year-round resident in most of its California range. Loggerhead shrikes hunt in open areas of short grasses, forbs, or bare ground, and impale prey on thorns or barbed wire (Shuford and Gardali 2008). Loggerhead shrike was observed foraging in the project site during surveys in 2016. These individuals were typically perched on fences or overhead electrical transmission lines and occasionally in stands of dead Russian thistle; no nests of this species were observed. There are no CNDDB reported occurrences of loggerhead shrike within 10 miles of the project site.

Project activities (construction and decommissioning) during the loggerhead shrike breeding season (March through August) have potential to disturb nests both directly and indirectly if this species is nesting in or adjacent to the project site. Disturbance leading to destruction of nests, eggs, chicks, or to abandonment of active nests would be a significant adverse effect.

Implementation of Mitigation Measure BIO-4 (general nesting bird avoidance) would reduce the potential for adverse effects on loggerhead shrike to *less than significant*.

Special-Status Mammals

San Joaquin Kit Fox

San Joaquin kit fox was listed as "threatened with extinction" under the Endangered Species Preservation Act of October 15, 1966 (16 USC 668aa(c); 32 FR 4001) and is currently listed as endangered under the Endangered Species Act of 1973 (16 USC 1531-1544) and as endangered under CESA. San Joaquin kit fox inhabits a wide range of open and shrubby habitats, including grassland, scrublands, agricultural areas where dens are available (e.g., unplowed fields, row crops, vineyards, or orchards), non-irrigated pastures, vernal pool grasslands, playas, and alkali meadows.

There are 15 CNDDB reported occurrences of San Joaquin kit fox within 10 miles of the project site, all of which are more than 5 miles from the site. The most recent occurrence record for San Joaquin kit fox is dated 2002, and located 7 miles north of the project site, on West Glendale Avenue. This record is of a single fox sighted in a fallow agricultural field. There are no other occurrence records after 1990. Most of the remaining occurrence records for San Joaquin kit fox within 10 miles of the project site date from the early 1970s and are based on distribution maps published in 1975. The most recent record of a San Joaquin kit fox den is located eight miles east of the project site at Kansas Ave and 17th Avenue and is dated 1988.

CNDDB occurrence records for San Joaquin kit fox generally form three clusters: a cluster of records in alkali sink habitat located east of the project site southwest of Hanford; a cluster of records located in grassland habitat on NAS Lemoore, and; a cluster of records located along the California Aqueduct southeast of Huron. Most of the records in the first two clusters date from the 1970s and the records in the third cluster date from 1981. The largest extant populations of San Joaquin kit fox generally form a meta-population lying west of I-5 and/or south of Allensworth, with only isolated occurrences in the remainder of the Central Valley. By 2006, San Joaquin kit fox was determined to be largely eliminated from the central San Joaquin Valley (USFWS 2010).

San Joaquin kit fox is believed to be absent from the project site because no occupied dens were observed in the project site, there were no sightings of this species during protocol presence/absence

surveys conducted in and within a 2-mile radius of the project site, and there are no recent occurrence records of the species in the region. However, potentially suitable foraging and denning habitat is present in the project site. Because San Joaquin kit fox is a highly mobile animal, there is a low potential for San Joaquin kit fox to occupy the project site prior to commencement of the proposed project or to occur in the project site as transient individuals either foraging or dispersing through the site during construction and decommissioning. The project has low potential for significant adverse effects on San Joaquin kit fox.

Implementation of Mitigation Measures BIO-3a, BIO-3b, and BIO-3c would reduce the potential for project impacts to San Joaquin kit fox to *less than significant*.

Mitigation Measure BIO-3a: **Preconstruction Surveys for San Joaquin Kit Fox.** A qualified biologist shall conduct a preconstruction survey no more than 14 days prior to the beginning of ground disturbance and/or construction/decommissioning activities, or any other project activity likely to impact San Joaquin kit fox, to determine if potential San Joaquin kit fox dens are present in or within 500 feet of the project site (inaccessible areas outside of the project site can be surveyed using binoculars or spotting scopes from public roads). The surveys shall be conducted in all areas of suitable habitat for San Joaquin kit fox. Surveys need not be conducted for all areas of suitable habitat at one time; they may be phased so that surveys occur within 14 days prior to disturbance of any particular portion of the site.

- If potential dens are observed and avoidance of the dens is determined to be feasible by a qualified biologist in consultation with the project proponent and the County, the following minimum buffer distances shall be established prior to construction/decommissioning activities (consistent with USFWS 2011):
    - Potential den: 50 feet
    - Atypical den: 50 feet
    - Known den: 100 feet
    - Natal/pupping den: at least 500 feet - **USFWS must be contacted**
- Buffer establishment shall follow the USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 2011) under “Exclusion Zones.”
- If occupied San Joaquin kit fox dens are observed on the site, USFWS must be contacted.

Mitigation Measure BIO-3b: Avoid Adverse Effects to San Joaquin Kit Fox Dens. If avoidance of the potential dens is not feasible, the following measures are required to avoid potential adverse effects to the San Joaquin kit fox:

- If the qualified biologist determines that potential dens are inactive, the biologist shall excavate these dens by hand with a shovel to prevent foxes from re-using them during construction.
- If the qualified biologist determines that a potential non-natal den may be active, an on-site passive relocation program may be implemented with prior concurrence from the USFWS. This program shall consist of excluding San Joaquin kit foxes from occupied burrows by

installation of one-way doors at burrow entrances, monitoring of the burrow for one week to confirm usage has been discontinued, and excavation and collapse of the burrow to prevent reoccupation. After the qualified biologist determines that the San Joaquin kit foxes have stopped using active dens within the project boundary, the dens shall be hand-excavated with a shovel to prevent re-use during construction with prior concurrence from USFWS.

Mitigation Measure BIO-3c: **Avoid and Minimize Impacts to San Joaquin Kit Fox**. In addition, the following avoidance and minimization measures for San Joaquin kit fox shall be implemented during construction/decommissioning of the project (USFWS 2011):

a. Project-related vehicles shall observe a daytime speed limit of 20 mph and a nighttime speed limit of 10 mph throughout the project site, except on County roads and state and federal highways. Off-road traffic shall be prohibited outside of designated project areas.

b. To prevent inadvertent entrapment of kit foxes or other animals during the construction or decommissioning phases of the project, all excavated, steep-walled holes or trenches more than 2-feet deep should be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks should be installed. Before such holes or trenches are filled, they should be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the USFWS and the CDFW should be contacted as noted under measure l referenced below.

c. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-inches or greater that are stored at a construction site for one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the USFWS has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.

d. All food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in securely closed containers and removed at least once a week from a construction or project site.

e. No firearms shall be allowed on the project site.

f. No pets, such as dogs or cats, should be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.

g. Use of rodenticides, herbicides, poison baits, or other substances potentially harmful to San Joaquin kit fox shall be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. Use of such compounds should observe label and other restrictions mandated by the USEPA, CDFA, and other State and Federal legislation, as well as additional project-related restrictions

deemed necessary by the USFWS. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox.

h. An employee education program shall be implemented and required for all personnel approved to work on the site during construction, operations, maintenance, and decommissioning. The program shall consist of a brief presentation by persons knowledgeable in kit fox biology and legislative protection to explain endangered species concerns to contractors, their employees, and military and/or agency personnel involved in the project. The program shall include the following: A description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information shall be prepared for distribution to the previously referenced people and anyone else who may enter the project site.

i. A representative shall be appointed by the project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the Service.

j. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. shall be re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas shall be determined on a site-specific basis in consultation with the USFWS, CDFW, and revegetation experts.

k. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape, or the USFWS should be contacted for guidance.

l. Any contractor, employee, or military or agency personnel who are responsible for inadvertently killing or injuring a San Joaquin kit fox should immediately report the incident to their representative. This representative should contact the CDFW immediately in the case of a dead, injured or entrapped kit fox. The CDFW contact for immediate assistance is State Dispatch at (916) 445-0045. They will contact the local warden or the wildlife biologist at (530) 934-9309. The USFWS should be contacted at Endangered Species Division, 2800 Cottage Way, Suite W2605, Sacramento, CA 95825, (916) 414-6620 or (916) 414-6600.

m. The Sacramento Fish and Wildlife Office and CDFW shall be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information.

n. New sightings of kit fox shall be reported to the CNDDB. A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to the USFWS at the address listed under measure l.

o. Fencing of the project site shall incorporate wildlife-friendly fencing design. Fencing plans may use one of several potential designs that will allow kit foxes to pass through the fence while still providing for project security and exclusion of other unwanted species (i.e., domestic dogs and coyotes). Raised fences or fences with entry/exit points of at least 6 inches in diameter spaced along the bottom of the fence to allow species such as San Joaquin kit fox access into and through the project site will be appropriate designs.

Migratory Birds and Raptors

The project site provides nesting and foraging habitat for a variety of native birds common in the San Joaquin Valley, such as western meadowlark (*Sturnella neglecta*), western kingbird (*Tyrannus verticalis*), mourning dove (*Zenaida macroura*), and savannah sparrow (*Passerculus sandwichensis*). Needless destruction of nests, eggs, or chicks by vegetation clearing or ground-disturbing during construction and decommissioning activities during the avian breeding season (March through August) would be considered a violation of the California Fish and Game Code. Overhead transmission line towers in the project site provide potential nest sites for red-tailed hawk and other raptors and birds. Project construction and decommissioning activities would not directly disturb these towers but could result in noise and other indirect disturbance that has potential to cause nest failure. In the absence of reasonable diligence to avoid indirect disturbance to active nests, disturbance resulting in nest failure would be considered a violation of the Fish and Game Code. Mitigation Measure BIO-4 would be implemented to reduce impacts to nesting birds, including migratory birds and raptors, to less than significant.

There is a potential for small birds to enter hollow vertical piles in the solar arrays and in fence posts. Birds could become entrapped and unable to extricate themselves, potentially resulting in mortality. This could occur with both common and special-status bird species. Mitigation Measure BIO-5 would be implemented to reduce impacts to less than significant.

As with other manmade structures (such as buildings, windows, and communications towers), avian species may potentially collide with the project's PV modules. However, any impacts to avian species resulting from collision with the project's PV modules are expected to be less than significant for several reasons. Firstly, PV panels do not pose the type of collision risk associated with taller structures; taller structures have a greater collision risk than shorter structures. Second, avian mortality resulting from collision with manmade structures is typically highest when projects are sited in areas of high bird use such as migration corridors and the project site is not located in an area of high bird use. Finally, bird populations that might interact with the project site—including waterbirds—regularly withstand substantial mortality rates from a variety of other sources such as buildings, windows, vehicles, predation, and communication towers, yet maintain sustainable population levels. Thus, while some avian mortality may be expected to occur on the project site, it would likely be minimal due to the low-lying nature of the project's PV modules and other structures, and the project's location in an area that is not subject to high bird use. For these reasons, impacts are expected to be less than significant.

A recent publication by the U.S. Department of Energy reviewed the current state of knowledge concerning avian mortality at utility-scale solar facilities (Walston et al. 2015). The report included discussion of the potential for solar PV generating facilities to cause death and injury to waterfowl that mistake fields of PV panels for waterbodies – an untested hypothesis called the "lake effect". The report concluded that few empirical data are available on the number of birds killed or injured at solar generating facilities generally, and by the lake effect specifically. In addition, the authors state that no

scientific studies testing the reality of the lake effect had been conducted up to the time of publication. Due to the lack of scientific data on the lake effect, it is not possible to meaningfully analyze potential project impacts to migrating waterfowl and other birds resulting from the lake effect.

Because there are currently no data on the reality or magnitude of the lake effect in regard to large-scale solar PV generating facilities, there are no generally accepted, effective mitigation measures to avoid or reduce impacts to waterfowl resulting from it. While there is potential for the project to affect migrating waterfowl through the lake effect, should it exist, analysis of such impacts would be purely speculative and no mitigation is required.

The project has potential for impacts to nesting birds and raptors through ground disturbance, vegetation clearing, noise, and human presence around active nests.

Implementation of Mitigation Measures BIO-4 and 5 would reduce the potential for project impacts to nesting birds and raptors during construction and decommissioning activities and impacts from birds entering hollow tubes and poles to *less than significant*.

> **Mitigation Measure BIO-4: Preconstruction Nesting Surveys.** If project (construction/decommissioning) ground-disturbing or vegetation clearing and grubbing activities commence during the avian breeding season (February 1 through August 31), a qualified biologist shall conduct a preconstruction nesting bird survey no more than 7 days prior to initiation of such activities. The survey area shall include suitable raptor nesting habitat within 300 feet of the project boundary (inaccessible areas outside of the project site can be surveyed from the site or from public roads using binoculars or spotting scopes). Pre-construction surveys are not required in areas where project activities have been continuous since prior to February 1, as determined by a qualified biologist. Areas that have been inactive for more than 14 days during the avian breeding season must be re-surveyed prior to resumption of project activities. If no active nests are identified, no further mitigation is required. If active nests are identified, the following measure is required:
>
> - A suitable buffer (e.g., 0.25 mile for Swainson's hawk, 300 feet for common raptors; 100 feet for passerines) shall be established by a qualified biologist around active nests and no construction/decommissioning activities within the buffer shall be allowed until a qualified biologist has determined that the nest is no longer active (i.e., the nestlings have fledged and are no longer reliant on the nest, or the nest has failed). Encroachment into the buffer may occur at the discretion of a qualified biologist. Any encroachment into the buffer shall be monitored by a qualified biologist to determine whether nesting birds are being impacted.
>
> **Mitigation Measure BIO-5: Cap Hollow Tubes and Poles.** Should any vertical tubes, such as solar mount poles, chain link fencing poles, or any other hollow tubes or poles be used on the project site, the tubes or poles shall be capped immediately after installation to avoid entrapment of birds.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No Impact. The site consists of agricultural land that supports cultivated and ruderal non-native species. There are no native or naturalized vegetation communities in the project site outside of patches of adventitious freshwater marsh vegetation in the canals. The canals are dredged periodically to maintain water carrying capacity as part of normal management practices and adventitious freshwater marsh vegetation in the canals does not represent a sensitive natural community. The canals do not support riparian habitat. In addition, no new structure would be constructed in any active canals. The project would result in *no impacts* to sensitive native or naturalized vegetation communities and no mitigation is required.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less Than Significant with Mitigation. The project site includes no waters or wetlands outside of engineered, actively managed irrigation ditches. The project will use existing roads/bridges over the canals where feasible and any new canal crossings required will utilize clear-span bridges to avoid any impacts to canals. Utility crossings will utilize directional drilling to install electrical conduit far enough under the canals to avoid any impacts to the canals. Entry/exit pits for directional drilling will be placed beyond the jurisdictional limits of canals. The existing culvert where Murphy Ranch Road crosses the inactive irrigation ditch along Avenal Cutoff Road may be replaced at the request of the County. If required, the replacement culvert would be situated in the footprint of the existing culvert, with no new impact to the ditch channel. The inactive irrigation ditch does not currently convey flows and does not support any wetland or riparian habitat or wildlife resources. For this reason, the inactive irrigation ditch is not subject to CDFW jurisdiction. Under the USACE Regulatory Guidance Letter (RGL) 07-02, *Exemptions for Construction or Maintenance of Irrigation Ditches and Maintenance of Drainage Ditches under Section 404 of the Clean Water Act*, the proposed activities associated with culverting the irrigation ditch and/or replacing an existing culvert in the irrigation ditch at Murphy Ranch Road are exempt from Clean Water Act jurisdiction. Such activities would qualify as construction or maintenance of an irrigation ditch and the discharge would not be part of an activity whose purpose is to convert an area of the waters of the U.S. into a use to which it was not previously subject (known as the Recapture Provision). Therefore, the proposed project has low potential for a substantial adverse effect on jurisdictional waters and wetlands. Implementation of Mitigation Measure BIO-6 would reduce the potential for incidental impacts to jurisdictional waters and wetlands to *less than significant*.

> **Mitigation Measure BIO-6: Protect Aquatic Resources.** The USACE, RWQCB, and CDFW will be contacted prior to commencement of any construction activity that would impact the bed or bank of any active canal on the project site (except for activities exempted under RGL 07-02, which may not require notification of the USACE and RWQCB) and permits will be obtained as required. Impacts to jurisdictional waters will be mitigated in accordance with agency requirements at a minimum ratio of 1:1 (i.e., 1 acre created per 1 acre impacted) to ensure no net loss of acreage or value to waters of the U.S. and/or waters of the state, except where exempted by regulation. This may be accomplished by purchasing credits in a mitigation bank approved by the USACE, RWQCB, and CDFW, or creation/preservation/or enhancement of waters in the project site or Off-site Reserves.

Construction activities will be required to follow standard engineering practices that reduce impacts to water quality. These practices include reduction of sediment loading and sediment disturbance as well as other standard BMPs for maintaining water quality in the project area. Avoidance and minimization measures that would be implemented to reduce impacts to waters on the project site may include, but are not limited to, the following:

- Standard construction BMPs will be implemented throughout construction, in order to avoid and minimize adverse effects to water quality within the project site. Appropriate erosion control measures will be used (e.g., hay bales, filter fences, vegetative buffer strips or other accepted equivalents, mulching, and seeding) to reduce siltation and contaminated runoff from entering waters and to stabilize disturbed soils.

- Construction by-products and pollutants such as petroleum products, chemicals, or other deleterious materials shall not be allowed to enter into canals. A plan for the emergency clean-up of any spills of fuel or other materials should be available when construction equipment is in use. A frac-out plan shall be prepared prior to the start of construction.

- Equipment and vehicles will be staged, maintained, refueled, and serviced at designated construction staging areas, which will be a minimum of 100 feet from the wetted width of a canal to prevent contamination of soil or water and staging areas will be bermed to prevent the discharge of pollutants to ground and runoff water. All construction material and fill shall be stored and contained in a designated area that is located away from channel areas to prevent transport of materials into adjacent waterbodies. In addition, a silt fence shall be installed to collect any discharge, and adequate materials should be available for spill clean-up and during storm events.

- Construction vehicles and equipment shall be maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease.

- Storage areas containing hazardous or potentially toxic materials such as herbicides and petroleum products shall have an impermeable membrane between the ground and the hazardous material and shall be bermed to prevent the discharge of pollutants to ground water and runoff water.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less Than Significant Impact. The project site is not included in any corridors mapped by the California Essential Habitat Connectivity Project and does not provide any unique movement or dispersal habitat relative to surrounding lands for several miles in all directions.

No impacts would occur to ditches on the project site that support resident fishes or other aquatic wildlife, therefore the project would have no potential to interfere with the movement of fish or aquatic wildlife. Dozens of wildlife surveys were conducted on and adjacent to the project site totaling hundreds of hours of survey time by wildlife biologists. In addition, camera stations collecting tens of thousands of photos cumulatively were established throughout the site during surveys for San Joaquin kit fox. In general, the faunal community on the site is relatively depauperate with the exception of avian species.

The project site's terrestrial faunal community consists primarily of upland and wetland-dependent bird species, with a few resident mammal species typical of disturbed areas including coyotes, rabbits, and ground squirrels. The project site's community of resident wildlife species would not be expected to range beyond the site and immediately surrounding areas except for coyotes. No game trails or movement corridors were observed on the project site that would indicate the site is being used regularly by wildlife to travel through the site or to access off-site habitats such as the Kings River corridor. As noted above, no evidence of San Joaquin kit fox movement across the site was documented during focused surveys, but the project site is potential dispersal habitat for the species.

In light of the biological survey results, the project would not be expected to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites because significant movement corridors or nursery sites are not present on the project site. Due to the abundance of other open farmlands in the immediate vicinity that would allow for potential dispersal habitat, development of the site is not expected to interfere substantially with the movement of San Joaquin kit fox. While no potentially significant impacts would occur, the project design would incorporate wildlife-friendly fencing that allows resident small mammals such as ground squirrels, rabbits, and San Joaquin kit foxes (if present) to pass through the fence (see Mitigation Measure BIO-3c). Therefore, the project would result in *less than significant* impacts.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. The Kings County General Plan includes several policies intended to promote conservation of existing high-value biological resources in the county and assure no net loss of sensitive resources and special-status species. The project site has been subject to a long history of agricultural land use that has severely reduced its biological value compared to undisturbed natural habitats. The project has potential for impacts to special-status species, and includes avoidance, minimization, and mitigation measures that would reduce impacts to special-status species to below the level of significance. Therefore, the proposed project would not conflict with local policies and ordinances protecting biological resources and no additional mitigation is required.

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

No Impact. The project is within the boundaries of PG&E's San Joaquin Valley Operations and Maintenance Habitat Conservation Plan (HCP; PG&E 2006). The HCP mainly covers PG&E's operational and maintenance activities, and small-scale construction projects (CDFG 2008). Because no project components would be constructed by PG&E, this HCP would not be applicable and would not cover the construction of the project. Regardless, the mitigation measures identified in this section would ensure the protection of wildlife and comply with the federal and state Endangered Species Acts. Therefore, the project would have no impact in terms of potential conflict with this HCP.

7.4.3 References

CDFW 2019 California Department of Fish and Wildlife (CDFW). 2019. California Department of Fish and Wildlife, Natural Diversity Database Biogeographic Data Branch. Sacramento, California. Accessed online June 7, 2019.

CDFW 2012	California Department of Fish and Wildlife (CDFW). 2012. Staff Report on Burrowing Owl Mitigation. March 7.
CDFW 1994	California Department of Fish and Wildlife (CDFW). 1994. Staff report regarding mitigation for impacts to Swainson's hawk (*Buteo swainsoni*) in the Central Valley of California. November 1.
CDFW 1990	California Department of Fish and Wildlife (CDFW). 1990. California Wildlife Habitat Relationships System – Horned lark (*Eremophila alpestris*).
CH2MHill 2003	CH2MHill. 2003. Appendix K - Addendum to the Natomas Basin Habitat Conservation Plan EIR/EIS. April.
CNPS 2018	California Native Plant Society, Rare Plant Program (CNPS). 2018. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 19 June 2018].
Estep 2017	Estep, J.A. 2017. The Distribution and Abundance of Nesting Swainson's Hawks in the Vicinity of the Proposed RE Mustang 2 Solar Generating Facility. Prepared by Estep Environmental Consulting, Sacramento, CA, for RE Mustang Two LLC, San Francisco, CA. January.
Estep 2015	Estep, J.A. 2015. A Proposed Conservation Strategy for the Swainson's hawk in Yolo County, CA. Yolo County Natural Heritage Program. March 20.
Estep 2013	Estep, J.A. 2013. Swainson's hawk and other raptor foraging use of solar array fields within an agricultural landscape in Sacramento County. Prepared for Recurrent Energy, San Francisco, CA. October
Estep 2011	Estep, J.A. 2011. The distribution and abundance of nesting Swainson's hawks in the vicinity of the proposed RE Tranquillity LLC solar generating facility. Prepared by Estep Environmental Consulting, Sacramento, CA, for RE Tranquillity LLC, San Francisco, CA. November.
Estep 1989	Estep, J.A. 1989. Biology, movements, and habitat relationships of the Swainson's hawk in the Central Valley of California, 1986-1987. California Department of Fish and Game, Nongame Bird and Mammal Section, Sacramento, CA.
Estep and Dinsdale 2012	Estep, J.A. and J.L. Dinsdale. 2012. Distribution, abundance, and habitat associations of nesting Swainson's hawks in the central San Joaquin Valley, California. CVBC Bulletin, 15(4): 84-106.
Fleischman et al. 2016	Fleishman E., J. Anderson, B.G. Dickson, D. Krolick, J.A. Estep, R.L. Anderson, C.S. Elphick, D.S. Dobkin, and D.A. Bell. 2016. Space use by Swainson's hawk (*Buteo swainsoni*) in the Natomas Basin, California. Collabra 2(1): 5. doi:10.1525/collabra.35

HELIX 2018	HELIX Environmental Planning, Inc. 2018. Swainson's Hawk Foraging Use of a Large-scale Solar Generating Facility in an Agricultural Landscape. February.
NRCS 2018	Natural Resources Conservation Service (NRCS). 2018. Web Soil Survey. Available at: http://websoilsurvey.nrcs.usda.gov. Accessed online January 19, 2018.
PG&E 2006	Pacific Gas & Electric Company. San Joaquin Valley Operation and Maintenance Habitat Conservation Plan. 2006. December. Available at: https://www.fws.gov/ecos/ajax/docs/plan_documents/thcp/thcp_838.pdf.
Shuford and Gardali 2008	Shuford, W.D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
SHTAC 2000	Swainson's Hawk Technical Advisory Committee (SHTAC). 2000. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley. May 31.
Swolgaard et al. 2008	Swolgaard, C.A., K.A. Reeves, and D.A. Bell. 2008. Foraging by Swainson's hawks in a vineyard-dominated landscape. Journal of Raptor Research, 42(3):188-196.
USACE 2008	U.S. Army Corps of Engineers (USACE). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). J.S. Wakeley, R.W. Lichvar, and C.V. Noble, eds., Technical Report prepared for the U.S. Army Engineer Research and Development Center, Vicksburg, MS.
USACE 1987	U.S. Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
USFWS 2018	U.S. Fish and Wildlife Service (USFWS). 2018. List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California. June 19.
USFWS 2011	U.S. Fish and Wildlife Service (USFWS). 2011. U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior To Or During Ground Disturbance. Available at: https://www.fws.gov/sacramento/es/Survey-Protocols-guidelines/Documents/kitfox_standard_rec_2011.pdf.

USFWS 2010 U.S. Fish and Wildlife Service (USFWS). 2010. San Joaquin Kit Fox (*Vulpes macrotus mutica*) 5-Year Review: Summary and Evaluation. Prepared by the Sacramento Fish and Wildlife Office.

USFWS 1999 U.S. Fish and Wildlife Service (USFWS). 1999. San Joaquin Kit Fox Protocol for the Northern Range. Sacramento Fish and Wildlife Office. June.

USFWS 1998 U.S. Fish and Wildlife Service (USFWS). 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland OR.

Walston et al. 2015 Walston, L.J., K.E. Rollins, K.P. Smith, K.E. LaGory, K. Sinclair, C. Turchi, T. Wendelin, and H. Souder. 2015. A Review of Avian Monitoring and Mitigation Information at Existing Utility-Scale Solar Facilities. prepared for: U.S. Department of Energy, SunShot Initiative and Office of Energy Efficiency & Renewable Energy. April.

7.5 CULTURAL RESOURCES

CULTURAL RESOURCES: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	■	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	■	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	■	☐	☐

This section is based on the Cultural Resource Assessment prepared for the project (HELIX 2018, Appendix E – *Confidential, Not for Public Review*). The assessment included a record search at the Southern San Joaquin Valley Information Center (SSJVIC), California State University, Bakersfield; a search of the Native American Heritage Commission's Sacred Lands File and information request letters to eight Native American representatives; a pedestrian field survey; and completion of California Department of Parks and Recreation (DPR) forms.

7.5.1 Environmental Setting

The term "cultural resources" includes historical resources, archaeological resources, paleontological resources, and human remains. Following are definitions for key cultural resource terms used in this section:

Historical Resources. Historical resources, as defined by CEQA, are resources that are listed in, or are determined to be eligible for listing in, the California Register of Historical Resources (CRHR) or a local register, or that are otherwise determined to be historical pursuant to the CEQA Statute or Guidelines (PRC Section 21084.1 or CCR Section 15064.5). A historical resource may be an object, building, structure, archaeological site, area, place, record, or manuscript which a lead agency determines to be

historically significant or significant in terms of California's architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural records. Typically, historical resources are more than 50 years old, and may be prehistoric (i.e., Native American) or historic in age.

Archaeological Resources. Archaeological resources that do not meet the criteria of historical resources may be determined to be "unique" as defined by the CEQA Statute (PRC Section 21083.2). A unique archaeological resource is an artifact, object, or site that: (1) contains information (for which there is a demonstrable public interest) needed to answer important scientific research questions; (2) has a special and particular quality, such as being the oldest of its type or the best available example of its type; or (3) is directly associated with a scientifically recognized important precontact or historic event or person. Unique archaeological resources may be prehistoric or historic in age.

Paleontological Resources. Paleontological resources include fossils, fossil localities, and stratigraphic units that contain the preserved remains or traces of fossil organisms. Fossils may be found as individual specimens or as assemblages of many organisms. Of particular importance are fossils that are unique or unusual and that may make significant contributions to taxonomy, systematics, evolutionary theory, paleoecology, or stratigraphy, or that may enhance understanding of regional geologic history. Fossils found in situ (i.e., that have not been disturbed subsequent to their burial and fossilization) provide the most useful scientific data for reconstructing taphonomic processes (i.e., conditions under which the fossils were preserved).

Native American Background

Ethnography

The project area lies in the ethnographic territory of the Yokuts, specifically, the Southern Valley Yokuts. The Yokuts constitute several different tribes delineated by slightly differing dialects and cultural practices. The Yokuts belong to the Penutian language family and are generally divided into three main groups: the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts (Silverstein 1978). Some researchers argue that the valley groups are so similar that early ethnologists may have inadvertently produced an arbitrary boundary line that didn't exist. Each of these Yokut groups consisted of numerous tribes and villages that settled along Central Valley waterways and the Sierra Nevada foothills. Although the Yokuts existed in a great territorial expanse, inhabiting more than half of California's valley floor, their dialects and traditions remained homogeneous.

According to early accounts, the Yokuts resided in a geographical stretch of approximately 300 square miles (Kroeber 1976). The Northern Valley Yokuts existed along the San Joaquin River from where it bends northward to a line midway between the Calaveras and Mokelumne Rivers to the south (Wallace 1978). The exact northern boundary is a matter of debate, as the Plains Miwok to the north may have existed in parts of this transitional area. Although ethnographic accounts are sparse in delineating a western territorial boundary, the Southern Valley Yokuts did not appear to settle west of the Diablo Range. The Southern Valley Yokuts existed in the southern region of the San Joaquin Valley from the Kings River and its tributaries to the Tehachapi Pass (Kroeber 1976). The Foothill Yokuts, acting as an eastern boundary for valley Yokut groups, exploited a different biota in the Sierra Nevada foothills, settling at elevations up to approximately 2,000 feet above sea level.

The name "Yokuts" was derived from a native word yokoch (and other variations) meaning "person" or "people" (Kroeber 1976). According to Kroeber, population estimates for the Yokut groups are sketchy

at best. Calculating the average number of people in each village, Kroeber estimates that Yokut populations could have ranged somewhere between 15,000 and 20,000 people before European contact (Kroeber 1976). When the Spanish explorer Gabriel Moraga led his expedition up the San Joaquin River in 1806, he documented approximately 20 groups and 5,620 people in Yokut territory, but Kroeber warns that accounts by Moraga could be inaccurate.

Depending on their ecological habitat, the Yokuts lived in a variety of structures made from local resources. The dwelling types included tule mat-covered, gabled communal structures, long tule houses, elliptical or oblong tule houses, conical Winter Houses (used by the Foothill Yokuts), bark houses, and semi-subterranean sweat houses (Kroeber 1976). Numerous California Native American groups in the Central Valley often located their dwellings on natural high points or mounds to avoid occasional flooding from the river systems (Heizer and Elsasser 1980).

According to Powers in 1877, the typical California Native American diet consisted mainly of acorns, fish, and small seeds (Heizer and Elsasser 1980). Nearly 500 plant and animal species were utilized and according to Kroeber, the Yokuts were omnivorous in their subsistence practices. The Southern Valley Yokut diet included waterfowl such as geese, ducks, and mud hens that were caught with snares in the tule marshes. Mussels and turtles were enjoyed as food by the Yokuts, but they did not eat frogs or many insects. Antelope, elk, and deer were hunted and other animals and birds that were eaten included wild pigeons, quail, rabbits, squirrels and other rodents (Wallace 1978). In addition to salmon, riverine exploitation also included fishing for white sturgeon, perch, western suckers, and Sacramento pike and hunting geese, ducks, and pigeons. Yokuts utilized fish pots, weirs, nets, and traps to catch various types of fish (Kroeber 1976). The Yokuts also utilized tule boats to traverse the multitude of water channels on the valley floor (Heizer and Elsasser 1980; Kroeber 1976). The Southern Valley Yokuts collected various seeds from the Central Valley grasslands (sunflower, clover, bunchgrass, and wild oats, to name a few), that they stored in baskets to be used during the winter months.

Pottery was a limited technology utilized almost solely by the southern foothill groups. The pottery consisted of simple earthenware formed into basic vessel shapes (Kroeber 1976). The bow and arrow were widely used by the Yokuts for hunting. Nodules of different stone, including obsidian, chert, and basalt, were crafted into projectile points and other usable tools. Mammal bones were also utilized to create a variety of implements, including saws and awls (Wallace 1978). Typical dress for Yokuts males was a basic deerskin wrapped around the loin, or they wore no clothes. Tattooing was a common practice. Men typically decorated their chins with different geometric patterns, while women tattooed their breasts, arms, legs, and abdomens, and pierced their nasal septum for ornamentation (Kroeber 1976).

Historic Setting

Kings County

Kings County gained its name from early Spanish explorer Gabriel Moraga, who in 1805 named the prominent river flowing through the land El Rio de los Santos Reyes, or “River of the Holy Kings” after the Three Wise Men from the Bible (Hoover et al. 1990). The river’s name was later Americanized to “Kings River,” and in 1893, the County was formed.

There are a number of historic resource sites in the County, but one of the most infamous is the site of the Mussel Slough Tragedy. The location is memorialized as California Historic Landmark #245 as the site

of a gunfight that left seven men dead. The Mussel Slough region consisted of dry plains suitable only for cattle ranching. In 1866, Congress granted the Southern Pacific Railroad (SPRR) title to the odd numbered sections of land along their proposed line. Homesteaders promptly began establishing farms and constructing canals nearby in anticipation of buying the adjacent lands, which SPRR planned to sell for $2.50 per acre. However, SPRR took note of the improvements, and set much higher prices for the land after a Supreme Court decision allowed SPRR to reclaim the properties without compensation unless the settlers were willing to pay the asking price. Tensions between homesteaders and SPRR intensified. On May 11, 1880, a group of armed homesteaders in the Mussel Slough area attempted to deter a U.S. Marshal and two heavily armed new property owners from evicting some of the homesteaders. The confrontation quickly escalated, leaving seven of the homesteaders and new property owners dead (Beck and Haase 1974).

Towards the end of the 19th century when petroleum oil was becoming increasingly important, the Kettleman North Dome Oil Field was discovered. This field runs parallel to I-5 in the County. The regional geology led prospectors to suspect that oil lay below, but it wasn't until deep drilling technology advanced sufficiently that the 7,000-foot deep reservoirs could be tapped. The enormous output caused general friction in the industry, as the unregulated output led to a drop in oil prices nationwide (Brown 1940). Regardless of the general price impacts, the oil industry spurred the regional economy for years to come.

Lemoore, CA

The project area lies in close proximity of the City of Lemoore, which was settled in the second half of the 19th century. At the request of Dr. Lee Moore in 1875, the United States Post Office Department built a new office in a small agricultural community called La Tache (named after one of the local Yokut territories and the Laguna de Tache land grant). Essentially granting cityhood to the community, the establishment of the new post office came with a name morphed from Dr. Lee Moore's post office application, the community henceforth being known as "Lemoore, CA." Local industry was, in part, focused on sheep ranching and in 1890 Lemoore was considered one of the largest wool distributors in the United States (Hoover et al. 1990).

Lemoore is now known for its United States Naval Air Station based west of the city. During World War II, the United States prepared for Japanese attacks along the west coast by creating a number of Army Air Field stations throughout California (Beck and Haase 1974), including the Lemoore Station. Later, the Navy opened Lemoore Naval Air Station, a base which hosts the largest Master Jet Base in the U.S. Navy.

Water Projects

Kings County is one of the most agriculturally productive counties in California, providing dairy products, livestock, tomatoes, almonds, stone fruit, grapes, and field crops. Located in the southern San Joaquin Valley, an area with low annual average rainfall, large-scale agriculture in the County is made possible through irrigation.

The CVP was an ambitious water development project built by the federal government at the behest of the State of California to resolve chronic water shortages which had been recognized in the 19th century but were not acted on until the 1920s. Studies by California State Engineer Edward Hyatt from 1927–1931 led to his recommendation for a system of canals and reservoirs throughout the state, including infrastructure that would transport water from the Colorado River to supply Southern California. The

Great Depression delayed construction, until California legislators convinced President Franklin Roosevelt to fund construction as a jobs creation program under the New Deal (JRP and Caltrans 2000).

Initial construction focused on five basic units, operating as an integrated system: Shasta Dam, the Delta-Mendota Canal, Friant Dam, the Friant-Kern Canal, and the Contra Costa Canal. Friant Dam and the Friant-Kern Canal worked together to store and divert San Joaquin River water as far as the southern extremes of the San Joaquin Valley near Bakersfield. Initial construction was complete by the 1950s, but the system has been expanded and elaborated on ever since, and the U.S. Bureau of Reclamation has claimed that the CVP is one of the most extensive water transport systems ever built. By 1955, about 4.5 million acres of land in the valley were irrigated by CVP water—a little more than half of the irrigated land in California (JRP and Caltrans 2000). The CVP is about 400 miles long, and consists of 20 dams and reservoirs, 11 power plants, and 500 miles of major canals, tunnels, and other water delivery systems. The CVP delivers 7 million acre-feet of water per year and provides irrigation for one-third of the agricultural lands in California (BOR 2016).

The State Water Project was built by the state of California as an accompaniment to the CVP, serving areas that did not have access to CVP infrastructure. The State Water Project accomplished this primarily by diverting water from northern California to the Southern San Joaquin and Los Angeles areas. The centerpiece of the State Water Project was the California Aqueduct, but other facilities included 16 dams, nine power plants, and 18 pumping plants along the Aqueduct's 444-mile length (JRP and Caltrans 2000).

The WWD was formed in 1952 and is currently the largest agricultural water district in the United States. The first significant irrigation of the Westlands area began in 1915 when farmers began drilling deep wells to expand the amount of arable land. Well production increased for the next 30 years until it became clear that an alternate supply was needed. The Westside Landowners Association was formed in 1942 to look for solutions, and to see if a connection to the CVP could be made (WWD 2016).

Increased productivity led farmers to petition the Fresno County Board of Supervisors for the formation of a water district, leading to the development of the WWD in 1952. The WWD contracted with the federal government for 40 years of surface water delivery. A pipeline was built in 1963 from Fresno Slough to the San Luis Canal to assist in the process. In the meantime, the Westplains Water Storage District was organized in 1962, with interests to the west of WWD. The Westplains Water Storage District and WWD merged in 1965 and by 1968 had begun receiving water from the San Luis Unit of the CVP (WWD 2016).

Record Searches and Archival Research

Southern San Joaquin Valley Information Center Record Search Results

On April 21, 2016, the SSJVIC at California State University, Bakersfield conducted a records search for documents relevant to any previously recorded cultural resources and archaeological studies within a 0.5-mile radius of the project site. A second record search was conducted at SSJVIC on November 6, 2017 to update the initial records search.

Based on the results of the database searches, no precontact or historic age resources or sites have been previously recorded within the project site; however, five cultural resources sites and two isolated artifacts (isolates) have been recorded within 0.5 mile of the project site (Table 7.5-1). Isolates differ from cultural resource sites and features in that they are a single or small group of artifacts that are not

clearly associated with a larger accumulation of artifacts or an archaeological site and are typically ineligible for the National Register of Historic Places (NRHP) and/or the CRHR. The database searches also identified six studies that have been conducted within the project site and 15 studies that have been conducted within 0.5 mile of the project site. Ten of the studies were identified during the April 2016 database search, and an additional five studies were identified during the November 2017 database search (HELIX 2018).

TABLE 7.5-1
PREVIOUSLY RECORDED SITES WITHIN 0.5-MILE OF PROJECT SITE

Resource/Site	Period	Description	Date Recorded
P-16-000007	Precontact	Burials, shell, tools – may have been destroyed	1977
P-16-000008	Precontact	Lithic scatter, burials	1939, 1977
P-16-000009	Precontact/ historic	Historic structures, lithic scatter, burials, occupation debris	1939, 1977,1985
P-16-000053	Precontact	Lithic scatter	1985, 2011
P-16-000092	Precontact	Lithic scatter	1985
P-16-000198	Precontact	Isolated groundstone fragment	2002
P-16-000199	Precontact	Isolated pestle and mortar fragments	2001

Archival Research

An analysis of General Land Office (GLO) plats and historic USGS maps was conducted to determine the potential for unrecorded resources within the project site and its vicinity. In 1894, the SPRR obtained lands in the southwest portion of the project site and the State of California took control of federal lands in the northeast and southwest portions of the project site. No GLO patents were awarded to individuals owning land within the project site. In addition to examining land patents, early plat maps of the project site and surrounding vicinity were reviewed. Plat maps incorporating the present-day project site were developed starting in 1855 and were re-drawn or amended in 1869. During these years, the maps depicted various natural features in the project site and vicinity which consisted primarily of sloughs and creeks. No buildings, structures, roads, or other man-made features were shown. Early 20th century USGS maps demonstrate that little historic-era development occurred in the northeast or southwest project site parcels. The 1929 “Lemoore, CA,” “Stratford, CA,” and “Westhaven, CA” USGS quadrangle maps depict only roadways, irrigation canals, and occasional buildings within the project area. Several decades later, the 1954 “Lemoore, CA,” 1943 “Stratford, CA,” and 1956 “Westhaven, CA” quadrangle maps differ little from the 1929 maps except for a few additional access roads and drainage/irrigation canals on the project site and in the vicinity.

Historic Age Chevron Pipeline

As detailed below, information was provided to the County about a decommissioned, historic age pipeline within the boundaries of the project site. The underground pipeline would cross in the northern portion of the project site between the unimproved Kent Avenue alignment and Murphy Ranch Road and would extend for approximately 4,800 feet in a roughly east/west direction.

On May 14, 2018, Matt Donnelly, Planner I of the CDA received a letter from Mike N. Oliphant, Project Manager Mining and Specialty Portfolio for Chevron Environmental Management Company (CEMC). The letter stated that a portion of Chevron’s former Old Valley Pipeline (OVP) existed in the vicinity of the

project site and provided information about the pipeline that could potentially be encountered during subsurface construction activities for the project. The letter stated:

> This formerly active pipeline was constructed in the early 1900s and carried crude oil from the southern San Joaquin Valley to the San Francisco Bay Area. Pipeline operations for the OVP ceased in the 1940s, at which point the pipeline was taken out of commission. The degree and method of decommissioning varied: in some instances, the pipeline was removed, while in others it remains in place. Because this pipeline has been decommissioned, with the majority of pipeline having been removed, it is not readily identified as underground utilities through the Underground Service Alert North System or utility surveys. Figure 1 illustrates the location of the former OVP [right-of-way] with respect to the proposed project area. The location of the pipeline shown on Figure 1 is based on historical as-built drawings and the approximated positional accuracy of the alignments is generally +/- 50 feet. The OVP was installed at depths of up to 10 feet below ground surface. The steel pipeline was typically encased in a protective coating composed of coal tar and ACM.

On June 6 and 7, 2018, a site investigation was conducted to evaluate the location of the pipeline, to determine if the OVP was still present and whether any releases of chemicals (such as petroleum products) had occurred in the area of the OVP. The field geophysical survey did not identify the pipeline within the boundaries of the project site (Stantec 2018).

Native American Heritage Commission Search Results

On June 6, 2016, a request was sent to the Native American Heritage Commission (NAHC) requesting a search of the Sacred Lands File. On June 6, 2016, a response was received from the NAHC stating that the "record search of the NAHC Sacred Lands File was completed for the project area with negative results." Included with the results was a list of eight Native American representatives who may have additional information about the project area. On June 7, 2016, information request letters were sent to the eight Native Americans.

On June 21 and June 30, 2016, telephone calls and/or emails were placed to the eight Native Americans to inquire about any information they would like to provide about the project. In a responding email dated June 21, 2016, Ms. Kerri Vera stated that the Tule River Tribe defers communication and planning efforts to the Tachi Yokut Tribe (Tribe). In an email dated June 21, 2016, Ms. Shana Brum, on behalf of Mr. Franco of the Tribe, stated that the project area is culturally sensitive and that the Tribe would like to:

- Secure Native American monitors for all ground disturbing activities during construction,
- Make a cultural presentation to the construction crews,
- Have a burial plan in place prior to construction, and
- Have a curation agreement for the project.

Ms. Brum also stated that it is the Tribe's preference is to avoid disturbing any discovered burials if possible. Further information regarding the County's consultation with the Tribe per the AB 52 process is presented in Section 7.18, *Tribal Cultural Resources*.

Pedestrian Survey

From May 30 to June 17, 2016, the HELIX team completed an intensive pedestrian survey of the project site by walking parallel transects at 15- to 20-meter intervals and using a Trimble GeoXT GPS unit to verify project boundaries and document resource locations. Because of the scope and scale of the project, field conditions summarized in Table 7.5-2 are reported by USGS Section numbers. All ground disturbance caused by bioturbation (the reworking of soils and sediments by animals or plants) was thoroughly examined, and vegetation was periodically scraped away to inspect the ground when surface visibility conditions were poor.

TABLE 7.5-2
FIELD CONDITIONS SUMMARY

Section	Subsection	Notes	Ground Surface Visibility (%)
1	West ½	Remnants of old crop rows discernable from old hay field now used for pastureland.	50-60
1	East ½	Vegetation decreases, silty soils present.	90
2	East ½	Remnants of old crop rows discernable from old hay field now used for pastureland. Area exhibited dense vegetation.	0-5
2	NE ¼	Vegetation and old crop rows completely disappear. Land consisted of soft non-compacted silty soil with the occasional salt pan present.	100
11, 12, 13, 14	All	Exhibited tall dried grasses, almost chaparral type vegetation.	30-40
16	West ½	Consisted of a recently cut hay field with stacks of hay at various locale. Residual low-lying dried hay remained.	10
17	East ½	Consisted of a recently cut hay field with stacks of hay at various locale. Residual low-lying dried hay remained.	0-5
20, 21	West ½	Recently cut alfalfa field, low-lying cut plants still present.	10
25	All	The parcel exhibited tall dried grasses and no apparent signs of cattle grazing.	30-40
25, 26	NW ¼	The parcel was covered in annual dried grasses with evidence of old crop rows present.	15-20
34	All	The flat parcel exhibited tall dried grasses, likely the remnants of an old hay field now being utilized for pastureland.	30-40
35	All	Remnants of old crop rows discernable from old hay field now used for pastureland.	0-5
36	All	The land is completely carpeted with tall grasses and chaparral type vegetation.	0-5

HELIX-001

This resource consists of a complex of WWD and EWSID/KRCD irrigation features, identified within or immediately adjacent to the project footprint:

HELIX-001/SAS-009 is the Empire Westside Main Canal, a series of adjacent canals with adjacent levee roads on either side which is managed by the KRCD. The canal/road complex is 4.3 miles long, running between Murphy Ranch Road and Laurel Avenue. This canal/road complex is visible on the 1929 and 1954 "Stratford, CA" USGS 7.5-minute quadrangle maps, making this complex at least 87 years old. The northern 2.7-mile section north of Kansas Avenue consists of four parallel canals, and five parallel levee roads on either side of the canals. The levee roads are consistent in construction, measuring approximately 30 feet wide each and made from compacted soil. All of the canals were filled with water during recordation and the height from the bottom of the canals to the top of the roads was estimated (rather than measured) to be approximately 20 feet. The outer (westernmost and easternmost) two canals measure 30 feet wide, while the larger inner two canals measure approximately 40 feet wide. The canals have modern sluice gates along bisecting roads.

HELIX-001/SAS-001 is an unnamed canal with adjacent levee roads on either side which is managed by the KRCD. The canal/road complex is 1.5 miles long, extending between Highway 198 and Jackson Avenue. This canal is visible on the 1927 and 1954 "Lemoore, CA" 7.5-minute quadrangle maps, making it at least 89 years old. The canal is approximately 25 feet wide at the top; the bottom width could not be discerned as the canal was filled with water at the time of the survey, and over 10 feet deep. The levee roads are approximately 15 feet wide. HELIX-001/SAS-001 is currently part of the KRCD and, given the minimum age of the feature, may have been part of the earlier development of the EWSID, which built a series of ditches and canals between 1890 and 1915. No alterations, modifications, or other changes in the original canal structure were apparent.

HELIX-001/SAS-010 is an unnamed canal with adjacent levee roads on either side which is managed by the KRCD. The canal/road complex is 2 miles long, running between the unimproved Kent Avenue alignment and Laurel Avenue. This canal is visible on the 1929 and 1954 Stratford 7.5-minute quadrangle maps, making this canal at least 87 years old. The canal is approximately 18 feet wide at the top, 4 feet wide at the bottom, 6 feet deep, and the bracketing levee roads are each approximately 15 feet wide. The bottom of the canal was dry and overgrown at the time of the survey, reflecting some interval of time since it had last been used. HELIX-001/SAS-010 is currently part of the KRCD and, given the minimum age of the feature, may have been part of the earlier development of the EWSID. No alterations, modifications, or other changes in the original canal structure were apparent.

HELIX-001/SAS-019 is an unnamed canal with adjacent levee roads on either side which is managed by the KRCD. The canal/road complex is 0.5-mile long, running between Laurel Avenue and Kansas Avenue. This canal is visible on the 1929 and 1954 "Stratford, CA" USGS 7.5-minute quadrangle maps, making it at least 87 years old. The canal is approximately 15 feet wide at the top; the bottom width could not be discerned as the canal was filled with water at the time of the survey, and over 10 feet deep. The levee roads are approximately 15 feet wide. This site is currently part of the KRCD and, given the minimum age of the feature, may have been part of the earlier development of the EWSID, which built a series of ditches and canals between 1890

and 1915 (KRCD 2009). No alterations, modifications, or other changes in the original canal structure were apparent.

HELIX-001/SAS-022 is an unnamed canal with adjacent levee roads on either side which is managed by the WWD. The canal/road complex is 3.1 miles long, running between Laurel Avenue and Avenal Cutoff Road. This canal is visible on the 1956 "Westhaven, CA" USGS 7.5-minute quadrangle map, making this canal at least 60 years old. The canal is approximately 35 feet wide at the top, 6 feet wide at the bottom, and 20 feet deep, and the bracketing levee roads, rising 3 to 4 feet above the adjacent hayfields, are each approximately 15 feet wide. The bottom of the canal was dry and overgrown at the time of the survey, reflecting some interval of time since it had last been used. No alterations, modifications, or other changes in the original canal structure were apparent.

HELIX-001/SAS-023 is an unnamed canal with adjacent levee roads on either side which is managed by the WWD. The canal/road complex is 2.5 miles long, running between the unimproved Kent Avenue alignment and Avenal Cutoff Road; the northern end connects with HELIX-001/SAS-022. This canal is visible on the 1956 "Westhaven, CA" USGS 7.5-minute quadrangle map, making this structure at least 60 years old. The canal is approximately 18 feet wide at the top, but the bottom width could not be discerned as the canal was filled with water at the time of the survey. The levee road east of the canal is 3 to 4 feet above the adjacent hayfields, whereas the road on the other side is much higher, rising 10 feet above the surrounding countryside; each road is approximately 15 feet wide. No alterations, modifications, or other changes in the original canal structure were apparent.

HELIX-001/SAS-25 is an unnamed canal with adjacent levee roads on either side which is managed by the WWD. The canal/road complex is 4.4 miles long, running between Laurel Avenue and Avenal Cutoff Road, where it turns west to 25th Avenue, then turns southward where it crosses Laurel Avenue and continues southward out of the project site. This canal is visible on the 1956 "Westhaven, CA" USGS 7.5-minute quadrangle map, making it at least 60 years old. The canal is approximately 30 feet wide at the top, 6 feet wide at the bottom, and 12 feet deep. The levee roads are only 1 foot above the adjacent hayfields; each road is approximately 15 feet wide. While no water was flowing in the canal at the time of the survey, it appeared to be maintained. No alterations, modifications, or other changes in the original canal structure were apparent.

HELIX-001/SAS-027 is an unnamed canal with adjacent levee roads on either side which is managed by the WWD. The canal/road complex is 1.9 miles long, running parallel to the southeast side of Avenal Cutoff Road. This canal is visible on the 1956 "Westhaven, CA" USGS 7.5-minute quadrangle map, making it at least 60 years old. The canal is approximately 20 feet wide at the top, 4 feet wide at the bottom, 10 feet deep, and the bracketing levee roads are each approximately 15 feet wide. The bottom of the canal was dry and overgrown at the time of the survey, reflecting some interval of time since it had last been used. No alterations, modifications, or other changes in the original canal structure were apparent.

HELIX-001/SAS-029 consists of the remnants of a canal bridge that is approximately 80 feet long and 20 feet wide. The feature was identified on 1954 "Stratford, CA" USGS 7.5-minute quadrangle map, making the bridge at least 62 years old. The bridge, built from a combination of cinder block and mortar, timber, and metal support construction, has been partially

deconstructed and is in partial collapse across the canal (HELIX-001/SAS-030) it once provided access over.

HELIX-001/SAS-030 is an unnamed canal with adjacent levee roads on either side which is managed by the KRCD. The canal/road complex is 0.3-mile-long, running between Murphy Ranch Road and the unimproved Kent Avenue alignment. This canal is visible on the 1929 and 1954 "Stratford, CA" USGS 7.5-minute quadrangle maps, making this canal at least 87 years old. The canal is approximately 60 feet wide at the top, 15 feet wide at the bottom, 20 feet deep, and the bracketing levee roads are each approximately 15 feet wide. The bottom of the canal was dry and overgrown at the time of the survey, reflecting some interval of time since it had last been used. HELIX-001/SAS-030 is currently part of the KRCD and, given the minimum age of the feature, may have been part of the earlier development of the EWSID. No alterations, modifications, or other changes in the original canal structure were apparent.

HELIX-002

This resource consists of a complex of roads identified in or adjacent to the project site:

HELIX-002/SAS-002 is a 3.3-mile-long historic road called 21st Avenue that is located approximately 1 mile southwest of the City of Lemoore. The compacted earthen farm access road connects to other similar roads. 21st Avenue is visible on the 1954 "Lemoore, CA" USGS 7.5-minute quadrangle map, making it at least 62 years old. 21st Avenue is 25 feet wide and rises 4 feet higher than the adjacent hay fields.

HELIX-002/SAS-003 is a 3.3-mile-long historic road called Jackson Avenue/Highway 41 that is located approximately 1 mile southwest of the City of Lemoore. The road is visible on the 1927 and 1954 "Lemoore, CA" USGS 7.5-minute quadrangle maps, making it at least 89 years old. Jackson Avenue is an actively maintained, 20-foot-wide two-lane asphalt road that rises 1 to 2 feet higher than the adjacent farm fields.

HELIX-002/SAS-004 is a 1-mile-long historic road called 20th Avenue that is located approximately 1 mile from the City of Lemoore. The road is visible on the 1927 Lemoore and 1929 "Stratford, CA" USGS 7.5-minute quadrangle maps, making it at least 89 years old. 20th Avenue is asphalted but appears generally unmaintained in aerial imagery.

HELIX-002/SAS-007 is a 3.2-mile-long historic road called Avenal Cutoff Road that is located approximately 1.5 miles southwest of the City of Lemoore. The road runs from Jackson Avenue to I-5 (the road continues beyond the project site) and is visible on the 1956 "Westhaven, CA" USGS 7.5-minute quadrangle map, making it at least 60 years old. Avenal Cutoff Road is an actively maintained, 25-foot-wide two-lane asphalt road that rises 1 to 2 feet higher than the adjacent hay fields.

HELIX-002/SAS-008 is a 2.2-mile-long historic road called Kent Avenue that is located approximately 1.5 miles southwest of the City of Lemoore. The road runs from Avenal Cutoff Road to an unnamed levee road. Part of Kent Avenue is visible on the 1929 "Westhaven, CA" USGS 7.5-minute quadrangle map, and the rest is visible by the time of the 1956 update, making it at least 87 years old. Kent Avenue is a compacted dirt farm access road that is 15 feet wide and rises 1 to 2 feet higher than the adjacent hay fields.

HELIX-002/SAS-011 is a 0.4-mile-long historic road called Kansas Avenue that is located approximately 1.5 miles southwest of the City of Lemoore. The compacted earthen farm access road connects the Empire Westside Main Canal and another unnamed levee road. Kansas Avenue is visible on the 1929 "Stratford, CA" USGS 7.5-minute quadrangle map, making it at least 87 years old. Kansas Avenue is 15 feet wide and rises 1 to 2 feet higher than the adjacent fields.

HELIX-002/SAS-012 is a 0.5-mile-long historic road called Laurel Avenue that is located approximately 2 miles southwest of the City of Lemoore. The road runs from Avenal Cutoff Road to the town of Stratford (the road continues beyond the project site) and is visible on the 1929 "Stratford, CA" USGS 7.5-minute quadrangle map, making it at least 87 years old. Laurel Avenue is a maintained, 25-foot-wide two-lane asphalt road that rises 1 to 2 feet higher than the adjacent fields.

HELIX-002/SAS-017 is a 1.2-mile-long compacted dirt farm access road that is located approximately 1.5 miles southwest of the City of Lemoore. The road runs from 21st Avenue to the outskirts of Lemoore. The road is visible on the 1954 "Lemoore, CA" USGS 7.5-minute quadrangle map, making it at least 62 years old.

HELIX-002/SAS-031 is a 0.8-mile-long historic road called Murphy Ranch Road that is located approximately 1.5 miles from the City of Lemoore. The road is visible on the 1927 "Lemoore, CA" USGS 7.5-minute quadrangle map, making it at least 89 years old. 20th Avenue is asphalted but generally appears unmaintained.

HELIX-003

This feature is a historic-era underground high-pressure gas line utility belonging to the Southern California Gas Company. The line was identified on the 1954 "Lemoore, CA" and "Stratford, CA" USGS 7.5-minute quadrangle maps, making it at least 62 years old. The pipeline was verified in the field by the presence of a row of warning signs interspersed throughout the entire alignment. Starting at Jackson Avenue, the line runs southwest for a length of 1.4 miles. Refer to Figure 3 in Appendix A for the location of the existing easement through the project site.

HELIX-004

This feature is a sparse lithic scatter on the west bank of the Kings River. The site included one grey granite projectile point mid-shaft fragment; one Franciscan chert unifacial scraper, one Franciscan chert interior flake, three light grey cryptocrystalline silicate (CCS) interior flakes, two brown CCS interior flakes, and one light greenish CCS interior flake found in a levee berm and adjacent hayfield.

ISO-001, -002, and -003

These features are three isolated finds of prehistoric fragmented lithic tools and flakes. ISO-001 consists of a black obsidian bifacial tool fragment (possibly a projectile point missing its base) and a dark grey chert primary flake. ISO-002 consists of one black obsidian bifacial tool, one brown chert projectile point mid-shaft fragment, and a single brown chert flake. ISO-003 consists of an isolated Franciscan chert interior flake. All isolated finds were discovered on the ground surface of an abandoned hay field or levee road and were clearly in secondary context. As such, ISO-001, -002, and -003 will not be evaluated for CRHR listing.

California Register of Historical Resources Eligibility

The CRHR identifies historical resources as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance (PRC Section 50201). PRC Section 5024.1 defines eligibility requirements and states that a resource may be eligible for inclusion in the CRHR if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2. Is associated with the lives of persons important in our past;

3. Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or

4. Has yielded, or may be likely to yield, information important in prehistory or history.

The four resources identified during the field survey were assessed under the California Register of Historical Resources four criteria as follows.

HELIX-001

The portions of HELIX-001 within the project site include four 1950s canals (HELIX-001/SAS-022, -023, -025, and -027); two of the canals (HELIX-001/SAS-022 and -027) were overgrown, not recently used, and possibly abandoned. In all cases, the adjacent levee roads were in good repair and appeared to be in active use. All of these features are part of a complex of irrigation features within the WWD, a historic irrigation district with ties to the CVP, arguably one of the most important water projects in the United States. Other canals (HELIX-001/SAS-001, -009, -010, -019, -020, and -030) within the project site are older, generally dating to the 1920s and were likely constructed under a variety of circumstances, possibly as part of the EWSID and now being managed by its successor, KRCD.

CRHR Criterion 1 – HELIX-001 was assessed under California Register of Historical Resources Criterion 1: Event, for its potential significance as part of any historic trends or events that may have made a significant contribution to the broad patterns of our history.

The development of irrigation for California's agricultural industry can be considered one of the two most important components of California history (the other being the Gold Rush). California's position as a leading supplier of produce to the United States and beyond and Kings County's role in that industry are substantial. While not physically imposing, the canals included in the HELIX-001 site - both active and abandoned - are visible reminders of the process that makes that agricultural industry possible in an area that otherwise could not support such endeavors. The four canals identified as HELIX-001/SAS-022, -023, -025, and -027 appear to be contributing elements to a CRHR-eligible historic district that exemplifies the broad patterns of California's history for its association with the CVP. The canal bridge (HELIX-001/SAS-029) is not a contributing element of the historic district as its dilapidated condition has resulted in a significant loss of integrity.

The remaining canals are associated with the EWSID and, while older, do not include the connection to the CVP and instead are just examples of a plentiful and necessary resource supporting California agriculture, and are not contributing elements to the district as they lack that critical association.

However, due to the connection of HELIX-001/ SAS-022, -023, -025, and -027 with the CVP, this site is recommended eligible for CRHR listing under Criterion 1.

CRHR Criterion 2 – HELIX-001 was assessed under California Register of Historical Resources Criterion 2: Person, for its potential significance and association with a person of importance in local, state, or national history. Organization of the WWD is credited to Jack O'Neill, Russell Giffen, Frank Diener, Harry Baker, and Louis Robinson, but these men do not otherwise appear to be prominent in California's past. The formation of the EWSID was a conglomeration of efforts not led by any persons particularly prominent in California's past. Consequently, HELIX-001 is not recommended eligible for CRHR listing under Criterion 2.

CRHR Criterion 3 – HELIX-001 was assessed under California Register of Historical Resources Criterion 3: Design/Construction, for its potential significance as a property which embodies the distinctive characteristics of a type, period, method of construction or style of architecture, represents the work of a master architect, builder or craftsman, possesses high artistic values, or represents a significant or distinguishable entity whose components lack individual distinction.

The construction of such water conveyance systems was common during the 20th century, and the mechanics of the excavations are common and uncomplicated. Neither the canals nor the wells embody any distinctive construction or artistic characteristics that would make them eligible to the CRHR under Criterion 3. Consequently, HELIX-001 is not recommended eligible for CRHR listing under Criterion 3.

CRHR Criterion 4 – HELIX-001 was assessed under California Register of Historical Resources Register Criterion 4: Information Potential, for its potential significance in providing information important to prehistory or history. The simple methods used to construct canals, levee roads, or wells are well understood and the features of HELIX-001 within the project site boundaries do not contain qualities that are in any way unusual or likely to reveal information important to understanding historical methods of construction. Consequently, HELIX-001 is not recommended eligible for CRHR listing under Criterion 4.

HELIX-002

The portions of HELIX-002 within the project site boundaries include segments of multiple roads of varying antiquity. Construction of these roads generally occurred more than 60 years ago, some more than 80 years ago. Almost all of the roads are in good condition, maintained and improved over time and still in use.

CRHR Criterion 1 – HELIX-002 was assessed under California Register of Historical Resources Criterion 1: Event, for its potential significance as part of any historic trends or events that may have made a significant contribution to the broad patterns of our history. The HELIX-002 roads are of historic age, but actual association with specific events or activities is absent; they allow access from one point to another but do not evidence any particular ties to the broad patterns of California history. Consequently, HELIX-002 is not recommended eligible for CRHR listing under Criterion 1.

CRHR Criterion 2 –HELIX-002 was assessed under California Register of Historical Resources Criterion 2: Person, for its potential significance and association with a person of importance in local, state, or national history. There do not appear to be any ties with individuals of historical significance. Consequently, HELIX-002 is not recommended eligible for CRHR listing under Criterion 2.

CRHR Criterion 3 – HELIX-002 was assessed under California Register of Historical Resources Criterion 3: Design/Construction, for its potential significance as a property which embodies the distinctive characteristics of a type, period, method of construction or style of architecture, represents the work of a master architect, builder or craftsman, possesses high artistic values, or represents a significant or distinguishable entity whose components lack individual distinction.

The roads are common examples of typical paved and unpaved transportation corridors with no specific engineering or artistic qualities. Consequently, HELIX-002 is not recommended eligible for CRHR listing under Criterion 3.

CRHR Criterion 4 – HELIX-002 was assessed under California Register of Historical Resources Register Criterion 4: Information Potential, for its potential significance and its ability to convey information.

The roads are typical structures built in a typical manner and do not offer information important to our understanding of the past. Consequently, HELIX-002 is not recommended eligible for CRHR listing under Criterion 4.

HELIX-003

HELIX-003 is a historic age gas pipeline that crosses the project footprint.

CRHR Criterion 1 – The history of SoCalGas is significant in the annals of Southern California development, however a gas pipeline is not a singularly important resource, rather it is a commonplace feature of the 20th century. Consequently, HELIX-003 is not recommended eligible for CRHR listing under Criterion 1.

CRHR Criterion 2 – There do not appear to be any ties with individuals of historical significance. Consequently, HELIX-003 is not recommended eligible for CRHR listing under Criterion 2.

CRHR Criterion 3 – The gas pipeline is a common example of infrastructure with no specific engineering or artistic qualities. Consequently, HELIX-003 is not recommended eligible for CRHR listing under Criterion 3.

CRHR Criterion 4 – Gas lines are typical structures built in a typical manner and do not offer information important to our understanding of the past. Consequently, HELIX-003 is not recommended eligible for CRHR listing under Criterion 4.

HELIX-004

HELIX-004 is a sparse lithic scatter; prehistoric sites such as lithic scatters are generally evaluated under CRHR Criterion 4 for their data potential as they lack values that would make them eligible for listing under other criteria.

CRHR Criterion 1 – The site does generally reflect broad patterns in California history but lies in a disturbed context. Consequently, HELIX-004 is not recommended eligible for CRHR listing under Criterion 1.

CRHR Criterion 2 – There do not appear to be any ties with individuals of historical significance. Consequently, HELIX-004 is not recommended eligible for CRHR listing under Criterion 2.

CRHR Criterion 3 – A sparse lithic scatter has no specific engineering or artistic qualities. Consequently, HELIX-004 is not recommended eligible for CRHR listing under Criterion 3.

CRHR Criterion 4 – The disturbed context of the find and the lack of significant numbers of artifacts indicates that the site has no particular data potential. Consequently, HELIX-004 is not recommended eligible for CRHR listing under Criterion 4.

HELIX-004's disturbed context, small size, and lack of artifact diversity also preclude it from meeting the criteria of a unique archaeological resource.

7.5.2 Environmental Evaluation of Cultural Resources

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

Less Than Significant Impact with Mitigation. Of the four cultural resources discovered and evaluated for CRHR eligibility, only HELIX-001 qualifies as a historical resource. HELIX-001 is comprised of historic canals and their associated levee roads.

The construction and operation of the proposed project would avoid direct permanent impacts to the bed and banks of the canals. As described in the discussion of "Project Entrances and Internal Driveways" in Section 3.5.4, *Support Facilities*, the proposed project may use bridges to span the canals. As needed, pre-fabricated bridges may be installed and would fully span any canal, avoiding any impacts to the channel and its banks. Similarly, improvements to existing canal crossings would completely avoid any impacts to canal banks and canal waters and would also be constructed in a manner to ensure that no fill is placed within the canal limits. The project fences would be placed so that existing levee roads are outside of the operation area for the project site, and internal driveways for the project would be constructed for project operation.

The levee roads would be used for transport of materials, heavy equipment, and workers during construction of the project. There is the potential for heavy equipment to inadvertently damage the roads which could affect the roads' historic integrity which would be a potentially significant impact. Mitigation Measure CUL-1 requires documentation of the physical condition and attributes of the levee roads prior to construction and at the completion of construction activities, limits the types and speeds of vehicles that will be permitted to drive on the levee roads, and, if a levee road is inadvertently damaged during construction, requires the contractor to repair the road to bring it to a usable condition for ongoing use by the KRCD for operation and maintenance of their facility.

With implementation of Mitigation Measure CUL-1, potentially significant impacts would be reduced to a level of *less than significant*.

Because HELIX-002, HELIX-003, and HELIX-004 are not potentially eligible for listing on the CRHR, no mitigation or management is necessary for impacts to these resources.

Mitigation Measure CUL-1: Damage to Historic Levee Roads. Resource HELIX-001 consists of a complex of six WWD features located within or adjacent to the Project site footprint. These features include four canals and adjacent levee roads, and two wells. As a historical resource (i.e., a cultural resource found to be eligible for listing on the CRHR), the following measures will be implemented to address inadvertent impacts to HELIX-001 during and after construction:

1. The physical condition and attributes of the levee roads will be documented by a qualified archaeologist prior to construction and at the completion of construction activities. Documentation will include an overall description of each road, as well as specific information about construction details, dimensions, and elevations, as appropriate. Any significant alterations will be described in terms of the resource and its setting, focusing on whether the road retains the seven aspects of historic integrity. Each of the roads will be photo documented to provide a visual record of the road before and after construction. The photographs will be georeferenced on aerial maps.

2. Construction vehicle speeds on levee roads will be limited to 15 miles per hour.

3. Levees and canals will not be crossed by construction vehicles (i.e., vehicles will not drive perpendicularly across/up/down the roads/levees or canals).

4. If any portion of HELIX-001 is inadvertently damaged during construction, the construction contractor will be required to repair the road to bring it to a usable condition for ongoing use by the KRCD for operation and maintenance of their facility. Repair of the road will be conducted to retain as many of the original features of the road as possible thus retaining its historic integrity while allowing for its continued use.

Within 24 hours of discovering a project-related inadvertent impact to the historic levee road, the contractor shall provide to the County a written account that:

1. Describes the resource affected;

2. Defines in detail the nature and extent of the impact on the resource including photographs and maps as appropriate;

3. Identifies the project activity that resulted in the impact, when the impact occurred, and whether measures were in place to prevent the impact;

4. Describes measures taken to protect the resources from further impacts;

5. Provides an assessment of whether the impacts have affected the significance of the resource; and

6. Defines how the contractor proposes to proceed to address the impact.

Resolution of impacts on cultural resources will be determined through coordination between the County, the contractor, and a qualified archaeologist. The applicant shall include a standard

inadvertent discovery clause in every construction contract to inform contractors of these requirements.

Although the proposed project would not result in potentially significant impacts to known historical resources, there is always the possibility that previously undiscovered historical resources are present within the project site. Historical resources may be pre-contact or historic in age, and could consist of, but are not limited to, stone, wood, or shell artifacts, structural remains (including remnants of the Chevron OVP), privies, or historic dumpsites. Ground disturbing activities such as trenching and grading could damage or destroy previously undiscovered historical resources, which would result in a potentially significant impact. Implementation of Mitigation Measure CUL-2 during construction would reduce the impact to a level of *less than significant*.

Mitigation Measure CUL-2: Discovery of Previously Unknown Historical Resources. In the event that buried historical resources are discovered during construction, operations shall stop within 50 feet of the find and a qualified archaeologist shall be consulted to determine whether the resource is potentially eligible for listing on the CRHR. The applicant shall include a standard inadvertent discovery clause in every construction contract to inform contractors of this requirement.

If the archaeologist determines that construction activities could damage a potential historical resource, mitigation will be implemented in accordance with Section 15126.4 of the State CEQA Guidelines. If avoidance of the resource is not feasible, a qualified archaeologist will prepare and implement a detailed treatment plan in consultation with the County, and if Native American artifacts are involved, with the Santa Rosa Rancheria Tachi Yokut Tribe. Treatment for most historical resources may consist of (but is not limited to) documentation of the resource on the appropriate DPR 523-series forms, sample excavation and artifact collection (if appropriate), and historical research. The treatment plan will include provisions for analysis of data in a regional context, reporting of results in a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals. The applicant shall include a standard inadvertent discovery clause in every construction contract to inform contractors of this requirement.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Less Than Significant Impact with Mitigation. According to the record searches conducted for the project, no unique archaeological resources have been previously recorded within the project site or a 0.5-mile radius (HELIX 2018). In addition, no unique archaeological resources were discovered during the field survey. Archaeological resources may be pre-contact or historic in age, and could consist of, but are not limited to, glass, stone, bone, wood, ceramics, features, lithic scatters and historic dump sites. It is possible that subsurface excavation activities may encounter previously undiscovered unique archaeological resources, which would result in a potentially significant impact. Implementation of Mitigation Measure CUL-3 during construction would reduce the impact to a level of *less than significant*.

Mitigation Measure CUL-3: Discovery of Previously Unknown Archaeological Resources. In the event that archaeological resources are discovered during construction, mitigation measure CUL-1 shall first be applied. If the qualified archaeologist determines that the find does not meet

the criteria of a historical resource under CEQA, the criteria of a unique archaeological resource described in PRC Section 21083.2(g) shall be applied.

If the archaeologist determines that construction activities could damage a resource that meets the criteria of a unique archaeological resource, mitigation will be implemented in accordance with PRC Section 21083.2 and Section 15126.4 of the CEQA Guidelines. The applicant shall include a standard inadvertent discovery clause in every construction contract to inform contractors of this requirement. Consistent with Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement. If preservation in place is not feasible, a qualified archaeologist will prepare and implement a detailed treatment plan in consultation with the County, and if Native American artifacts are involved, with the Santa Rosa Rancheria Tachi Yokut Tribe. Treatment of unique archaeological resources may consist of (but is not limited to) sample excavation, artifact collection, site documentation on DPR 523 forms, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the project. The treatment plan will include provisions for analysis of data in a regional context, reporting of results in a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.

c) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact with Mitigation. No human remains are known to exist within the project site nor were there any indications of human remains found during the field survey. However, there is always the possibility that subsurface construction activities associated with the proposed project, such as trenching and grading, could potentially damage or destroy previously undiscovered human remains which would result in a potentially significant impact. Implementation of Mitigation Measure CUL-5 during construction activities would reduce the impact to a level of *less than significant*.

Mitigation Measure CUL-4: Discovery of Human Remains. In the event of the accidental discovery or recognition of any human remains, State CEQA Guidelines Section 15064.5, Health and Safety Code Section 7050.5, PRC Section 5097.94, and Section 5097.98 must be followed. If during project development there is accidental discovery or recognition of any human remains, the following steps shall be taken:

a. There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the County Coroner is contacted to determine if the remains are Native American and if an investigation of the cause of death is required. If the coroner determines the remains are Native American, the coroner shall contact the NAHC within 24 hours, and the NAHC shall identify the person or persons it believes to be the “most likely descendant” (MLD) of the deceased Native American(s). The MLD shall make recommendations to the landowner or the person responsible for the excavation work within 48 hours, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98.

b. Where the following conditions occur, the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity either in accordance with the recommendations of MLD or on the project site in a location not subject to further subsurface disturbance:

   i. The NAHC is unable to identify a MLD or the MLD failed to make a recommendation within 48 hours after being notified by the commission.

   ii. The descendant identified fails to make a recommendation.

   iii. The landowner or his authorized representative rejects the recommendation of the descendant, and mediation by the NAHC fails to provide measures acceptable to the landowner.

7.5.3 References

Beck and Hasse 1974 — Beck, W., and Y. D. Haase. 1974. Historical Atlas of California. University of Oklahoma Press, Norman, Oklahoma.

BOR 2016 — U.S. Bureau of Reclamation (BOR). 2016. History of the Central Valley Project. Available at: http://www.usbr.gov/mp/cvp/about-cvp.html. Accessed February 2019.

Brown 1940 — Brown, R.L. 1940. History of Kings County. A.H. Cawston.

Caltrans 2000 — JRP and Caltrans. 2000. Water Conveyance Systems in California, Historic Context Development and Evaluation Procedures. Available at: http://ohp.parks.ca.gov/?page_id=24544. Accessed July 2016.

HELIX 2018 — HELIX Environmental Planning, Inc. 2018. RE Slate Solar Project Cultural Resources Assessment. September 2018.

Heizer and Elasser 1980 — Heizer, R. F., and A. B. Elsasser. 1980. *The Natural World of the California Indians*. University of California Press, Berkeley.

Hoover and Rench 1990 — Hoover, M., H. Rensch, E. Rensch, and W. Abeloe. 1990. *Historic Spots in California*. Revised by D. Kyle, Stanford University Press, Stanford, CA.

Kroeber 1976 — Kroeber, A. L. 1976. *Handbook of the Indians of California*, reprint of 1925 Bulletin 78, Smithsonian Institution. Dover Publications, New York.

Silverstein 1978 — Silverstein, M. 1978. Yokuts: Introduction. In Volume 8, California, edited by R. F. Heizer, pp. 446-447. *Handbook of North American Indians.* W. C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.

Stantec 2018 — Stantec Consulting Services, Inc. (Stantec). 2018. Old Valley Pipeline Assessment Report. July 31.

Wallace 1978 — Wallace, William J. 1978. Northern Valley Yokuts. In Volume 8, California, edited by Robert F. Heizer, pp. 462-470. Handbook of North American Indians. William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

WWD 2016 — Westlands Water District (WWD). 2016. History. Available at: http://wwd.ca.gov/about-westlands/history/. Accessed July 2016.

7.6 ENERGY

ENERGY: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	■	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	■

7.6.1 Environmental Setting

In 2003, the California Public Utilities Commission, the California Energy Commission, and the California Power Authority adopted an Energy Action Plan to meet California's electricity and natural gas needs. The plan was revised and updated in 2005 and again in 2008. The primary objectives of the plan are to invest in energy efficiency, renewable resources, and a clean conventional electricity supply. Senate Bill (SB) 100, passed in 2018, sets in place a goal for to produce 50 percent renewable energy by 2026, 60 percent renewable energy by 2030, and 100 percent renewable energy by 2045 within the California electricity grid. As of 2017, renewable energy sources, including biomass, geothermal, hydrologic, solar, and wind, accounted for 29 percent of California's power mix (CEC 2019).

7.6.2 Environmental Evaluation of Energy

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less Than Significant Impact. This section evaluates potential impacts of the proposed project related to energy use during construction, operation, and eventual decommissioning. The project's energy use was estimated using data and assumptions included in the Air Quality and Greenhouse Gas Emissions Technical Report prepared for the project (HELIX 2018, Appendix C).

Construction Energy Use

The project would require energy in the form of gasoline and diesel during construction through the use of on-site off-road equipment, on-site vehicles (pickup trucks, water trucks, flatbed trucks, gravel trucks, and concrete trucks), and on-road vehicles (construction delivery and freight trucks, water trucks, and worker commute vehicles; refer to Section 3.6.7 for equipment and vehicle details).

Energy use related to construction of the project would be temporary. As shown in Table 7.6-1, total energy use associated with construction is estimated at approximately 146 billion British thermal units (BTU), or nearly 43,000 megawatt-hours (MWh).

TABLE 7.6-1
TOTAL CONSTRUCTION ENERGY USE

Activity	Energy Use	
	Billion BTU	MWh
On-site Equipment		
PV Phase 1: Site Preparation	28.85	8,453
PV Phase 2: PV System Installation	21.63	6,339
PV Phase 3: Collection, Substation(s), Switching Station, Gen-Ties; Site Restoration and Revegetation	2.99	877
ESS Phase 1: Site Preparation	3.35	982
ESS Phase 2: Foundations, Structures, and System	1.76	517
ESS Phase 3: Inverters, Substation, and Connection	2.80	821
On-road Vehicles	84.89	24,873
Total	**146.28**	**42,861**

Source: HELIX 2018; Appendix C. See Appendix F for calculations.
BTU = British thermal unit
MWh = megawatt-hour

The project's construction-related energy use would not represent a significant demand on energy resources because it would be limited to a 15-month period. In addition, the project would implement standard construction BMPs, such as following maintenance schedules to maintain equipment in optimal working order and rated energy efficiency, to avoid or reduce inefficient, wasteful, and unnecessary consumption of energy. Therefore, the project's construction-phase energy impacts would be less than significant.

Operational Energy Use

As described in Section 3.7, *Operation and Maintenance*, up to six permanent staff could be on the site at any one time for ongoing facility maintenance and repairs. Occasionally, an additional 25 full-time workers may be needed for panel washing and other maintenance and repair activities. A total of up to 28 light duty truck trips per day could also occur during these quarterly maintenance activities. Based on the Traffic Impact Analysis (LSA 2018, Appendix H), modeling assumed that the project would result in a total of 3,184 annual trips at a roundtrip distance of 80 miles. Quarterly maintenance activities would also require the use of off-road equipment (refer to Section 3.7.1 for the equipment list).

As shown in Table 7.6-2, energy use associated with operations is estimated at approximately 3 billion BTU, or nearly 890 MWh, per year.

TABLE 7.6-2
ANNUAL OPERATIONAL ENERGY USE

Emission Source	Energy Use	
	Billion BTU	MWh
Onsite Equipment	0.67	198
On-road Vehicles	2.35	690
Total	**3.02**	**888**

Source: HELIX 2018; Appendix C. See Appendix F for calculations.
BTU = British thermal unit
MWh = megawatt-hour

The proposed solar facility would be capable of generating up to 300 MW of electricity under peak solar conditions. The energy that would be generated by the proposed project is estimated at 683,729 MWh per year. With this offset, the project would have a net benefit of reducing energy consumption by 682,841 MWh per year. Therefore, the project would not consume energy in a wasteful, inefficient or unnecessary manner during operation, and impacts would be less than significant.

Decommissioning Energy Use

Similar to construction, the project would require energy in the forms of gasoline and diesel during decommissioning through the use of on-site off-road equipment, on-site vehicles, and on-road vehicles (refer to Section 3.8.4 for equipment and vehicle details).

As shown in Table 7.6-3, total energy use associated with decommissioning activities is estimated at approximately 17.5 billion BTU, or approximately 5,000 MWh.

TABLE 7.6-3
TOTAL DECOMMISSIONING ENERGY USE

Activity	Energy Use	
	Billion BTU	MWh
Onsite Equipment	1.75	513
On-road Vehicles	15.72	4,607
Total	**17.47**	**5,120**

Source: HELIX 2018; Appendix C. See Appendix F for calculations.
BTU = British thermal unit
MWh = megawatt-hour

The project's energy use during decommissioning would not represent a significant demand on energy resources because it would be limited to a six-month period. The project would implement standard BMPs, such as following maintenance schedules to maintain equipment in optimal working order and rated energy efficiency, to avoid or reduce inefficient, wasteful, and unnecessary consumption of energy. In addition, energy usage during decommissioning was estimated based on current vehicle fuel economy data. In 2050, when decommissioning would occur, fuel economy will likely be substantially improved, and energy consumption would be lower than what is estimated here. Therefore, the project's decommissioning-phase energy impacts would be less than significant.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No impact. As discussed in Section 7.6.1, the primary objectives of both the Energy Action Plan and SB 100 are to promote the use of renewable energy throughout California. Although the project would consume energy during construction, operations, and decommissioning activities, the proposed solar facility was offset the projects energy consumption requirements and result in a net benefit of reducing energy consumption by approximately 683,000 MWh per year. The project would contribute to the State's goal of producing 50 percent renewable energy by 2026, 60 percent renewable energy by 2030, and 100 percent renewable energy by 2045. Locally, RC Objective G1.2 of the Kings County General Plan Resource Conservation Element encourages the development of sustainable and renewable alternative energy sources, including solar (CDA 2010). The proposed project would directly contribute to achieving this objective. Therefore, the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and no impacts would occur.

7.6.3 References

CEC 2019 — California Energy Commission (CEC). 2019. Total System Electric Generation. 2017 Total System Electric Generation in Gigawatt Hours. Available from: https://www.energy.ca.gov/almanac/electricity_data/total_system_power.html Accessed January 30, 2019.

HELIX 2018 — HELIX Environmental Planning, Inc. (HELIX). 2018. Air Quality and Greenhouse Gas Emissions Technical Report for the RE Slate Solar Project.

CDA 2010 — Kings County Community Development Agency (CDA). 2010. 2035 Kings County General Plan – Resource Conservation Element. Adopted January 26. Available at: http://www.countyofkings.com/home/showdocument?id=3118

7.7 GEOLOGY AND SOILS

GEOLOGY AND SOILS: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	■
ii. Strong seismic ground shaking?	☐	☐	■	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	■	☐

GEOLOGY AND SOILS: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
iv. Landslides?	☐	☐	☐	■
b) Result in substantial soil erosion or the loss of topsoil?	☐	■	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	■	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	■	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	■	☐
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	■	☐	☐

7.7.1 Environmental Setting

Geology

The project site is located in the Great Valley Geomorphic Province, a topographic and structural basin bounded on the east by the Sierra Nevada and on the west by the Coast Ranges. The Sierra Nevada Range is part of a fault block which dips gently to the southwest which forms the bedrock beneath the valley. This basement complex is composed of igneous and metamorphic rocks overlain by alluvium.

Tectonics and Seismicity

The project site is not located in or near an Alquist-Priolo Earthquake Fault Zone (California Geological Survey [CGS] 2018a). However, there are several active faults in the Coast Ranges to the west, including the San Andreas Fault Zone and the Great Valley Fault System. The nearest segment of the San Andreas fault is located about 35 miles southwest of the project site, and it is estimated to be capable of producing a magnitude 7.7 earthquake along the nearest segments to the project site. The Great Valley Fault System, which runs parallel to and east of the San Andreas Fault zone, is composed of blind thrust faults, which do not intersect the ground surface but can cause significant shaking and ground deformation. The nearest segment of this fault system is the Kettleman Hills segment which runs approximately 20 miles southwest from the project site at the nearest point. The 6.5 magnitude Coalinga earthquake in 1983 (25 miles west) and the 6.1 magnitude Kettleman Hills earthquake in 1985 (17 miles southwest) occurred within this fault complex (CDA 2010a).

Soils

According to the NRCS Soil Survey, the project site is composed of Lethent clay loam (approximately 46 percent of site), Tulare variant clay (approximately 17 percent), Gepford clay (approximately

16 percent), Calflax clay loam (approximately 16 percent), and Pitco clay (approximately 6 percent). Lethent clay loam (map unit 139) is described as a very deep, moderately well drained, and saline-alkali soil. Runoff is very slow and erosion hazard is slight. Limitations include very low permeability and moderate to high shrink-swell (expansion) potential. Tulare variant clay (map unit 164) is saline-alkali, very deep, poorly drained with slow permeability and low to moderate water capacity. Gepford clay (map unit 115) is found in the northeastern portion of the project site and is a saline-alkali soil found on flood plains characterized by deep and poorly drained soil with slow permeability and low to high water capacity due to salinity variation. Calflax clay (map unit 151) loam is found in the southwestern portion of the project site and is saline-sodic, very deep, and well drained with moderately slow permeability. Pitco clay (map unit 153) is described as saline-alkali, very deep, and somewhat poorly drained with slow permeability and low to moderate water capacity. The saline-alkali condition of the soils causes high corrosivity to steel and concrete (NRCS 1986, 2018). Refer to Figure 6 in Appendix A for project site soil composition.

Regulatory Framework

State

Installation of the solar field, power conditioning system, and substation at the project site would be performed in accordance with the requirements of the California Building Code (CBC) to withstand the design basis ground motion, which is defined as earthquake ground motion (lateral dynamic displacement) with a two percent chance of being exceeded in 50 years. The Alquist-Priolo Act regulates development near active faults to mitigate the hazard of surface rupture. Faults identified as being located within an Alquist-Priolo Earthquake Fault Zone are typically active faults. The project site is not in an Alquist-Priolo Fault Zone, and the nearest active faults are approximately 20 and 35 miles from the project site.

Kings County General Plan

The 2035 Kings County General Plan states that “Damage and injury resulting from geologic hazards can be reduced to acceptable levels through zoning and building permit review procedures and construction standards. New construction conforming to the standards of the CBC will provide adequate protection. Dams, schools, and hospitals are more stringently regulated by state and federal agencies for protection against such hazards. It should be noted that the purpose of the earthquake provisions of the CBC is to prevent loss of life, not to prevent structural damage” (p. HS-8; CDA 2010a).

In addition, the Resource Conservation Element of the 2035 Kings County General Plan (CDA 2010b) includes the following:

RC Objective C2.2: Ensure that land use decisions are compatible with the control of soil erosion and the maintenance of soil quality.

RC Policy C.2.2: Continue to require the application of construction related erosion control measures, including SWPPPs for all new construction.

7.7.2 Environmental Evaluation of Geology and Soils

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

No Impact. The project site is not included in an earthquake fault zone, and there are no known faults in the project site or the near vicinity (see Pub. Res. Code, Section 2621, et seq.; Div. of Mines and Geology, Spec. Pub. 42.) In addition, the Health and Safety Element of the 2035 Kings County General Plan states "[t]he County has no known major fault systems within its territory" (CDA 2010a). Since there are no known earthquake faults on or near the project site, there are *no impacts* associated with the project relative to surface rupture of an earthquake fault.

ii. Strong seismic ground shaking?

Less Than Significant Impact. Several major faults are located within a 50-mile radius of the project site and can generate maximum credible earthquakes of 6.5 Richter Magnitude or greater which could result in grounding shaking from a large or moderate earthquake causing stress to structures at the project site. The CBC specifies building standards for seismic safety with varying design standards applicable to Seismic Zones mapped statewide (ICBO 1997). The project site is within Seismic Zone 3, which has the second most stringent standards. The primary objective of the CBC standards is to ensure public safety and minimize property damage in the event of an earthquake. The CBC structural design standards provide for high degree of seismic strength and resistance to lateral forces (strong shaking) to minimize risks to public safety and damage to property. The CBC has been adopted as the County Building Code, which is implemented and enforced by the County Building Official and Building Inspectors through building permit reviews, approvals, inspections, and final sign offs.

In addition, the Health and Safety Element of the 2035 Kings County General Plan states:

> "Damage and injury resulting from geologic hazards can be reduced to acceptable levels through zoning and building permit review procedures and construction standards. New construction conforming to the standards of the [CBC] will provide adequate protection." (CDA 2010a)

With implementation of the applicable seismic design standards of the CBC, potential project impacts due to ground shaking at the project site would be *less than significant*.

iii. Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. No regulatory mapping of liquefaction zones has been prepared by the CGS for the project site, with the nearest such mapping completed for Santa Clara County (CGS 2018). The soils on the project site have high clay content, indicating a low susceptibility to liquefaction. According to the EDR Radius Report, groundwater was reportedly measured from nearby shallow wells at approximately 4 to 9 feet below ground surface (bgs). Additionally, several of the agricultural wells, historically, encountered groundwater varying from 55 to 332 feet bgs. These measurements were collected from agricultural wells that are drilled into a deeper aquifer and do not represent shallow

water levels at the project site (Stantec 2017b, Appendix G). In the presence of the clayey soils on the site, the relatively high groundwater conditions would not be sufficient to induce liquefaction during a seismic event. In addition, the Health and Safety Element of the 2035 Kings County General Plan states "[t]he risk and danger of liquefaction and subsidence occurring within the County is considered to be minimal" (CDA 2010a). Therefore, potential project-related impacts due to liquefaction would be *less than significant*.

Seismic settlement can occur when saturated and unsaturated granular soils become rearranged during ground shaking resulting in a volume reduction and surface deformation. Seismic settlement has the greatest potential to occur in locations where loose granular materials such as sandy soils are present above the groundwater table. The relatively dense clayey soils covering the project site are associated with a low potential for surface deformation resulting from seismic settlement (CEC 2001). Therefore, potential project-related impacts due to seismic settlement would be *less than significant*.

iv. Landslides?

No Impact. No regulatory mapping of landslide zones has been prepared by the California Geological Survey for the project site, with the nearest such mapping completed for Santa Clara County (CGS 2018). The project site is not mapped as lying within a landslide hazard area by USGS landslide mapping which shows the nearest landslide areas in the foothills of the Coast Ranges to the west (USGS 1997). In addition, the Health and Safety Element of the 2035 Kings County General Plan indicates that site vicinity is defined as having a "low" susceptibility to landslides (CDA 2010a). The relatively flat terrain of the project site has a very low potential for landslides. Therefore, the project would have *no impact* relative to landslides.

b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact with Mitigation. Table HS-1 in the 2035 General Plan describes the probability of soil erosion in the County as "unlikely," the spatial extent of erosion as "limited," the potential magnitude as "negligible," and the significance as "low" (CDA 2010a). Further, the soils covering the project site have either slow runoff potential, very slow runoff potential or ponded runoff. The risk of erosion from runoff is minimal for all soils located in the project site (NRCS 1986).

Grading, excavation, vegetation removal, and ground disturbance during construction and decommissioning would expose soils on the project site to potential erosion from wind and rain. As described in the discussion of "Clearing and Grading" in Section 3.6.1, *Solar Facility Construction*, ground disturbance during construction would be minimized to the extent practicable and would occur incrementally, minimizing the amount of new disturbance at a given time. No mass grading is anticipated, and existing topsoil would not be removed; however, ground disturbing activities during both construction and decommissioning would affect more than one acre of soil. As described in Section 7.10, *Hydrology and Water Quality*, ground disturbing activities affecting more than one acre of soil require coverage under the Construction Stormwater General Permit from the RWQCB and compliance with all conditions of the permit, including implementation of a SWPPP. Therefore, while the project site contains soils with a low risk for substantial erosion, failure to comply with the NPDES Program, which would address erosion during construction and decommissioning, would result in a *potentially significant impact*. Mitigation Measure HYD-1 requires the preparation and implementation of a SWPPP. The SWPPP for each project phase would be prepared by a licensed engineer and would detail the treatment measures and BMPs to prevent pollutants from affecting water quality, including

erosion control measures. Typical erosion control measures may include: scheduling construction activities to avoid forecasted rain events and implementing soil stabilization measures prior to rain events; designating restricted entry zones; sediment tracking control measures such as crushed stone or riffle metal plates at construction entrances; and soil stabilization such as mulching or revegetation once activities in an area are complete or suspended. With implementation of the proposed mitigation, potentially significant impacts associated with erosion would be reduced to a level of *less than significant*.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less Than Significant Impact. As discussed above, the project site is not susceptible to landslides, liquefaction, or seismic settlement. Lateral spreading (or liquefaction-induced lateral spreading) can occur with seismic ground shaking on slopes where saturated soils liquefy and flow toward the open slope face. The project site is relatively flat and does not include significant slopes with the exception of the channel banks of the irrigation canals that run north to south along the eastern boundary and within the interior of the project. These channels are periodically cleared of vegetation to maintain their hydraulic capacity, resulting in exposed earth channel faces with approximately 2:1 slopes. However, the clay soils of the project site are not susceptible to liquefaction, so the similarly stiff clay soils along the open slope faces of the irrigation canals would likewise not be subject to lateral spreading resulting from liquefied soils (USGS 2007; NRCS 1986). As such, the potential impact from lateral spreading on or near the project site would be *less than significant*.

Ground subsidence is typically caused when overdrafts of a groundwater basin reduces the upward hydraulic pressure that supports the overlying land surface, resulting in consolidation/settlement of the underlying soils. Large areas of the San Joaquin Valley, including the project site, have been subject to subsidence from groundwater use. Mapping by the U.S. Bureau of Reclamation shows that from the 1926 to 1970, the land at the project site subsided by more than 10 feet (USBR 2011). From 2007 to 2011, the land at the project site subsided between 0.5 and 1.0 feet (CWF 2014). As previously described, the Health and Safety Element of the 2035 Kings County General Plan states "[t]he risk and danger of liquefaction and subsidence occurring within the County is considered to be minimal" (CDA 2010a).

As discussed in Section 7.10, *Hydrology and Water Quality*, groundwater pumping in the area can exceed the safe yield of the groundwater basin during years when severe curtailment in surface water deliveries from the CVP necessitates increased pumping of groundwater to make up for reductions in imported supplies. The over-pumping of groundwater and resulting subsidence is the cumulative result of water withdrawals from many agricultural wells. Over the course of its useful life, the proposed project would use a minimal amount of water, representing a very small fraction of the groundwater that is typically used for agricultural irrigation, and multiple potential regional water sources have been identified for construction and operation (including groundwater from both the Westside and Tulare Lake subbasins). As a result, the proposed project would contribute only minimally to the demand on groundwater in the area and would not itself result in subsidence.

The project site has not been irrigated since 2014 but was at least partially irrigated in 2013. Water usage records for the site are not available, however, the estimated amount of water used for irrigation at the project site for the 24-year period from 1994 through 2018 is approximately 233 acre-feet per

year. During that timeframe, the site was partially irrigated in 1994 (1,181 acre-feet per year), 2004 (766 acre-feet per year), 2006 (965 acre-feet per year), 2007 (486 acre-feet per year), 2012 (793 acre-feet per year), and 2013 (1,409 acre-feet per year) (Balance 2018, Appendix G). The construction-phase water use at the site would be a one-time use of approximately 260 acre-feet of water, and the operational phase of the project (which would take place over 40 or more years) would use approximately 15 acre-feet per year. On a per-year basis, the overall project water use would represent up to 21 acre-feet per year, an amount well below the 24-year average per-year volume of water that has been used in the past to irrigate the site. Therefore, the project would use less groundwater than past agricultural activities, and changes in groundwater use represented by the relatively small project site would not result in a significant increase in overall groundwater usage and would not individually result in subsidence. Therefore, the project would have a *less than significant impact* on land subsidence.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Less Than Significant Impact with Mitigation. Expansive soils are typically associated with fine-grained clayey soils that have the potential to shrink and swell during seasonal wetting and drying cycles. The ability of clayey soil to change volume can result in uplift or cracking to foundation elements or other rigid structures such as slabs-on-grade, rigid pavements, or other slabs or hardscape founded on these soils. The clay loam soils covering the project site and the gen-tie connection line have a moderate to high shrink-swell potential in the upper 31 inches of the soil horizon and a low shrink-swell potential below that depth (NRCS 1986). Figure HS-4 of the 2035 General Plan Health and Safety Element also identifies the project site as having expansive soils (CDA 2010a). As such, there is a potential for damage to project pads and foundations as a result of soils expansion beneath these structures, and impacts would be potentially significant. With the implementation of Mitigation Measure GEO-1, the potential risks to life or property due to potential soils expansion would be reduced to a level of *less than significant*.

> **Mitigation Measure GEO-1: Expansive Soils.** Prior to the issuance of the building permit for the project, the applicant shall retain a qualified registered civil engineer to prepare a preliminary soils report, based on soil borings or excavations, to determine the potential for soils expansion and to prepare recommendations for corrective actions to mitigate potential damage to project structures due to potential soils expansion. The preliminary soils report shall be submitted to CDA Building Division for review and approval. The potential damage from soils expansion can be reduced by one or more of several alternative engineering measures, as recommended by the registered civil engineer. These measures could include: over excavation and replacement with non-expansive soils; extending foundations below the zone of shrink and swell; chemically treating the soils with quicklime or cement; or foundation design measures. The corrective measures specified by will be conditions of approval for the Building Permit and be subject to inspection and approval by the County Building Official.

e) *Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water*?

Less Than Significant Impact. The project includes the construction of a small septic system and leach field, which would have an anticipated peak flow of less than 300 gallons into the leach field per day during operation. Operations personnel who visit the site periodically for inspection, maintenance,

repair, and panel washing duties would be provided with portable restrooms serviced by a licensed provider. The project would not connect to the sanitary sewer system. Although the project site is located in an area with a perched water table, a qualified engineer would design a system appropriate for the project site in accordance with the Kings County Plumbing Code (Ordinance No. 567.4, Section 5-82) which regulates septic system designs in unincorporated portions of the County. To ensure that there would be no environmental impacts, the on-site septic system would be required by ordinance to be engineered in a manner that avoids discharge into groundwater. Therefore, the project's impacts in terms of the site soils to adequately support septic systems would be *less than significant*.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact with Mitigation. Portions of Kings County are known to contain significant deposits exhibiting numerous important paleontological specimens (UCMP 2016). Chief amongst these is the Witt Site, located approximately 20 miles south of the project site near Dudley Ridge. Thousands of Pleistocene mammal remains have been found here dating to between approximately 11,380 and 15,800 years ago. The Kettleman Hills and Avenal areas (about 20 miles southwest of the project site) also show rich paleontological deposits but dating to the earlier Pliocene epoch. These consist mainly of bivalves, gastropods, and Echinoidea (a type of long-spined sea urchin) found in the Kettleman Hills and near Big Tar Canyon Road in Avenal. The finds at the Witt Site, the Kettleman Hills, and in Avenal are generally the closest paleontological finds to the project site. No paleontological specimens are documented to have been discovered within or within the immediate area of the project site (University of California Museum of Paleontology 2016).

While the proposed project would not result in potentially significant impacts to known paleontological resources, there is always the possibility that previously undiscovered paleontological resources are present in the project site. Ground disturbing activities such as trenching and grading could damage or destroy previously undiscovered paleontological resources, which would result in a *potentially significant impact*. Implementation of Mitigation Measure CUL-4 during construction would reduce the impact to a level of *less than significant*.

> **Mitigation Measure GEO-2: Discovery of Paleontological Resources.** In the event a fossil is discovered during construction for the proposed project, excavations within 50 feet of the find shall be temporarily halted or delayed until the discovery is examined by a qualified paleontologist, in accordance with Society of Vertebrate Paleontology standards. The applicant shall include a standard inadvertent discovery clause in every construction contract to inform contractors of this requirement. If the find is determined to be significant and if avoidance is not feasible, the paleontologist shall design and carry out a data recovery plan consistent with the Society of Vertebrate Paleontology standards.

7.7.3 References

AGMS 2017 — Kings County Agricultural Commissioner/Measurement Standards (AGMS). 2017. Kings County Pesticide Use Report and Field Boundary GIS Data. Data supplied by Lynda Schrumpf on November 17, 2017.

Balance 2018 — Balance Hydrologics, Inc. (Balance). 2018. Water Supply Assessment for the RE Slate Solar Project, Kings County, California. December.

CDA 2010a	Kings County Community Development Agency (CDA). 2010a. 2035 Kings County General Plan – Health and Safety Element. Adopted January 26. Available at: http://www.countyofkings.com/home/showdocument?id=3118.
CDA 2010b	Kings County Community Development Agency (CDA). 2010b. 2035 Kings County General Plan – Resource Conservation Element. Adopted January 26. Available at: http://www.countyofkings.com/home/showdocument?id=3112.
CEC 2001	California Energy Commission (CEC). 2001. Staff Assessment – Henrietta Peaker Project (01-AFC-18). December. Available at: http://www.energy.ca.gov/sitingcases/henrietta/.
CGS 2018	California Department of Conservation, California Geological Survey (CGS). 2018. California Geological Survey Information Warehouse – Regulatory Maps. Available at: http://www.quake.ca.gov/gmaps/WH/regulatorymaps.htm. Accessed January 17, 2018.
CWF 2014	California Water Foundation (CWF) 2014. Land Subsidence from Groundwater Use in California. Prepared by Luhdorff & Scalmanini Consulting Engineers, and Borchers and Carpenter. April 14. Available at: http://californiawaterfoundation.org/wp-content/uploads/PDF/1397858208-SUBSIDENCEFULLREPORT_FINAL.pdf.
ICBO 1997	International Conference of Building Officials (ICBO). 1997. Uniform Building Code; Figure 16-2 – United States Seismic Zones. Available at: https://codes.iccsafe.org/public/.
NRCS 2018	Natural Resources Conservation Service (NRCS). 2018. “Web Soil Survey.” Areas of Interest Interactive Map. United States Department of Agriculture. Available at: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed January 17, 2018.
NRCS 1986	U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 1986. Soil Survey of Kings County California. Available at: https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/california/CA031/0/kings.pdf.
Stantec 2017	Stantec Consulting Services Inc (Stantec). 2017a. Phase I Environmental Site Assessment: RE Slate LLC. October 2017.
UCMP 2016	University of California Museum of Paleontology (UCMP). 2016. Online Fossil Database. Available at: http://ucmpdb.berkeley.edu/. Accessed July 2016.

USBR 2011 U.S. Bureau of Reclamation (USBR). 2011. San Joaquin River Restoration Program – Draft Program Environmental Impact Statement Report. April. Available at: https://www.usbr.gov/mp/nepa/.

USGS 2007 U.S. Geological Survey (USGS). 2007. The Liquefaction Susceptibility, Resistance, and Response of Silty and Clayey Soils. November 21. Available at: http://www.water.ca.gov/waterplan/docs/cwpu2013/Final/vol4/groundwater/13Land_Subsidence_Groundwater_Use.pdf.

USGS 1997 U.S. Geological Survey (USGS). 1997. Digital Compilation of "Landsliding Overview Map of the Coterminous United States," 1982. USGS Open-File Report 97-289. Available at: https://landslides.usgs.gov/hazards/nationalmap/.

7.8 GREENHOUSE GAS EMISSIONS

GREENHOUSE GAS EMISSIONS: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	■	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	■	☐

This section is based on the project's Air Quality and Greenhouse Gas Emissions Technical Report (HELIX 2018, Appendix C).

7.8.1 Environmental Setting

Global climate change refers to changes in average climatic conditions on Earth including temperature, wind patterns, precipitation, and storms. Global temperatures are moderated by atmospheric gases. These gases are commonly referred to as greenhouse gases (GHGs) because they function like a greenhouse by letting sunlight in but preventing heat from escaping, thus warming the Earth's atmosphere. GHGs are emitted by natural processes and human (anthropogenic) activities. Anthropogenic GHG emissions are primarily associated with: (1) the burning of fossil fuels during motorized transport, electricity generation, natural gas consumption, industrial activity, manufacturing, and other activities; (2) deforestation; (3) agricultural activity; and (4) solid waste decomposition.

The GHGs, as defined under California's AB 32, include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

GHGs vary widely in the power of their climatic effects; therefore, climate scientists have established a unit called global warming potential (GWP). The GWP of a gas is a measure of both potency and lifespan in the atmosphere as compared to CO_2. For example, since CH_4 and N_2O are approximately 25 and

298 times more powerful than CO_2, respectively, in their ability to trap heat in the atmosphere, they have GWPs of 25 and 298, respectively (CO_2 has a GWP of 1). Carbon dioxide equivalent (CO_2e) is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP. The GWP of each GHG is multiplied by the prevalence of that gas to produce CO_2e. The atmospheric lifetime and GWP of selected GHGs are summarized in Table 7.8-1.

TABLE 7.8-1
GLOBAL WARMING POTENTIALS AND ATMOSPHERIC LIFETIMES

Greenhouse Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)
Carbon Dioxide (CO_2)	50.0–200.0	1
Methane (CH_4)	12.0	25
Nitrous Oxide (N_2O)	114.0	298
HFC-134a	14	1,430
PFC: Tetrafluoromethane (CF_4)	50,000.0	7,390
PFC: Hexafluoroethane (C_2F_6)	10,000.0	12,200
Sulfur Hexafluoride (SF_6)	3,200.0	22,800

Source: IPCC 2007.
HFC: hydrofluorocarbons; PFC: perfluorocarbons

Regulatory Framework Relating to Greenhouse Gas Emissions

Refer to the Air Quality and Greenhouse Gas Emissions Technical Report in Appendix C for detailed descriptions of regulations related to GHGs.

Federal Regulations

The USEPA has issued regulatory actions under the Clean Air Act and other statutory authorities to address issues related to climate change.

Federal Clean Air Act

The U.S. Supreme Court ruled in 2007, in Massachusetts v. USEPA that CO_2 is an air pollutant, as defined under the Clean Air Act (CAA), and that the USEPA has the authority to regulate emissions of GHGs. The USEPA announced that GHGs (including CO_2, CH_4, N_2O, HFC, PFC, and SF_6) threaten the public health and welfare of the American people. This action was a prerequisite to finalizing the USEPA's GHG emissions standards for light-duty vehicles, which were jointly proposed by the USEPA and the United States Department of Transportation's National Highway Traffic Safety Administration (NHTSA). The standards were established in 2010 for 2012 through 2016 model year vehicles and in 2012 for 2017 through 2025 model year vehicles (USEPA 2016; USEPA and NHTSA 2012).

State Regulations

Assembly Bill 32 and Senate Bill 32

AB 32, the California Global Warming Solutions Act of 2006, recognizes that California is a source of substantial amounts of GHG emissions. The statute states that:

> *Global warming poses a serious threat to the economic wellbeing, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.*

In order to help avert these potential consequences, AB 32 established a State goal of reducing GHG emissions to 1990 levels by the year 2020.

As a follow-up to AB 32, SB 32 was passed by the California legislature in August 2016 to establish a California GHG emission reduction target of 40 percent below 1990 levels by 2030.

Senate Bill 1078, 107, X1-2, and 100

SB 1078 was established in 2002 and created California's RPS. The RPS requires retail sellers of electricity purchase a specified minimum percentage of electricity generated by renewable energy resources. This was accelerated in 2006 under SB 107, requiring 20 percent of electricity sales be generated by renewable resources by 2010. In 2011, SB X1-2 was signed and set the RPS target to 33 percent by 2020. SB 100, approved September 10, 2018, increases the RPS target to 60 percent, from 50 percent, by 2030 and establishes a further target for all eligible renewable energy resources and zero-carbon resources to supply 100% of electricity to California end-use customers by December 31, 2045. SB 100 requires the CPUC, Energy Commission, and CARB to transition to a zero-carbon electric system and incorporate the policy into all relevant planning.

California Air Resources Board Scoping Plan

AB 32 requires that CARB prepare and approve a scoping plan for achieving the maximum technologically feasible and cost-effective reductions in GHG emissions from sources or categories of sources of GHGs by 2020. In 2008, CARB adopted the Scoping Plan (CARB 2008) as directed by AB 32. The Scoping Plan proposes a set of actions designed to reduce overall GHG emissions in California to the levels required by AB 32. Measures applicable to development projects include those related to energy-efficiency building and appliance standards, the use of renewable sources for electricity generation, regional transportation targets, and green building strategy.

The most recent 2017 Climate Change Scoping Plan Update, The Strategy for Achieving California's 2030 Greenhouse Gas Target, was adopted in December 2017. The Scoping Plan Update establishes a proposed framework for California to meet a 40 percent reduction in GHGs by 2030 compared to 1990 levels, aligning California with the rest of the world in fighting climate change. The Scoping Plan would continue to move California towards a sustainable future while shifting dependence away from fossil fuels. The Plan would build on the Cap-and-Trade Program - which sets a strict overall emissions limit (or cap) on GHGs and requires facilities subject to the emissions cap to trade permits to emit GHGs,

the Low Carbon Fuel Standard program, and continue to increase the use of renewable energy through cleaner cars, trucks and freight movement and reduce agricultural and waste methane emissions by utilizing it for energy needs. The Scoping Plan also addresses for the first time the GHG emissions from agriculture and forestry sectors along with other natural and working lands of California (CARB 2017).

Local Regulations

The project is planned for an area within the San Joaquin Valley. In 2009 the SJVAPCD adopted the following guidance documents applicable to the project:

- Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (SJVAPCD 2009a), and

- District Policy: Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency (SJVAPCD 2009b).

This guidance and policy are the documents referenced in the SJVAPCD's Guidance for Assessing and Mitigating Air Quality Impacts adopted in March 2015 (SJVAPCD 2015). Consistent with the District Guidance and District Policy above, SJVAPCD (2015) acknowledges the current absence of numerical thresholds, and recommends a tiered approach to establish the significance of a project's GHG impacts on the environment:

i. If a project complies with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, then the project would be determined to have a less than significant individual and cumulative impact for GHG emissions;

ii. If a project does not comply with an approved GHG emission reduction plan or mitigation program, then it would be required to implement Best Performance Standards; and

iii. If a project is not implementing Best Performance Standards, then it should demonstrate that its GHG emissions would be reduced or mitigated by at least 29 percent compared to the Business as Usual scenario.

In the event that a local air district's guidance for addressing GHG impacts does not use numerical GHG emissions thresholds, at the lead agency's discretion, a neighboring air districts' GHG thresholds may be used to determine impacts. Although the project is not located within the South Coast Air Quality Management District (SCAQMD 2008), SCAQMD currently has a GHG threshold of 10,000 metric tons of CO_2e per year for construction emissions amortized over a 30-year project lifetime, plus annual operation emissions. This threshold is often used by agencies, such as the CPUC, to evaluate GHG impacts in areas that do not have specific thresholds (CPUC 2015). Therefore, because this threshold has been established by the SCAQMD in an effort to control GHG emissions in the largest metropolitan area in the State of California, this threshold is considered a conservative approach for evaluating the significance of GHG emissions in a more rural area, such as the County.

7.8.2 Environmental Evaluation of Greenhouse Gas Emissions

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. This section evaluates potential impacts of the proposed project related to the generation of GHG emissions.

Construction Emissions

This project's construction GHG emissions were estimated using the emission factors and methods described in the GHG assessment report prepared for the project (HELIX 2018, Appendix C). Project-specific input was based on general information provided in Section 3.0, *Project Description*, and assumptions to estimate reasonable worst-case conditions. Additional details of phasing, selection of construction equipment, and other input parameters are included in Appendix C.

Emissions of GHGs related to the construction of the project would be temporary. As shown in Table 7.8-2, total GHG emissions associated with construction are estimated at 5,507 MT of CO_2e.

Because GHG emission reduction measures for construction equipment are relatively limited, SCAQMD recommends that construction emissions be amortized over a 30-year project lifetime and considered to be an element of operational emissions (SCAQMD 2008). Accordingly, although the proposed project may operate up to 40 years, emissions are amortized over the SCAQMD recommended 30-year project lifetime, thus presenting a more conservative analysis. Therefore, the proposed construction activities, would contribute 184 MT CO_2e emissions per year over a conservatively estimated 30-year project lifetime.

TABLE 7.8-2
ESTIMATED CONSTRUCTION GHG EMISSIONS

Source	Emissions (MT CO_2e)
Truck Trips	1,064
Worker Commute	1,094
PV Site Preparation	849
PV Installation	1,860
PV Inverters, Substation & Connection	154
ESS Site Prep	244
ESS Foundations, Structures, and DC	96
ESS Inverters, Substation, and AC	146
Total[1]	**5,507**
Amortized Construction Emissions[2]	*184*

Source: Modeling data is provided in Appendix C

[1] The total presented is the sum of the unrounded values.

[2] Construction emissions are amortized over 30 years in accordance with SCAQMD guidance.

Operational Emissions

As described in Section 3.7, *Operation and Maintenance*, up to six permanent staff could be on the site at any one time for ongoing facility maintenance and repairs. Occasionally, an additional 25 full-time workers may be needed for panel washing and other maintenance and repair activities. A total of up to 28 light duty truck trips per day could also occur during these quarterly maintenance activities. Based on the Traffic Impact Analysis (LSA 2018, Appendix I), modeling assumed that the project would result in a total of 3,184 annual trips at a roundtrip distance of 80 miles. Quarterly maintenance activities would also require the use of off-road equipment (refer to Section 3.7.1 for the equipment list). Emissions from on- and off-road sources were estimated using the methods described in the GHG assessment report prepared for the project (HELIX 2018, Appendix C).

Operations and Maintenance activities were estimated to result in 73 MT CO_2e per year. As described above, construction emissions are evaluated as operational emissions by amortizing the construction emissions over the life of the project. Therefore, direct project GHG emissions would be approximately 184 MT CO_2e per year from construction activities and 73 MT CO_2e per year from long-term maintenance activities. A total of 257 MT CO_2e per year would be generated by the proposed project.

Conversely, the proposed solar facility would be capable of generating up to 300 MW of electricity under peak solar conditions. The energy that would be generated by the proposed project is estimated at 684 gigawatt-hours per year. This electric power would be dispatched to the CAISO in accordance with a complex and dynamic formula that takes into account numerous variables in ongoing dispatching decisions to meet demand for electricity at any given time. One of those variables is compliance with the mandate to integrate electricity generated from renewable sources into the system at a predetermined rate, i.e., 33 percent by 2020 as mandated by the RPS (CAISO 2016). Since fossil fuel sources are typically less expensive and more reliable than renewable sources at the utility scale, it is expected that in the absence of an RPS mandate, these fossil sources would continue to be the dominant fuel source for electrical generation in California. Thus, renewable sources of electricity, such as solar generation, are considered to offset an equivalent amount of generation from other fuel sources, such as natural gas or coal, that would otherwise be dispatched by the CAISO in the absence of an RPS mandate. In other words, the installation and operation of solar facilities, such as the proposed project, would result in a net reduction of fossil-based generation, and hence a net reduction in CO_2e emissions, relative to overall CO_2e emissions that would occur without the proposed project. Using PG&E's emission factors, it has been calculated that the proposed project would result in the offset of up to 199,698 MT CO_2e per year (HELIX 2018, Appendix C).

As stated, a total of 257 MT CO_2e per year would be generated by the proposed project from construction and operational activities. With the offset of approximately 199,698 MT CO_2e per year from operation of the proposed facility, the project would have a net benefit of reducing global GHG emissions by approximately 199,442 MT CO_2e per year. Therefore, the implementation of the project would result in a net regional and global reduction of GHG emissions compared with the existing conditions.

GHG emissions from the project would not be cumulatively considerable and the project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. Therefore, project impacts from GHG emissions would be *less than significant*.

b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant Impact. As a 300-MW solar power project, the proposed project would fulfill a portion of the renewable portfolio that is mandated for California and reflected in the CARB AB 32 Scoping Plan, SB X 1-2, and SB 100 partially satisfying the goals of the California Renewable Energy Programs. Additionally, the emission reductions enabled by the project would help reach the AB 32 emission reduction goals for the electricity generation sector. Therefore, the project would conform to applicable plans, policies, and regulations related to GHG emission reductions and potential impacts would be *less than significant*.

7.8.3 References

CAISO 2016 — California Independent System Operator (CAISO). 2016. Integrating Renewables Reliably. Available at: http://www.caiso.com/informed/Pages/CleanGrid/IntegratingRenewables.aspx. Accessed November 30, 2016.

CARB 2017 — California's 2017 Climate Change Scoping Plan. November 2017. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

CARB 2008 — California Air Resources Board (CARB). 2008. Climate Change Scoping Plan – A Framework For Change. December.

CPUC 2015 — California Public Utilities Commission (CPUC). 2015. Section 4.7, "Greenhouse Gases." Final Environmental Impact Report for the Santa Barbara County Reliability Project. May 2015.

IPCC 2007 — Intergovernmental Panel on Climate Change (IPCC). 2007 Climate Change 2007: The Physical Science Basis. Summary for Policymakers (Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change). Boulder, CO: IPCC, Working Group I. February.

SCAQMD 2008 — South Coast Air Quality Management District (SCAQMD). 2008 (October). Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Thresholds.

SJVAPCD 2015 — San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. Final Draft – Guidance for Assessing and Mitigating Air Quality Impacts. March 19. Available at: http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf.

SJVAPCD 2009a — San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009a. Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects Under CEQA. December 17. Available at: http://www.valleyair.org/programs/CCAP/12-17-09/3%20CCAP%20-%20FINAL%20LU%20Guidance%20-%20Dec%2017%202009.pdf.

SJVAPCD 2009b — San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009b. District Policy: Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency. December 17. Available at: http://www.valleyair.org/programs/CCAP/12-17-09/2%20CCAP%20%20FINAL%20District%20Policy%20CEQA%20GHG%20-%20Dec%2017%202009.pdf.

USEPA 2016 — United States Environmental Protection Agency (USEPA). 2011 (November 22, last update). Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act. Available at: http://www.epa.gov/climatechange/endangerment/.

USEPA & NHTSA 2012 — U.S. Environmental Protection Agency and U.S. Department of Transportation, National Highway Traffic Safety Administration (USEPA & NHTSA). 2012 (October 15). 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards. Federal Register (Volume 77, No. 199, pp. 62623–63200).

7.9 HAZARDS AND HAZARDOUS MATERIALS

HAZARDS AND HAZARDOUS MATERIALS: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	■	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	■	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	■
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	■
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	■	☐
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	■	☐

HAZARDS AND HAZARDOUS MATERIALS: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	■	☐

Phase I and Phase II Environmental Site Assessments (ESAs) were prepared for the project by Stantec Consulting Services and are included in Appendix G (Stantec 2017a; 2017b). In addition, a site investigation was conducted to evaluate potential environmental concerns associated with the OVP and is available for review upon request (Stantec 2018).

7.9.1 Environmental Setting

Historic records indicate that the project site was used for agricultural/grazing land from prior to 1937 to the present (Stantec 2017b). Most recently, the site has been used for grazing and is undeveloped. Irrigation canals transect the site trending north-south. The canals feature raised berms with dirt driveways adjacent to the canals. Based on the current site configuration, storm water from the site flows to the east and ponds against the canal berms. A 70-kV electrical pole line owned by PG&E runs along the unimproved Kent Avenue alignment.

Underground SoCalGas natural gas pipelines are present in and adjacent to the project site. A 21-inch pipeline in a 30-foot easement traverses the project site northeast to southwest and exits the project site at Kent Avenue. Refer to Sheets C2.0-C2.5 of Appendix B for the locations of the easements.

No oil or natural gas wells (operating or abandoned) are present on the project site. An abandoned oil well is located approximately 0.5 mile east of the project site near Kansas Avenue and 22nd Avenue. However, the oil well was plugged and abandoned in November 2005 (DOGGR 2018).

Land uses in the County within 5 to 10 miles of the project site potentially associated with hazardous materials are primarily neighboring agricultural and industrial operations, including solar facilities. Refer to the discussion of "Hazardous Materials Sites in the Vicinity of the Project Site," below, for a discussion of the results of environmental investigations and a review of federal, State, and local databases for the project site and surrounding area. Shallow soils near the edge of pavement in transportation corridors have the potential to be contaminated with aerially deposited lead from car emissions prior to the elimination of lead gasoline in the 1990s (DTSC 2009).

Hazardous Materials and Solar Photovoltaic Uses

Hazardous materials are classified as those including solids, liquids, or gaseous materials that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, could pose a threat to human health or the environment. Hazardous materials are not directly used during solar PV system installation and operations; however, such materials may be used during manufacturing and in equipment used for assembly and installation. Other materials that may result in a public health concern that would be used during solar PV installation and operation include fuels, lubricants, herbicides, and batteries. These materials must be handled and used in accordance with federal and state regulations.

Crystalline and Amorphous Silicon Modules

Crystalline and amorphous silicon (c-Si) is a semiconductor used in solar cells to convert solar energy into electricity. Silicon-based solar PV cell production involves many of the same materials and hazards as those used in the microelectronics industry, with the highest toxicity levels occurring during production and disposal. Though crystalline and amorphous silicon material poses no significant hazard during project construction or operation, careful consideration should be made for the disposal or reuse of solar PV cells in accordance with applicable local, state, and federal regulations.

Cadmium Telluride

The PV panels to be installed for the project may contain CdTe, which is manufactured as a result of a reaction between elemental cadmium (Cd) and tellurium (Te). The USEPA has classified cadmium as a probable human carcinogen (Group B1) (USEPA 2000). Elemental cadmium is a lung carcinogen and long-term exposure can cause detrimental effects to kidneys and bones (Fthenakis and Zweibel 2003). Tellurium compounds are highly toxic and can cause birth defects as well as acute and chronic health effects (BNL/DOE 2003). If CdTe PV panels are used on site, human exposure would occur only if CdTe flakes or dust particles were generated and particles of CdTe dust would not be generated unless the panels were broken and/or ground up (such as during off-site disposal of old panels) or burned in a fire (Fthenakis 2003). For cadmium to be vaporized by fire, flame residence time and temperature would have to be sufficient to heat the PV panels to over 1,000 degrees Celsius (°C). Flame residence times in grass fuels have been shown to be approximately 15 seconds; maximum grass fire temperatures are approximately 800°Celsius to 1,000°Celsius. The melting point of CdTe is 1,041°C, and evaporation begins at 1,050°Celsius (Fthenakis and Zweibel 2003). Because grass fires are characterized by rapid burn time and low temperature, heat transfer during a wildland fire would be insufficient to vaporize cadmium into the environment.

Routine Use of Other Materials During Construction and Operation

Hazardous Materials

Hazardous materials would be used during project construction, operation, and decommissioning. Materials of concern include gasoline, diesel fuel, inverter coolant, ethylene glycol, hydraulic oil, transformer oil, sulfur hexafluoride, gases (such as acetylene, argon, oxygen and propane) and cleaning chemicals. The Materials Safety Data Sheets associated with each of these substances discloses their potential risk to human health. The primary health risks associated with these materials would generally occur when put in direct contact with either eyes or skin, or by ingestion, or inhalation. Most of the materials would not present long-term health risks in the quantity and duration of exposure during the project's construction, operation, and decommissioning. Short-term health risks may include skin or eye irritant, respiratory difficulty, ringing in ears, headaches, shortness of breath, wheezing, headache, dizziness, indigestion, or nausea. In rare cases of extreme overexposure, unconsciousness or death could occur. Some of the materials are flammable or combustible and could result in an explosion if handled improperly. Additionally, the project could use any commercially available battery technology which could contain potentially hazardous material including lithium iron, lead acid, sodium sulfur and sodium or nickel hydride batteries.

Fuels, lubricants, and other materials including batteries would be stored on-site. Oil would be used as an insulating fluid in the transformers proposed to be located at the project substations. The transformers would be filled with oil at the manufacturing company and subsequently checked in four-

year intervals for integrity. The inverter coolant would be routinely and remotely monitored, with inverter replacement expected to occur every 15 years. Rodent and weed control substances (USEPA-registered and approved pesticides and herbicides) may be used and stored on-site for fire abatement, noxious weed abatement, and pest control. In addition, sheep grazing would be utilized at the project site for vegetation management, which would minimize the use of herbicides.

Hazardous Waste

Hazardous and non-hazardous wastes that are likely to be generated from construction and operation of the project include used inverter coolant, waste motor oils, waste hydraulic fluids, and waste solvents and adhesives. Inverter coolant would be replaced approximately every 15 years, and the oil used in the transformers would be replaced at regular intervals. All oils, lubricants, and spent filters would be collected and removed for recycling at the time of replacement. All waste handling, storage, transportation, and disposal would comply with state and federal regulations.

Hazardous Materials Sites in the Vicinity of the Project Site

Environmental Site Assessment

A review of local, state, and federal environmental databases using EDR, a third-party environmental database search firm, and Department of Toxic Substance Control's (DTSC) Envirostor was conducted to identify any sites known to be associated with releases of hazardous materials or wastes within the project site and vicinity (Stantec 2017a). This research, which covered the project site and surrounding areas, confirmed that the project would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Gov. Code Section 65962.5 and ASTM International Standard Practice for Environmental Site Assessments.

The Phase I ESA revealed the following recognized environmental condition in connection with the project site:

> The Property was used for agricultural purposes from prior to 1937 until present. The historical agricultural use of the Property may have involved the application of pesticides or heavy metal-containing herbicides (i.e., arsenic and lead) (Stantec 2017a).

Stantec identified the following *de minimis* condition:

> Stantec observed minor concrete and soil staining associated with the turbine oil aboveground storage tanks (ASTs) at the agricultural well sites (Sites 1 through 5, 7, 8, 10, and 11). Because the staining appears to be localized and limited, Stantec concluded that it is unlikely to represent an environmental concern to the property and recommended no further investigation regarding this issue (Stantec 2017a).

Stantec identified the following non-ASTM International environmental issue:

> Due to the historic agricultural usage of the property, transite irrigation piping may be present, which may contain asbestos (Stantec 2017a).

Based on the results of the Phase I ESA and the finding of a recognized environmental condition on the project site, a Phase II ESA was conducted to sample and analyze soil at the project site to determine whether pesticides, arsenic or lead are present at levels exceeding regulatory thresholds.

Chemical analysis of the shallow soil samples reported no organochlorine pesticides at concentrations above the United States Environmental Protection Agency Regional Screening Levels (EPA RSLs) and the California Office of Environmental Health Hazard Assessment California Human Health Risk Screening Levels (CHHSLs) provided by OEHHA for residential land use and commercial/industrial land use. Therefore, Stantec concludes that the historical use of pesticides does not represent a recognized environmental condition to the project site (Stantec 2017b).

Chevron Old Valley Pipeline

As mentioned in the discussion of "Historic Age Chevron Pipeline" in Section 7.5, *Cultural Resources*, CEMC provided a letter to the CDA dated May 14, 2018, indicating that a portion of Chevron's former OVP existed in the vicinity of the project site and provided information about the pipeline that could potentially be encountered during subsurface construction activities for the project. The letter noted that the associated materials could include residual weathered crude oil, abandoned pipeline, and asbestos containing materials. Stantec conducted a literature review and performed a subsurface investigation of the most likely location of the OVP on June 6 and 7, 2018.

The OVP was not observed during the subsurface investigation which included excavations in five trenches to a depth of 10 feet or more bgs based on field observations. Soil samples were collected and tested for diesel and oil residue. Residual weathered crude oil staining was observed in three of the five sample trenches, at depths from 6 to 14 feet bgs. Risk assessments were conducted under the direction of State regulatory agencies at locations with known historical crude-oil release points along the OVP. The results indicated that the crude-oil contaminated soil exceeded the action levels for total petroleum hydrocarbons as gasoline, total petroleum hydrocarbons as diesel, and total petroleum hydrocarbons as oil at two locations, three locations, and one location (respectively), but the analysis identified the potential for risks from contaminated soils elsewhere along the OVP corridor through the site (Stantec 2018).

Airports

The project site is within proximity of two private use airstrips: Jones Farms Airport is located approximately 1.1 miles east of the project site, near Stratford, and Newton Field airstrip is located approximately 2.1 miles south of the project site, near SR-41. The nearest NAS Lemoore runway is located approximately 5.1 miles northwest of the project site, across SR-198. The Navy's largest master jet air station, NAS Lemoore, encompasses nearly 30,000 acres, 11,020 acres of which are under an air easement contract within which two offset, parallel, 13,500-foot-long runways operate (JLUSPC 2011).

Additional information about airports near the project site and in the County is included in Section 7.17, *Transportation/Traffic*.

Regulatory Framework

Federal and state laws include provisions for the safe handling of hazardous substances. The federal Occupational Safety and Health Administration (OSHA) administers requirements to ensure worker

safety. Construction activity must also be in compliance with the California OSHA regulations (Occupational Safety and Health Act of 1970).

State

Hazardous Materials Release Response Plans and Inventory Law of 1985

Pursuant to the Hazardous Materials Release Response Plans and Inventory Law of 1985, local agencies are required to develop "area plans" for response to releases of hazardous materials and wastes. The County maintains a Hazardous Material Incident Response Plan to coordinate emergency response agencies for incidents and requires the submittal of business plans by persons who handle hazardous materials. The California Hazardous Materials Incident Reporting System is a post-incident reporting system to collect data on the accidental release of hazardous materials. Information on accidental releases of hazardous materials is reported to and maintained by CEMA.

Solar Photovoltaic Installation Guide

In 2008, the Office of the State Fire Marshall published a draft copy of the Solar Photovoltaic Installation Guide in partnership with interested local fire officials, building officials, and industry representatives. This guide was developed to increase public safety for all structures equipped with solar PV systems. This guidance was developed for PV systems associated with residential and commercial buildings, but some of the information about marking, access, pathways, smoke ventilation, location of direct current conductors, and ground mounting is applicable to larger solar PV generation facilities (CAL FIRE 2008).

Photovoltaic Product Disposal and End-of-life Regulation

Regulation of solar PV products' end of-life disposal is based on the federal Resource Conservation and Recovery Act and the Hazardous Waste Control Law. The solar panels proposed for the project do not meet the USEPA's definition of hazardous waste; however, the applicant adheres to strict internal guidelines related to the handling, recycling, reuse, storage, treatment, and disposal of solar panels and adheres to all regulations related to the disposal of solid waste.

Local

Kings County General Plan, Health and Safety Element

The Health and Safety Element of the 2035 General Plan contains a comprehensive set of safety goals, objectives, and corresponding policies that are the framework for the determination of acceptable risk, response to disasters, and the development of policies for mitigating the effects of natural or human-made incidents (CDA 2010). Natural hazards, including geological, flood, temperature, fire, and wind hazards, are discussed in Section II of the Health and Safety Element. Policies described in the Health and Safety Element are intended to minimize personal injury and property damage while addressing issues related to community health and safety.

Objectives and policies contained in the Health and Safety Element that are relevant to the project include measures addressing the regulation of new development to reduce the risk of damage and injury due to fire (CDA 2010). According to the Health and Safety Element, the KCFD can, "conduct assessment of proposed industrial and business facilities to assure compliance with safety and design capacity requirements" in the mitigation of fire risks.

Emergency Operations Plans

The County Office of Emergency Management (OEM) is responsible for coordinating multi-agency responses to complex, large-scale emergencies and disasters within the County. It is the responsibility of OEM to develop and maintain the Emergency Operations Plan, which serves as a guideline for who would do what, when, by which authority, and with what resources before, during, and immediately after an emergency. OEM is the conduit for information and resource coordination among the State of California and the local governments of the County (the Kings Operational Area), as defined in California's Standardized Emergency Management System. The Kings Operational Area includes the cities of Avenal, Corcoran, Hanford and Lemoore, as well as the political subdivisions of the County. OEM adopted the County's Multi-jurisdictional Local Hazard Mitigation Plan in December 2012. The goal of the plan is to reduce impacts of natural disasters to human life, property, and the environment (OEM 2012).

Fire Safety

The project site is classified by the California Department of Forestry and Fire Protection (CAL FIRE) as a Local Responsibility Area (LRA) in which local jurisdictions, rather than the state, are responsible for emergency fire response. The project site is also adjacent to a Federal Responsibility Area near NAS Lemoore. The project site is largely classified as LRA Unzoned by CAL FIRE, meaning fire hazard severity has not been determined for this area (CAL FIRE 2007). The Health and Safety Element of the 2035 General Plan shows there is little to no threat for fire hazards where the project site is located. The 2035 General Plan also identifies areas of dry vegetation in rural areas of the County as high fire hazard risks. The areas surrounding the project site are classified as an LRA Moderate and LRA Unzoned.

The project site perimeter driveways and main access driveway would be approximately 20 to 30 feet wide and constructed to be consistent with facility maintenance requirements and KCFD standards. These driveways would be surfaced with gravel, compacted dirt, or another commercially available surface and would provide a fire buffer, accommodate project O&M activities such as cleaning of solar panels, and facilitate on-site circulation for emergency vehicles. The project site access driveway would be sufficiently wide to allow emergency vehicles to pass construction or operational traffic.

7.9.2 Environmental Evaluation of Hazards and Hazardous Materials

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less Than Significant Impact with Mitigation. Potentially hazardous materials would be used during construction, operation, and decommissioning of the proposed project. If hazardous materials are spilled or released during routine transport, use, or disposal, these substances could pose a risk to the environment and to human health, which would be a *potentially significant impact*. The routine transport, use, and disposal of hazardous materials are subject to local, state, and federal regulations to minimize risk and exposure. No extremely hazardous substances (i.e., those governed pursuant to Title 40, Part 335 of the CFR) are anticipated to be produced, used, stored, transported, or disposed of as a result of the proposed project. The following discussion summarizes potential hazards and hazardous materials associated with construction, operation, and decommissioning of the solar facility.

Construction

The potentially hazardous materials used during construction of the proposed project would include gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, welding and soldering supplies, pressurized gases, etc. All hazardous materials would be stored in containers that are specifically designed for the materials to be stored. The fuels stored on-site would be in a locked container (aboveground storage tank) within a fenced and secure staging area. Substantial quantities of gasoline, diesel fuel, and transformer oil would be transported to the site during construction. A spill of these hazardous liquids en-route to the site could result in significant impacts to the public and the environment. The transport of large quantities of hazardous materials is strictly regulated by the California Highway Patrol. During construction, minor spills or discharges of potentially hazardous materials could occur due to improper handling, storage and/or disposal which could result in potentially significant impacts.

Mitigation Measure HAZ-1 would be implemented to reduce potential impacts from minor spills or discharges of potentially hazardous materials due to improper handling, storage and/or disposal during construction, operation, and decommissioning of the solar facility to a level of *less than significant*.

Operation

O&M of the proposed project would involve the transport, use, and disposal of hazardous materials, including gasoline, diesel fuels, lubricants, cleaning chemicals, inverter coolant, batteries, pesticides, herbicides, and fire suppressant. Materials would be stored in temporary above-ground storage tanks or in secure sheds or fenced areas. During operation, certain project components, such as switchgears, transformers, and inverters, may contain small quantities of hazardous materials. Large quantities of hazardous substances would not be routinely transported or used during operation, except for transport, use, and disposal of transformer oil during major maintenance activities. The substations would be designed with containment-style mounting that would accommodate an accidental spill of transformer fluid. The mounting would consist of a basin surrounding the substation lined with an impermeable layer. Should an oil spill occur, the oil would be captured by the mounting and disposed of by O&M personnel. During operation, minor spills or discharges of potentially hazardous materials could occur due to improper handling, storage and/or disposal which could result in potentially significant impacts.

High voltage circuit breakers may contain SF_6 gas for insulation and arc suppression in the breaker. The SF_6 gas would be completely encapsulated within the breaker assembly, and breakers would adhere to the manufacturer's guaranteed leakage rate requirements (generally, a leakage rate of less than 0.5 percent is assumed). Under normal conditions, the SF_6 gas would be completely contained in the equipment and would only be released in the unlikely event of a failure, leak, or crack in the circuit breaker housing. The project applicant would ensure that measures would be taken to address emergency spills or accidents, in coordination with local authorities as appropriate.

Mitigation Measure HAZ-1 would be implemented to reduce potential impacts from minor spills or discharges of potentially hazardous materials due to improper handling, storage and/or disposal during construction, operation, and decommissioning of the solar facility to a level of *less than significant*.

Decommissioning

Once the project has reached the end of its productive life, the solar arrays and supporting infrastructure would be disassembled and removed, with all materials recycled, reused, or disposed of as appropriate in accordance with the Soil Reclamation Plan to be prepared for each project phase (Mitigation Measure AG-2). Materials stored on the site during operation would be transported and/or disposed of during the decommissioning phase. Decommissioning may result in the minor spills or discharges of potentially hazardous materials that could occur due to improper handling, storage and/or disposal which could result in potentially significant impacts.

Mitigation Measure HAZ-1 would be implemented to reduce potential impacts from minor spills or discharges of potentially hazardous materials due to improper handling, storage and/or disposal during construction, operation, and decommissioning of the solar facility to a level of *less than significant*.

> **Mitigation Measure HAZ-1: Protection from Hazardous Materials**. In order to protect the public from potential release of hazardous materials, the project applicant shall prepare and implement a HMBP in accordance with the requirements of the County Public Health Department Environmental Services Division and the Hazardous Materials Release Response Plan and Inventory Act of 1985. Under this state law, the applicant is required to prepare an HMBP to be submitted to the County Public Health Department, Environmental Health Services Division, which is the Certified Unified Program Agency for the County. The HMBP shall include a hazardous material inventory, emergency response procedures, training program information, and basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of at the proposed project site, and procedures for handling and disposing of unanticipated hazardous materials encountered during construction. The HMBP shall include an inventory of the hazardous waste generated on-site and specify procedures for proper disposal. As required, hazardous waste will be transported by a licensed hauler and disposed of at a licensed facility. According to the HMBP reporting requirements, workers must be trained to respond to releases of hazardous materials in accordance with State and federal laws and regulations governing hazardous materials and hazardous waste (e.g., HAZWOPER training required by OSHA). Any accidental release of small quantities of hazardous materials shall be promptly contained and abated in accordance with applicable regulatory requirements and reported to the Environmental Health Services Division. As the Certified Unified Program Agency for the County, the Environmental Health Services Division of the County Public Health Department is responsible for implementation and enforcement of HMBPs.
>
> Failure to comply with the HMBP requirements is civilly liable to the County in an amount not more than two thousand dollars for each day in which the violation occurs. If the violation results in, or significantly contributes to, an emergency, including a fire, the business shall also be assessed the full cost of the County or city emergency response, as well as the cost of cleaning up and disposing of the hazardous materials. If the business continues to be in violation after reasonable notice of violating the HMBP requirements, the business is civilly liable to the administering county or city in an amount not to exceed five thousand dollars for each day in which the violation occurs (Health & Safety Code Section 25515). In the United States, any person other than a governmental entity who violates any requirement of 42 USC 11022 and 42 USC 11023 shall be liable for civil and administrative penalties of not more than $37,500 for each violation. Each day a violation continues shall constitute a separate violation (42 USC

11045 (c)(1)). The adjustment to civil monetary penalties for inflation can be found at 40 CFR Section 19.4.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant Impact with Mitigation. Scenarios associated with the project that have the potential to release hazardous materials into the environment include: (1) accidental release of hazardous materials during routine transport, use, or disposal as described under item 'a)'; (2) exposure of workers and the environment to hazardous materials from contaminated soils in the project site (stained soils and/or herbicides and pesticides) and previously undiscovered sites; (3) accidental release of hazardous materials from solar panels; (4) accidental rupture of the gas transmission pipeline that extends through the project site; (5) exposure to Valley Fever; and (6) release of aerially deposited lead.

Routine Project Transport, Use, or Disposal Activities

As described under item 'a)' project construction, operation, and decommissioning activities would involve the use of hazardous materials, including gasoline, diesel fuel, inverter coolant, ethylene glycol, hydraulic oil, transformer oil, sulfur hexafluoride, gases (such as acetylene, argon, oxygen and propane) and cleaning chemicals. The risk of accidental release of hazardous materials would be reduced by compliance with local, state and federal regulations and implementation of Mitigation Measure HAZ-1 described under item 'a)'. With implementation of Mitigation Measure HAZ-1, potential impacts to the public and/or environment resulting from the accidental release of hazardous materials associated with routine project transport, use, or disposal activities would be reduced to *less than significant*.

Contaminated Soils and Previously Undiscovered Sites

Subsurface investigations were conducted to sample and analyze the soils in the project site to determine whether pesticides, or the heavy metals that typically accompany herbicide application (i.e., arsenic and lead) were present at concentrations exceeding regulatory thresholds, human risk criteria, or hazardous waste levels (Stantec 2017b), and to evaluate environmental risks associated with the former OVP. As part of the investigation for subsurface agricultural chemicals, fifty shallow soil samples were collected and chemically analyzed. The results of the investigation indicated that while traces of hazardous materials including arsenic, lead, and pesticides were present, none occurred in levels exceeding the USEPA and OEHHA screening levels, and there are no risks to on-site construction workers or to the intended use of the property from arsenic, lead, or pesticides (Stantec 2017b).

As part of the investigation for diesel and oil residue from the OVP, soil samples were taken from five trenches excavated to a depth of 10 feet or more along the likely location of the OVP (Stantec 2018). Residual weathered crude oil staining was observed in three of the five sample trenches, at depths from 6 to 14 feet bgs. Risk assessments were conducted by Chevron Environmental Management Company under the direction of State regulatory agencies at locations with known historical crude-oil release points along the OVP. The results indicated that the crude-oil contaminated soil was non-hazardous; however, there is the potential for construction-related ground disturbing activities along the OVP to result in potentially hazardous conditions. Construction workers excavating to depths of 6 feet bgs or deeper may be exposed to vapors from the contaminated soils. Prolonged inhalation or skin exposure may result in adverse dermal or system effects. Contaminated soils could result in corrosion to structures, and there is the potential for impacts to ground water quality if storm water is designed to infiltrate through contaminated soils.

In addition to the observed soil staining on the site, past and ongoing land uses associated with the site may result in additional previously unidentified hazardous materials being uncovered during construction activities. Examples include materials associated with current land uses being stored on site (e.g., oil, herbicides, pesticides) or the discovery of previously undiscovered hazardous materials. Due to the historic agricultural usage of the project site, there is the possibility of transite piping containing asbestos to be present. Ground disturbing activities during construction have the potential to disturb previously undiscovered hazardous materials in the project site, if present.

The accidental release of hazardous materials during construction and the risk to workers, structures and groundwater from residual OVP crude oil would result in a potentially significant impact. Mitigation Measures HAZ-2 and 3 would be implemented to reduce the risk to workers, structures, and the environment from accidental release of hazardous materials during construction. With implementation of the proposed mitigation, potential impacts would be reduced to a level of *less than significant*.

Mitigation Measure HAZ-2: Discovery of Previously Unknown Hazardous Materials. In the event that buried or previously undiscovered hazardous materials are discovered during construction (examples include but are not limited to soil staining, transite piping, and hazardous materials storage), operations potentially affecting the site of the hazard shall stop and a qualified environmental specialist shall be consulted to determine whether the site poses a potential risk to humans and/or the environment. If transite piping is discovered, the construction contractor shall retain a qualified environmental specialist to test the piping for asbestos prior to handling it and, if necessary (depending on the results), shall engage a certified asbestos abatement contractor to abate asbestos containing piping in accordance with all applicable laws, including OSHA guidelines. All hazardous materials identified on site that may be impacted by construction will be properly handled and disposed of in accordance with local, state and federal regulations related to proper handling, transport, and disposal of hazardous material. Any accidental release of small quantities of hazardous materials shall be promptly contained and abated in accordance with applicable regulatory requirements and reported to the County Environmental Health Services Division.

Mitigation Measure HAZ-3: Old Valley Pipeline Buffer. To reduce the risk to workers, structures, and water quality from residual contamination related to the OVP, a 50-foot-wide area shall be maintained on either side of the OVP alignment (minimum 100 feet wide) within which specific design considerations shall be incorporated and additional worker protections shall be exercised during construction. The 50-foot buffer shall be depicted on the site plans, and the contractor shall be made aware of the restrictions and requirements within the buffer. Design considerations shall include:

a. Soil vapor intrusion may be a concern for structures built above residual weathered crude oil impacted areas, therefore, no occupiable structures shall be constructed above or within the 50-foot buffer of the OVP alignment without the area first being remediated in accordance with a Hazardous Materials Remediation Plan prepared by a qualified hazardous materials specialist and that has been approved by the County and applicable oversight agencies (e.g., the RWQCB, DTSC, and the County Division of Environmental Health Services).

b. Similarly, to minimize the potential for storm water infiltration and potential groundwater impacts, storm water basins shall not be constructed within the 50-foot buffer of the OVP alignment within the area first being remediated as described above.

c. If excavation activities greater than 6 feet in depth will occur within the buffer area, the contractor shall obtain a qualified environmental specialist to conduct air quality monitoring for crude oil soil vapors and monitor for crude oil soil staining. If stained soils are encountered or if hydrogen sulfide gas is present in excess of the permissible exposure limit, Mitigation Measure HAZ-2 shall be implemented to address potential risks and the appropriate methods of removal and disposal.

Hazardous Materials in Solar Panels

There are two dominant semiconducting materials used in photovoltaic technology: crystalline silicon (c-Si) which is the conventional material used in flat plate panels, and thin-film semiconductors such as amorphous silicon (a-Si) and CdTe. Silicon based solar cells do not contain hazardous materials, although they may use lead-containing solders. Improper decommissioning of the panels with lead containing solders could result in lead leaching into landfills and eventually into waterbodies. The applicant would recycle, reuse, or dispose of solar PV cells in compliance with all applicable local, state, and federal regulations.

CdTe is a hazardous substance when not imbedded within a PV module (cadmium compounds are classified by USEPA as a probable human carcinogen [USEPA 2000]). The proposed project may use thin film modules with CdTe. At present, CdTe is only contained in modules manufactured by First Solar, Inc. (First Solar).

During the manufacturing process, the CdTe semiconductor layer is sealed between two sheets of glass. CdTe contained within PV modules is highly stable and, even if the modules become broken or damaged, would not mobilize from the glass and into the environment except under extreme laboratory conditions, which would not occur under foreseeable operational conditions. For example, in one experiment, CdTe was released after it was purposely ground into an extremely fine powder and then subjected to agitation in an acidic environment. However, these conditions would not occur in the field during any operational conditions or in a landfill (Golder 2010). Testing involving realistic risk scenarios, such as accidental breakage or structure fire, found that Cd emissions were negligible (Fthenakis 2003; Fraunhofer 2010). Standard leaching tests of broken and end-of-life modules found that CdTe modules pass federal leaching criteria for non-hazardous waste (ibid). Since CdTe PV modules are not considered hazardous waste, they can be disposed of at a Class III (non-hazardous) landfill (ibid.).

The primary manufacturer and operator of solar facilities with CdTe PV modules, First Solar, employs operational and maintenance protocols to identify and remove damaged or defective PV modules, which are recycled in accordance with First Solar's PV module collection and recycling program. The purpose of this program is to minimize the potential for modules to be disposed of in landfills. The recycling program has sufficient capacity to accept high volume recycling as the modules reach the end of their 25-year life cycle (First Solar 2016). During the recycling and refining process, up to 90 percent of the semiconductor material is recovered for reuse in new modules (ibid.).

As discussed above, the potential for emissions of CdTe is negligible during normal use of CdTe PV modules or under any foreseeable risk scenario such as accidental breakage or fire. Recycling of CdTe modules is preferable to disposal at a landfill, from a waste reduction and materials recovery standpoint,

and a manufacturer's program is in place to accept used CdTe PV modules. However, since the evidence indicates there is a negligible human health risk associated with CdTe modules, mandatory recycling of these modules is not warranted.

In summary, the potential use of CdTe PV modules for the proposed project would not result in a significant risk of a release of hazardous materials that would be harmful to human health or the environment. Therefore, the potential for health hazard due to CdTe PV panels would represent a *less than significant* impact.

Existing Natural Gas Pipelines

An underground SoCalGas natural gas transmission pipeline trends northeast to southwest through the project site from Jackson Avenue to the unimproved Kent Avenue alignment in an approximately 30-foot-wide easement. The proposed project has been designed to avoid the SoCalGas easement through the project site, with a 20-foot-wide driveway along the northern easement boundary included in the project design. Perimeter fencing of the array layout would be installed at the northern edge of the driveway and at a 5-foot setback along the southern easement boundary through the project site, which would locate the driveway outside of the project fences and allow use of the driveway for access to the easement. The easement would remain undeveloped by the proposed project.

According to the Material Safety Data Sheet, potential risks associated with natural gas include fire and or explosion (the gas is extremely flammable and combustible), and exposure can result in shortness of breath, drowsiness, headaches, confusion, visual disturbances and vomiting. Extreme exposure can result in asphyxiation and death. Impacts associated with accidental release of natural gas from a high-pressure gas line would be potentially significant.

The applicant would be required to comply with the applicable provisions of the California Government (Gov.) Code, which sets forth detailed procedures to be followed for the protection of underground infrastructure and specifies substantial financial penalties for failure to comply (Gov. Code Sections 4216-4216.9). While compliance with the Code would reduce risks associated with the release of natural gas from the existing pipelines during construction, the effects of a pipeline rupture could result in substantial damage and potentially significant impacts. Therefore, mitigation would nevertheless be necessary to further minimize the risks of damage from pipeline rupture. Mitigation Measure HAZ-4 requires coordination with the utility and the following of certain excavation procedures to avoid impacts to the pipeline. If the pipeline is damaged, reporting procedures would be implemented. Based on the notification process, a SoCalGas transmission crew may standby during construction activities in the vicinity of the pipelines to ensure no damage to the pipelines occur. With implementation of Mitigation Measure HAZ-4, potential impacts to the public and/or environment resulting from the accidental release of natural gas from existing underground lines would be reduced to a level of *less than significant*.

> **Mitigation Measure HAZ-4: Avoid and Minimize Impacts to Underground Natural Gas Pipelines**. At least two days prior to ground disturbing activities, the applicant shall call Underground Service Alert at 811 to provide notification of the planned activities, including the locations of excavation activities. No ground disturbing activities shall take place until the locations of the underground SoCalGas facilities are identified and marked at the site by the utility provider. The excavator and pipeline operator shall conduct an on-site meeting pursuant to Gov. Code Section 4216, to determine actions required to verify the location of the pipeline. If excavation is planned to occur within 2 feet of the field marked pipeline location, hand tools

shall be used to expose the exact locations of all lines before using any power-driven excavation equipment in the area. Should construction activities result in any damage to the pipeline (including a slight gouge, scrape, or dent to a pipeline, its coating, or any component attached to or running alongside the pipe, such as a wire), the damage shall be immediately reported by calling 1-800-427-2200.

Aerially Deposited Lead

Elevated lead concentrations exist in soils along older roadways as a result of aerially deposited lead from the historical use of leaded gasoline. Lead poses potential health risks related to inhalation, ingestion, and dermal contact with lead-containing soil. Potential hazards to workers and the public exist if soils containing lead are disturbed during ground disturbing activities.

Most project activities would take place on the project site, and the proposed project does not include construction activities within the rights-of-way for frequently traveled roadways in the area (i.e., Avenal Cutoff Road, SR-193, and Laurel Avenue). The unimproved Kent Avenue alignment currently features a private roadway through the project site that is unpaved, features minimal traffic, and would not be expected to have high concentrations of aerially deposited lead. The route for the short gen-tie connection line would cross over the unimproved Kent Avenue alignment to tie into the gen-tie line to be constructed for the RE Mustang Two Solar Project. Excavation activities for installation of a gen-tie pole footing and/or installation of the gen-tie line underground may occur within 10 feet of the unimproved Kent Avenue alignment, which is typically considered within the area of potential exposure for aerially deposited lead. In addition, installation of collection system (34.5 kV) lines under the unimproved Kent Avenue alignment, or other improvements could also result in excavation within 10 feet of the unimproved Kent Avenue alignment. Based on the results of the technical investigation of the historical agricultural usage of the project site, which included the assessment of several areas near the alignment, the site does not contain lead in levels that would put workers or the public at risk of exposure (Stantec 2017b). Due to the minimal traffic on the Kent Avenue alignment and the results of the hazardous materials investigation, the risk of exposure from aerially deposited lead is minimal and impacts would be *less than significant*.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. There are no schools within 0.25 mile of the project site. The nearest schools are in Stratford (approximately 2.2 miles east), NAS Lemoore (approximately 1 mile north), Huron (11 miles west) and Kettleman City (14 miles south). The project would have *no impact* to schools in relation to the emission or handling of hazardous materials.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. As discussed in Section 7.9.1, a review of state and federal databases confirmed that the project would not be located on lands that are included on a list of hazardous materials sites compiled pursuant to Gov. Code Section 65962.5. Therefore, the project would have *no impact* to the public or environment by being located on a listed hazardous material site.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

Less Than Significant Impact. The project site is not located within 2 miles of a public airport or public use airport, nor is the site located within an airport influence area as designated by the Kings County Airport Land Use Compatibility Plan (Kings County 2018). The nearest public or public use airports include the Hanford, Corcoran, and Coalinga municipal airports, and the Harris Ranch airfield, all of which are located 14 miles or more from the project site.

The airfield at NAS Lemoore is located approximately 5 miles northwest of the project site and while the project site is not within an "airport land use plan," it is included in the Military Influence Area of NAS Lemoore and is within the study area of the NAS Lemoore Joint Land Use Study (JLUS). The JLUS has no jurisdictional effect on the project but includes relevant information regarding potential safety hazards posed by NAS Lemoore operations upon the project. The JLUS specifically addresses concerns associated with siting solar generation facilities around the base, and potential associated conflicts. As noted in the JLUS, potential conflicts associated with solar facilities are the heights of facilities such as towers and transmission lines, and reflective surfaces (JLUS 2011).

In response to the County's notice regarding the CUP for the proposed project, NAS Lemoore submitted comments related to the proposed project in an email dated April 5, 2018. Concerns raised in this email included: 1) the potential for electronic components such as transformers, switchboards, inverters, microwave communications and other components to interfere with pilot's communications while on approach or landing, and 2) the effect of utility poles that would be installed as part of the project on base operations. In this email, NAS Lemoore also requested full evaluation of the project by the Federal Aviation Administration (FAA), and communications with the FAA for obstacle evaluation under CFR Title 14 Part 77.9, as well as a point of contact for the finished project should electronic interference develop. The applicant responded to NAS Lemoore in an e-mail dated August 30, 2018, indicating that 1) a previously proposed 100-foot telecommunications tower has been removed from the project and fiber optic telecommunications services would instead be provided to the site; 2) the manufacturers of the inverters had confirmed that they would include filters that address frequency output and emissions, and they have been certified to meet CFR 47 Part 15, Subpart B FCC requirements; and 3) as part of the permitting process, the project applicant will seek No Hazard Determinations from the FAA under CFR Title 14, Part 77 for the project utility poles prior to project construction. In addition, the project design has been revised: previously, a short electrical distribution line (and its associated support poles) in the northern part of the project site was planned to be relocated as part of the project. Current project designs do not include relocation of this distribution line.

The project site is located approximately 2.2 miles south of the nearest runway clear zone mapped for NAS Lemoore. The project site lies within the NAS Lemoore flight approach/departure clearance and outer horizontal zones (Zones D and G) which have a height restriction of 500 feet above ground level, as regulated by the FAA (JLUSPC 2011). The tallest structures associated with the project would be two gen-tie power poles, each up to approximately 135 feet high. Most project structures would consist of solar arrays, inverter pads, and meteorological stations that would be less than 15 feet high. Thus, the tallest project features would be well below the 500-foot height limit for physical obstructions within the applicable NAS Lemoore approach/departure clearance and outer horizontal zones.

Given the proximity of NAS Lemoore to the project site, there is a potential concern with the effect of glare from the solar panels on flight operations at the base. The discussion of solar facilities in the JLUS notes that issues of glare are the result of highly reflective mirrors used in concentrating solar thermal facilities, and that "if there is no central collection tower, the new solar panels can be made non-reflective and arrays could be installed to not cause any height or reflective issues" (p. 2-12 in JLUSPC 2011). As described in Section 7.1, *Aesthetics*, the PV modules installed for the proposed project would be dark in color, highly absorptive, and have minimal reflectivity. An example of a solar facility project located near an air force base includes the installation of a large PV solar facility at Nellis Air Force Base (AFB) that has had no adverse effects on the base's flight operations (USAF 2008). In addition, there are numerous examples of solar facilities near air force bases including an approximately 80-acre PV solar facility adjacent to the runways at Luke AFB (Google Earth 2018).

An analysis of solar glare hazards was conducted for the adjacent RE Mustang Two Solar Generation Facility using the Sandia Laboratory' Solar Glare Hazard Analysis Tool (HELIX 2016). The tool considers the orientation and height of the panels, flight route and direction, time of year and time of day to determine length of exposure to the pilot and the potential for temporary after image. The results of the analysis indicated the RE Solar Mustang Two Solar Generation Facility has a low potential to result in a temporary after-image for pilots within 1.75 mile of the site during early morning and evening during the sunniest times of year (generally April to October). The timeframe for the exposure is relatively short (generally only for a few minutes per day, although the exposure could occur for up to approximately 30 minutes during the evening when within 0.25 mile of the site). The results of the glare analysis further support the low potential for glare hazards as a result of solar development in the flight path for the base. Due to the proximity of the RE Solar Mustang Two Solar Generation Facility to the project site, and the similar development standards for the sites, the results of a similar analysis of the proposed project would be expected to be similar with a low potential for the proposed project to result in glare hazards for pilots. In their response to the project CUP application, NAS Lemoore did not express any concern in regard to interference from glare. PV solar panels installed at the project site would not produce light or glare that would pose a hazard to flight operations at NAS Lemoore.

The project site is located within the NAS Lemoore flight pattern and falls between the 60 dBA and 70 dBA CNEL noise contours as mapped in the NAS Lemoore JLUS. The northeast half of the project site is exposed to aircraft noise levels of 65 dBA CNEL or greater, while the southwestern half of the site is exposed to aircraft noise levels of 65 dBA CNEL or less (JLUSPC 2011).

Noise levels exceeding 76 dBA CNEL are considered hazardous to health as determined by the USEPA (USEPA 1974). Aircraft overflights would expose construction workers, who would be on the site temporarily, and permanent workers, who would visit the site periodically, to noise levels of up to 70 dBA CNEL, which is below the 76 dBA CNEL threshold. Therefore, the project would not expose workers on the project site to excessive noise levels from flight operations at NAS Lemoore.

As such, the potential for the project to result in safety hazards or excessive noise for people residing or working in the project area would be *less than significant.*

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The project would not interfere with the implementation of or physically interfere with an adopted emergency response or evacuation plan. In times of emergency or disaster

response, the state highways would serve as primary routes, and designated county arterial roadways in the area would serve as secondary routes. According to Figure HS-20 in the Health and Safety Element of the 2035 General Plan, primary routes near the project site would include SR-198 and SR-41, and the secondary routes would consist of Avenal Cutoff Road and Laurel Avenue (CDA 2010). These nearby highways and county roads provide several alternative evacuation routes with relatively low ambient traffic volumes. The project would not result in changes to the adjacent roadway network, and the small operational workforce would not create or increase traffic congestion during times of emergency or disaster. During the construction phase, slow moving vehicles or delivery of large pieces of equipment or components could result in traffic slowdowns, although such conditions would be temporary and infrequent. Therefore, the project would not impair implementation of, or physically interfere with, an adopted emergency response plan or an emergency evacuation plan, and potential project impacts would be *less than significant*.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

Less Than Significant Impact. The project site is not located within or near a wildland fire hazard area. The Fire Hazard Severity Zone map for the County prepared by CAL FIRE shows the project site as "LRA Unzoned" for fire hazard (CAL FIRE 2007). The Health and Safety Element of the 2035 General Plan includes a map of Potential Fire Hazards which shows project site as being subject to "little or no threat" (CDA 2010). Heavy equipment and vehicles used during construction, operation, and decommissioning have the potential to start a fire, particularly in the presence of vegetation or other combustible materials. As described in Section 3.6.8, *Construction Personnel Training*, and Section 3.7.5, *Site Safety and Security*, construction and operation and maintenance workers would receive fire suppression and safety training. None of the materials that would be used in project construction, such as solar modules and foundations, are considered flammable; in addition, potential electrical arcing and sparking from wiring between panels or in the location of the substations would be addressed by installing collector lines underground.

Electrical equipment and materials in the energy storage system could present a flammability hazard and could be susceptible to fire. However, the project elements, including the energy storage system, would be designed and operated in compliance with all applicable local, State, and federal requirements, such as Article 480 of the Electrical Code, which identifies insulation and venting requirements for stationary storage batteries; and Section 608 of the California Fire Code, which addresses stationary storage battery systems and includes measures for thermal runaway,[4] ventilation, and other requirements. In addition, the energy storage system monitoring, controls, and operational management systems would work to monitor, control, and alert based on battery cell, rack, and string voltage and current levels to detect potential thermal issues before a fire starts. The controls and project SCADA system would isolate thermal runaway events should one happen, and alert site operators and/or local emergency services. As discussed in Section 3.5.2, energy storage system containers may also include fire suppression systems, as necessary, for Li-ion battery systems, and flow battery containers would include secondary containment, as necessary, for circulating fluid systems.

Dependent on the battery technology and design selection employed, the addition of a battery storage system could trigger additional KCFD requirements including, but not limited to, the purchase of

[4] A "thermal runaway" event refers to an incident whereby a thermo-electrical fault in one battery cell causes one or more nearby cells to overheat and, potentially, catch fire.

specialized hazmat vehicles and equipment along with mandated training of KCFD personnel. However, the project would be constructed in accordance with State and local standards, and the applicant would submit project designs to KCFD for review and consultation regarding fire risk and hazards, among other considerations. During operation of the project, vegetation at the project site would be managed such that the maximum vegetation height would not shade the panels, and routine maintenance of the facility would ensure that electric and electronic devices, switches, circuit breakers and other systems would be operated safely with regard to fire risk. The driveways on the project site would be maintained free of vegetation and would provide fire breaks on the site. Regardless, because of the relatively large distances between the project site and existing built-up and residential areas, and the low fire hazard rating of the area, risks to human life and property from fire that could occur during project construction would be minimal. Therefore, the risk of wildland fire at the project site would be *less than significant*.

7.9.3 References

BNL/DOE 2003 — Brookhaven National Laboratory/Department of Energy (BNL/DOE). 2003. Nomination of Cadmium Telluride to the National Toxicology Program. April 11, 2003. Available at: http://ntp.niehs.nih.gov/ntp/htdocs/Chem_Background/ExSumPdf/CdTe.pdf.

CAL FIRE 2008 — California Department of Forestry and Fire Protection (CAL FIRE). 2008. Solar Photovoltaic Installation Guideline. Prepared April 22, 2008 and available at: http://osfm.fire.ca.gov/pdf/reports/solarphotovoltaicguideline.pdf.

CAL FIRE 2007 — California Department of Forestry and Fire Protection (CAL FIRE). 2007. Draft Fire Hazard Severity Zones in Local Responsibility Area. Prepared September 7, 2007 and available at: http://frap.fire.ca.gov/webdata/maps/statewide/fhszl06_1_map.pdf.

CDA 2010 — Kings County Community Development Agency (CDA). 2010. 2035 Kings County General Plan – Health and Safety Element. Adopted January 26. Available at: http://www.countyofkings.com/home/showdocument?id=3118.

DOGGR 2018 — California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR). 2018. Well Finder, Interactive Map. Available at: https://maps.conservation.ca.gov/doggr/wellfinder/#close. Accessed April 25, 2018.

DTSC 2009 — Department of Toxic Substances Control (DTSC). 2009. Caltrans Statewide Variance for Reuse of Lead-Contaminated Soils. Fact Sheet. April. Available at: https://www.dtsc.ca.gov/HazardousWaste/Projects/upload/Caltrans_Variance_FS.pdf

First Solar 2016 — First Solar, Inc. 2016. The Recycling Advantage. Available at: file:///C:/Users/CatherineS/Downloads/First-Solar-Recycling-Brochure.pdf. Accessed December 14, 2016.

Fraunhofer 2010 Fraunhofer Institute for Mechanics of Materials. 2010. Scientific Comment of Fraunhofer to Life Cycle Assessment of CdTe Photovoltaics. June. Fthenaikis 2003. Fthenakis, V. and K. Zweibel. 2003. CdTe PV: Real and Perceived EHS Risks. Presented at the 2003 NCPV Meeting. Available at: https://www.bnl.gov/pv/files/pdf/art_166.pdf.

Fthenakis and Zweibel 2003 Fthenakis, V. and K. Zweibel. 2003. CdTe PV: Real and Perceived EHS Risks. Presented at the 2003 NCPV Meeting. Available at https://www.bnl.gov/pv/files/pdf/art_166.pdf.

Golder 2010 Golder Associates. 2010. Review and Comments on Reports by NGI: Environmental Risks Regarding the Use and Final Disposal of CdTe PV Modules and Leaching from CdTe PV Module Material – Results from Batch, Column, and Availability Tests. May.

Google Earth 2018 Google Earth. 2018. Aerial review of Luke Air Force Base Solar Facility in Glendale, Arizona. Accessed February 19, 2019.

JLUSPC 2011 Naval Air Station Lemoore Joint Land Use Study Policy Committee (JLUSPC). 2011. NAS Lemoore Joint Land Use Study – Final Release. August 30. Available at: http://www.kingscog.org/documents.html.

OEM 2012 Kings County Office of Emergency Management (OEM). 2012. Kings County Multi-jurisdictional Local Hazard Mitigation Plan. December 2012.

Stantec 2018 Stantec Consulting Services, Inc. (Stantec). 2018. Old Valley Pipeline Assessment Report. July 31.

Stantec 2017a Stantec Consulting Services Inc (Stantec). 2017a. Phase I Environmental Site Assessment: RE Slate LLC. October 2017.

Stantec 2017b Stantec Consulting Services Inc (Stantec). 2017b. Phase II Environmental Site Assessment: RE Slate LLC. October 2017.

USAF 2008 United States Air Force Warfare Center. 2008. Nellis AFB Solar Power System. Available at: https://www.epa.gov/sites/production/files/2014-06/documents/lrb2g_price_0.pdf.

USEPA 2000 U.S. Environmental Protection Agency (USEPA). 2000. Air Toxics Website: Cadmium Compounds. Available at: https://www.epa.gov/haps/health-effects-notebook-hazardous-air-pollutants. Accessed April 25, 2018.

7.10 HYDROLOGY AND WATER QUALITY

HYDROLOGY AND WATER QUALITY: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	■	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	■	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. Result in substantial erosion or siltation on- or off-site;	☐	☐	■	☐
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☐	■
iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	■	☐
iv. Impede or redirect flood flows?	☐	☐	☐	■
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	■
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	■	☐

A WSA was prepared for the project by Balance Hydrologics, Inc. (Balance 2018), and a Phase C Hydrology Study was prepared for the project by Westwood (2018). The WSA is included in Appendix H.

7.10.1 Environmental Setting

The project site and surrounding region is primarily flat agricultural land crossed by an extensive network of irrigation canals and drains. The most significant landscape feature in the project vicinity is the Kings River, east of the project site.

Hydrologic System

The County is in the Tulare Lake Hydrologic Region, which includes all of the San Joaquin Valley south of the San Joaquin River (CA DWR 2003). This portion of the San Joaquin Valley drains southward through the Kings, Kaweah, Tule, and Kern rivers to the Tulare Lake Basin, which historically held Tulare, Buena

Vista, and Kern lakes. Flood control on the major rivers and draining of the historic lakes and wetlands beginning in the late 19th century has converted the Tulare Lake Basin into an expanse of rich agricultural land. Hydrology in the region is now managed through a system of irrigation canals and drains that convey water obtained from the CVP, State Water Project, local water projects, and groundwater.

CA DWR has subdivided the Tulare Lake Hydrologic Region into 12 groundwater basins, one of which, the San Joaquin Basin, is further divided into seven subbasins. The project site is bisected by the boundary between two San Joaquin Valley groundwater subbasins, the Westside and Tulare Lake subbasins (CA DWR 2016 in Balance 2018).

The western portion of the project site is located within the boundary of the WWD, which administers and distributes water from the CVP to farming operations within its service area and implements the groundwater management plan within the Westside subbasin described below. The eastern portion of the project site is located within the EWSID, which manages irrigation infrastructure within a small area of land between WWD and the Kings River. The northern portion of the Tulare Lake subbasin is managed by the KRCD through the Lower Kings Basin Management Plan (WRIME 2005 in Balance 2018), though KRCD does not directly regulate groundwater extraction.

Groundwater

Westside Subbasin

The Westside subbasin (subbasin 5-22.09; CA DWR 2003) is bounded generally by the Coast Range to the west and the San Joaquin River and Fresno Slough on the east and covers approximately 1,000 square miles (640,000 acres) along the western side of the San Joaquin Valley. The project site is in the southeastern corner of the subbasin, at the boundary with the Tulare Lake groundwater subbasin.

The Westside subbasin contains two primary aquifers, an upper unconfined to semi-confined water-bearing zone that extends approximately 500 to 850 feet below ground surface, and a fully confined water bearing zone below an elevation of approximately 400 feet below sea level. The two aquifers are separated by the Corcoran Clay confining unit, a bed of low-permeability old lake deposits approximately 20 to 120 feet thick (CA DWR 2003).

Recharge to the Westside subbasin occurs from infiltration of runoff from Coast Range streams along the western side of the basin as well as through deep percolation of irrigation water (CA DWR 2003 in Balance 2018). Inflow to the basin may also occur from adjacent groundwater basins, such as the Tulare Lake subbasin to the southeast and the Kings subbasin to the east. Rates of inflow (or outflow) would be dependent on the amount of pumping within the respective basins and the resulting groundwater gradients established by that pumping.

The Westside Subbasin is not an adjudicated groundwater basin, as defined by CA DWR. The subbasin has, however, been designated by CA DWR as a “Critically Overdrafted Groundwater Basin” (CA DWR 2016). The WWD oversees groundwater management within its service area through the implementation of a Groundwater Management Plan (WWD 1996 in Balance 2018), though WWD itself does not directly regulate or control groundwater extraction. For long-term supply, it is in the District’s and other users’ best interest to appropriately manage groundwater within the basin to reduce or eliminate overdraft (Balance 2018).

Groundwater Levels and Safe Yield

Prior to 1968, agricultural operations within the WWD service area relied solely on groundwater extraction for irrigation. Groundwater withdrawals during that period were on the order of 900,000 acre-feet per year, resulting in water levels within the deep aquifer to be drawn down as low as 150 feet below sea level in elevation (WWD 1996 in Balance 2018). Beginning in 1968, WWD began to receive water deliveries from the CVP to offset groundwater pumping, and water levels generally recovered over the next twenty years, when groundwater pumping averaged about 225,000 acre-feet per year. Beginning with the drought period in the late 1980s and early 1990s, however, CVP allocations have averaged only 54 percent of contracted supply, with full allocation only available in three years since 1990. As a result, groundwater pumping has increased (averaging 290,000 acre-feet per year), and groundwater levels have stopped rising and have shown marked decreases in years when pumping has increased due to lack of CVP supply.

Analyses in the 1996 Groundwater Management Plan (WWD 1996 in Balance 2018) estimated the safe yield of the Westside Subbasin to be approximately 200,000 acre-feet per year. Pumping in excess of this amount would tend to cause water levels to decline, while water levels in the aquifer would tend to increase when pumping is less than this amount. In general, WWD expects that groundwater withdrawals would exceed the safe yield during dry years, but that groundwater levels would recover in wetter years when pumping is reduced below the safe yield threshold due to offsets from CVP water.

Since 1990, water levels in the aquifer have been drawn down during drought periods (early 1990s, for example), and shown at least some recovery during wetter periods (late-1990s). Since 2011, however, the aquifer has experienced drastic increases in pumping in response to severely curtailed CVP deliveries (zero percent in 2014 and 2015, and five percent in 2016). As a result, the aquifer has been drawn down to elevations not seen since the 1960s. Water levels are expected to recover if and when CVP water becomes available again and pumping is reduced. However, the average pumping since the CVP water was first imported is on the order of 250,000 acre-feet per year, higher than the estimated long-term safe yield of the aquifer. This suggests that, despite the availability of CVP water and the efforts to improve irrigation efficiency, the subbasin is still in an overdrafted state.

Tulare Lake Subbasin

The Tulare Lake subbasin (subbasin 5-022.12; CA DWR, 2003) is bounded generally by the California Aqueduct and the Kettleman Hills of the Coast Range on the west, the Kings/Tulare County line to the east, the Kings River to the north and the Kings/Kern County line to the south. The basin covers approximately 818 square miles (524,000 acres). The project site is located in the northwestern-most corner of the subbasin, at the boundary with the Westside groundwater subbasin.

The subbasin is composed of layers of alluvial and flood basin sediments overlying the Corcoran Clay at a depth of about 300 to 900 feet. The aquifer contains numerous interfingered layers of coarse and fine material and many discontinuous lenticular beds, creating a complicated stratigraphy with highly variable permeability.

Recharge to the Tulare subbasin occurs primarily from stream infiltration and deep percolation of applied irrigation water (CA DWR 2003 in Balance 2018). Inflow to the basin also occurs from adjacent groundwater basins, such as the Westside subbasin to the west, the Kings subbasin to the north, the Kaweah and Tule subbasins to the east, and the Kern County subbasin to the south. Rates of inflow (or outflow) would be dependent on the amount of pumping within the respective basins and the resulting

groundwater gradients established by that pumping. Groundwater gradient within the subbasin is generally toward the center northwesterly-southeasterly axis of the basin but can be highly variable locally due to pumping rates.

The Tulare Lake subbasin is not an adjudicated groundwater basin, as defined by the CA DWR. The subbasin has, however, been designated by CA DWR as a "Critically Overdrafted Groundwater Basin" (CA DWR 2016 in Balance 2018). The northern portion of the Tulare Lake subbasin is currently managed by the KRCD through the Lower Kings Basin Groundwater Management Plan (WRIME 2005 in Balance 2018), though KRCD itself does not directly regulate or control groundwater extraction. For long term supply, it is in the District's and other users' best interest to appropriately manage groundwater within the basin to reduce or eliminate overdraft.

Groundwater Levels and Safe Yield

KRCD has divided their operational area into several WMAs and considers them separately (though still acknowledging that they are part of a larger groundwater subbasin). The proposed project is located in WMA C1. In general, groundwater levels within the KRCD have shown steady decline since at least the 1950s, though the rate of decline appears to have lessened somewhat since the early 1980s (WRIME 2006 in Balance 2018). However, groundwater levels in WMA C1 do decline over short periods of years (1975-1978 and 1988-1992, for example; both of which were notable regional dry periods), but these periods were followed by relatively rapid recovery during subsequent wet years. As a result, the long-term decline seen elsewhere within the KRCD does not appear to be occurring in the WMA C1 portion of the District where the project is located. Admittedly, this is based on a small sample of wells (though the WMA itself is relatively small), but it does show that overdraft in this portion of the subbasin is less of a concern than in other areas. Recent measurements of groundwater at the project location, show variable groundwater elevations in the range of about -60 to 60 feet amsl for 2016 and 2017, which are lower than the highest levels observed in the mid-1980s and late 1990s, but still higher than the lows in the early 1960s and late 1980s/early 1990s (Balance 2018). This suggests that groundwater conditions in WMA C1 have not significantly worsened since the 2006 Ground Water Management Program plan was prepared. Water levels were probably significantly drawn down during the 2012-2014 drought (as they were during the late 1970s and late 1980s droughts) but have recovered to within a typical range since the end of the recent drought conditions. Within WMA C, located north and west of WMA C1, groundwater trends are similar to other areas of the subbasin, showing general declines in average groundwater elevation since the 1960s (Balance 2018).

KRCD has not established a numerical safe yield for its WMAs. Preliminary estimates of natural and applied recharge as well as agricultural and municipal extractions summarized in CA DWR (2003) suggest a safe yield of around 284,200 acre-feet per year (0.54 acre-feet per acre per year) for the Tulare Lake subbasin as a whole (Balance 2018). Based on the amount of overdraft occurring for the various WMAs, KRCD estimates that long-term overdraft for WMA C is within the range of 6,000 to 9,000 acre-feet per year, depending on whether 1965 or 1950 is used as the calculation baseline[5] (Balance 2018).

Though the EWSID is not a CVP contractor, through an existing agreement between the KRCD, EWSID may receive up to 3,000 acre-feet per year of CVP water when excess supply is available.

[5] In general, rate of overdraft decreased after 1965 after the construction of the Pine Flat Dam.

City of Lemoore Groundwater Supply

The proposed project may obtain some of its supply as a purchase from Lemoore. Lemoore obtains all of its water from six active wells within the city limits, all drawing from the underlying Tulare Lake Subbasin aquifer. Between 2011 and 2015, Lemoore pumped between 6,371 and 7,915 acre-feet per year to support residential, commercial, industrial, governmental, and landscape irrigation uses within the city limits (QK Inc. 2017 in Balance 2018). Groundwater usage during that period peaked in 2013, with subsequent declines in 2014 and 2015 as a result of State-mandated water usage restrictions during that period (which have since been lifted).

The Tulare Lake subbasin is not an adjudicated basin, and as such there are no current legal constraints to the amount of water Lemoore can extract from the underlying aquifer. Lemoore estimated that there is over 540,000 af of groundwater stored within the portion of the aquifer underlying the city, that the supply "is available to the City regardless of the climatic conditions related to average, single-dry, and multiple-dry years", and that available supply far exceeds projected demand through 2040 for all year-type scenarios. It is important to note that the Urban Water Management Plan (UWMP) directly compared total groundwater volume (540,000 af) to the annual rate of extraction (approximately 7,000 acre-feet per year in 2020 to approximately 14,000 acre-feet per year in 2040), essentially assuming that the full groundwater volume is available in every year. Given the documented decline in aquifer levels (and correspondingly, aquifer storage), this overstates the amount of "excess" water available to the City, which is calculated to be approximately 533,000 af. Still, even without accounting for recharge, the City would have enough groundwater supply to meet demand over the 20-year planning period[6].

The UWMP does acknowledge that long-term drought may induce operational constraints to their supply if groundwater drawdown within the subbasin exceeds the depth of the active wells but suggests that this could be mitigated by deepening of the wells. The UWMP also states that "compliance with Sustainable Groundwater Management Act [SGMA] may require the City to come up with alternative sources of water in the future based on the result of the Groundwater Sustainability Plan to be developed," but there was no requirement to anticipate the effects of SGMA (and associated regulations related to safe aquifer yield) within the UWMP planning process.

Surface Water

The project site is near the City of Lemoore – Kings River Hydrologic Unit (HUC12: 180300120704). This hydrologic unit includes the reach of the Kings River from the floodgate at Jersey Avenue downstream to the forebay near Stratford where the river is distributed into three large irrigation canals. The boundaries of the hydrologic unit extend eastward to the City of Lemoore and westward to SR-269. The Kings River is the nearest river to the project site and is approximately 0.1 to 0.9 mile east of the project boundary.

There are several irrigation canals that transect the property site trending north-south. The irrigation canals have raised berms with dirt roads adjacent to the canals. The property elevation varies from approximately 202 to 220 feet amsl. Based on the current site configuration, storm water run-off is

[6] 540,000 af of supply divided by 20 years is 27,000 acre-feet per year, well above the projected 2040 annual demand of 13,900 acre-feet per year.

expected to flow to the east side of each segment and pond against the canal berms, which prevents surface drainage from exiting the site.

The project hydrology report prepared by the applicant (Westwood 2018) included an analysis of surface water depth and velocities across the project site. The analysis concluded that during a 100-year storm the flood depths across most of the project site are 2.25 feet at maximum with velocities less than 1 foot per second. The report concludes that the site is suitable for the planned development and includes design recommendations to prevent equipment damage by avoiding areas of high flood depths and velocities or elevating equipment in the noted areas (Westwood 2018).

Federal Emergency Management Agency-Designated 100-Year Flood Hazard Area

The project site is not within a Federal Emergency Management Agency (FEMA)-designated 100-year (one-percent annual risk) flood hazard area. However, the eastern boundary of the project site borders a FEMA-designated 100-year flood hazard area (FEMA 2018). As noted in the hydrology report prepared for the project (Westwood 2018), the project is within FEMA FIRM panels 06031C0300C, 06019C3300H, and 06031C0325C. The eastern edge of the watershed area is designated as a Flood Hazard Zone A (1 percent annual change flood hazard/100-year flood hazard area, and the remainder of the watershed area (in which the project site is located) is designated as Zone X (Area of Minimal Flood Hazard).

Project Water Demand

The project site has not been irrigated since 2014 but was at least partially irrigated in 2013. Water usage records for the site are not available, but inspection of available aerial photographs shows that the site was partially irrigated in 1994, 2004, 2006, 2007, 2012, and 2013. Even when assuming no irrigation occurred in the 11 years for which photographs were not available, the past average annual water usage at the project site was approximately 233 acre-feet per year.

The project would use an estimated 260 acre-feet of water during the construction phase, primarily for dust suppression. Construction is expected to begin by the end of 2020, and much of the project construction would be completed in approximately one year. The project would use up to 15 acre-feet per year of water during the operation and maintenance phase for panel washing, sheep watering, restroom facilities, and other non-potable miscellaneous needs. Project decommissioning would require water supplies similar to or less than construction.

Regulatory Framework

State

Porter Cologne Water Quality Control Act

Under the USEPA NPDES, the applicable RWQCB (in the case of the proposed project, the CVRWQCB) requires an application under the Construction Activities Storm Water General Permit (Executive Order 2009-009-DWQ) for storm water discharges associated with any construction activity including clearing, grading, and excavation, that results in the disturbance of at least 1 acre of total land area. Because the project would disturb more than 1 acre, an NPDES permit and approved SWPPP would be required.

California Water Code

Section 10910 of the California Water Code (as revised by Senate Bill 610, or SB 610) requires: "the city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project as defined by Water Code Section 10912 and subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, … [to] identify any water system…that may supply water for the project" and to prepare a WSA to address the increased water use over existing conditions.

Water Quality Control Plan for the Tulare Lake Basin

Water quality control plans, or basin plans are required by the State Porter-Cologned Water Quality Control Act and Section 303 of the Clean Water Act. California's basin plans serve as regulatory references for meeting both State and federal requirements for water quality control (40 CFR Parts 130 and 131). The basin plans contain California's administrative policies and procedures for protecting state waters. The Water Quality Control Plan for the Tulare Lake Basin (Basin Plan) was adopted by the CVRWQCB in July 1975 and was subsequently revised with the latest version approved in May 2018. The Basin Plan establishes a number of beneficial uses and water quality objectives for surface and groundwater resources and a program of implementation for achieving the water quality objectives. Beneficial uses are generally defined as the uses of water necessary for the survival or well-being of man, plants, and wildlife. The beneficial uses and water quality objectives collectively comprise the water quality standards for a given region and Basin Plan. The Basin Plan specifically notes that the greatest long-term problem facing the entire Tulare Lake Basin is the increase of salinity in the ground water which has been accelerated by human activities – irrigated agriculture, in particular (CVRWQCB 2018). The project is in The Hanford-Lemoore Hydrologic Area (551.90) of the South Valley Floor Hydrologic Unit in the Basin.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA; AB 1739, SB 1168, and SB 1319) requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. The SGMA empowers local agencies to form Groundwater Sustainability Agencies to manage basins sustainably and to adopt Groundwater Sustainability Plans for crucial groundwater basins in California. The Tulare Lake subbasin is identified as a high priority basin for groundwater management (CA DWR 2018); however, no Groundwater Sustainability Plan has been adopted for the Basin.

Local

Westside Groundwater Management Plan

In 1996, WWD developed a Groundwater Management Plan (WWD 1996 in Balance 2018) in response to the California Groundwater Management Act (AB 3030). The Groundwater Management Plan proposed several programs intended to aid in sustainable management of WWD's groundwater resources. These included continued monitoring and analysis of groundwater conditions, development and importation of new surface-water supplies, and restrictions on the exportation of groundwater. In addition, WWD outlined a number of water conservation efforts, including conservation education, providing real-time crop water-use information and other efforts to support efficient irrigation

techniques and scheduling. They have also implemented an expanded program to meter groundwater extraction in order to gain additional understanding of groundwater usage within the service area.

Lower Kings Basin Groundwater Management Plan

The northern part of the Tulare Lake subbasin is included in the Kings Basin Groundwater Management Plan, managed by the KRCD, with the remainder of the Tulare Lake subbasin (well south of the project site) managed under the Tulare Lake Bed Coordinated Groundwater Management Plan.

In 2005, the KRCD completed an updated groundwater management plan (WRIME 2005). The plan was enacted to:

- Develop consensus among various stakeholders regarding water problems, current and future demands, and groundwater conditions;
- Document groundwater management goals and objectives;
- Develop specific solutions to groundwater overdraft in several Water Management Areas within the district; and
- Provide an implementation plan.

The KRCD GWMP established groundwater thresholds for the various WMAs within the District and outlined near- and long-term projects to help stabilize and improve groundwater levels and quality in each of the areas. Potential near-term projects were mostly concentrated in areas where local surface water (or imported water) could be used to supplement recharge. Long-term objectives involved establishing groundwater banking and exchange programs that could help optimize use of the groundwater within the basin during wet and dry periods. In general, the options discussed would not directly affect WMA C1, as overdraft was not perceived to be a problem in that area.

Kings County General Plan

The 2035 General Plan includes goals, policies and objectives for water resource protection and conservation, including measures addressing reliable long-term water supply, water supply for sustainable agriculture, watershed protection, and floodway protection (CDA 2010a). Applicable policies in the Resource Conservation Element of the 2035 General Plan include the following:

RC Policy A1.1.2: Review new discretionary development proposals, including new or expanded uses within agricultural zone districts, to ensure that there are adequate water supplies to accommodate such uses. Projects should provide evidence of adequate and sustainable water availability prior to approval of a tentative map or other land use approval.

RC Policy A1.2.2: Require the use of low water consuming, drought-tolerant and native landscaping and other water conserving techniques, such as mulching, drip irrigation and moisture sensors, for new development.

RC Policy A1.2.6: Future development shall incorporate low impact development principles to minimize long-term stormwater runoff. Such principles shall include:

- Permeable paving, such as pavers, porous concrete, or one pathway composed of decomposed granite that is effective in stormwater infiltration to help prevent excess runoff.
- Use of "urban bio-swales" to redirect stormwater into planter strips, rather than capturing runoff in pipes and diverting it to a remote location.
- Use of water efficient irrigation (e.g., drip irrigation system) to water trees, shrub beds, and areas of groundcover to eliminate evaporation losses and minimize runoff.
- Use of predominantly (75 percent) native plants and drought-tolerant landscaping wherever possible.

RC Policy A1.4.1: Evaluate proposed land uses and development projects for their potential to create surface and groundwater contamination from point and non-point sources. Confer with other appropriate agencies, as necessary, to assure adequate water quality review to prevent soil erosion; direct discharge of potentially harmful substances; ground leaching from storage of raw materials, petroleum products or waste; floating debris; and runoff from the site.

RC Policy A1.4.2: Monitor and enforce provisions to control water pollution contained in the NPDES program as implemented by the California Water Quality Control Board, Central Valley Region.

RC Policy A1.4.3: Require the use of feasible and cost-effective BMPs and other measures designed to protect surface water and groundwater from the adverse effects of construction activities and urban and agricultural runoff in coordination with the California Water Quality Control Board, Central Valley Region.

RC Policy A1.6.2: Support measures to ensure that water users do not unreasonably use groundwater resources.

RC Policy A1.6.3: Protect groundwater by enforcing the requirements for installation of wells in conformity with the California Water Code, the County Well Ordinance, and other pertinent state and local requirements.

RC Policy A2.1.4: Coordinate the review of all development proposals within or adjacent to designated floodways with relevant resource conservation district entities to ensure compliance with Central Valley Flood Protection Board requirements, and local Floodplain Administration requirements.

7.10.2 Environmental Evaluation of Hydrology and Water Quality

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Less Than Significant Impact with Mitigation. The proposed septic system and leach field at the O&M building would not require a Waste Discharge Permit from the RWQCB, as peak flow would be 300 gallons per day, which is substantially less than the 2,500 gallons per day threshold. The design of the septic system and leach field would comply with County Building Department setback requirements

for septic disposal systems and would be designed in accordance with the Kings County Plumbing Code (Ordinance No. 567.4, Section 5-82) which regulates septic system designs in unincorporated areas of the County. To ensure that there would be no environmental impacts, the on-site septic system would be required by ordinance to be engineered in a manner that would avoid discharge into groundwater. Impacts related to waste discharge requirements would be *less than significant*.

The NPDES Program is responsible for regulating storm water discharges to surface waters. Because construction and decommissioning of the proposed project would involve ground disturbance to more than one acre of soil, the applicant would be required to obtain coverage for the project under the Construction Stormwater General Permit from the RWQCB and comply with all conditions of the permit. The project would also implement an approved SWPPP, which would be developed based on final engineering design and would include all project components. Failure to comply with the water quality standards of the NPDES Program, including preparation and implementation of a SWPPP, would result in a potentially significant impact to water quality standards. Mitigation Measure HYD-1 requires the preparation and implementation of a SWPPP which would reduce potentially significant impacts to a level of *less than significant*.

Impacts related to water quality or waste discharge are not anticipated for post-construction operation or maintenance on the project site. Although panel washing would be performed during operation and maintenance, the small quantities of water required to wash panels would percolate into the soil and would not be a source of significant runoff. The project would use sheep grazing as a method of weed control during operation. The project site is currently used for cattle grazing, and the waste associated with sheep is expected to be substantially less than that associated with cattle, as the number of animals and intensity of grazing would be much smaller.

The decommissioning phase would remove the project components, and the potential impacts would be similar to those of the construction phase. The approved SWPPP (Mitigation Measure HYD-1) would be implemented during both the construction and decommissioning phases, reducing potentially significant impacts under this criterion to a level of *less than significant*.

> **Mitigation Measure HYD-1: Stormwater Quality Protection**. The applicant shall file an NOI to comply with the Construction General Permit with the CVRWQCB prior to each phase of construction and project decommissioning. Individual SWPPPs shall be prepared for each NOI (project construction and project decommissioning) and shall detail the treatment measures and BMPs to control pollutants that shall be implemented and complied with during the construction and post-construction phases of the project. The SWPPP(s) required for decommissioning will specify BMPs to be implemented during that final project phase. The SWPPPs are subject to approval by the CVRWQCB, which makes the final determination on which BMPs are required for the project. The construction contracts for each project phase and for the decommissioning phase will include the requirement to implement the BMPs in accordance with the SWPPPs, and proper implementation of the specified BMPs is subject to inspection by the CVRWQCB staff. Example BMPs may include practices such as: designation of restricted-entry zones, sediment tracking control measures (e.g., crushed stone or riffle metal plate at construction entrance), truck washdown areas, diversion of runoff away from disturbed areas, protective measures for sensitive areas, outlet protection, provision mulching for soil stabilization during construction, and provision for revegetation upon completion of construction within a given area. The SWPPPs will also prescribe treatment measures to trap

sediment once it has been mobilized, such as straw bale barriers, straw mulching, fiber rolls and wattles, silt fencing, and siltation or sediment ponds.

In addition, during the construction and decommissioning phases of the project, there is the potential for discharges of hazardous materials that could adversely affect water quality. Spills or leaks from heavy equipment and machinery could result in storm water contamination. Staging areas and building sites can be the source of pollution due to paints, solvents, cleaning agents, and metals contained in the surface of equipment and materials. Trash, debris, and organic matter released during construction or decommissioning may enter waterways and impact water quality. Potential impacts to water quality resulting from discharges of hazardous materials during the project construction and decommissioning phases of the project would be potentially significant. With implementation of the NPDES Program and Mitigation Measure HYD-1, potential impacts to water quality would be reduced to a level of *less than significant*.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less Than Significant Impact. The proposed project would require water supplies during project construction, operation, and decommissioning.

The proposed project is expected to use up to 260 acre-feet of water during the construction phase of the project, primarily for dust control. As described in the WSA (Balance 2018, Appendix G), if construction occurs during a wet year when the CVP water supply is available at 70 percent or greater to support subbasin-wide irrigation demand, the project's water demands during construction would not impact the safe yield status of the aquifer. If project construction occurs during a year when the CVP water supply is less than 70 percent (a normal to dry year), project construction would have the potential to contribute to aquifer withdrawals that would exceed the safe yield of the aquifer for the construction year. However, water usage during construction is a one-time use of the water and does not represent a long-term shift in demand. In addition, the project site was partially irrigated (approximately 30 percent) during drought conditions in 2013, and the water supply during those years was sufficient. The water used for construction would be less than 20 percent of the estimated amount of water used to partially irrigate the site in 2013. Project decommissioning would be expected to require water supplies similar to or less than construction.

Project operation would use up to 15 acre-feet of water per year for washing solar panels, watering sheep, and sanitation at the O&M building. There would be no impact to groundwater in years when the CVP water availability is greater than 70 percent and withdrawals are less than the safe yield (Balance 2018, Appendix G). In other years, water usage would contribute to aquifer withdrawals that may exceed the safe yield for the aquifer. However, the proposed project would reduce the amount of water used at the project site long-term relative to the historic average water use (Balance 2018). Irrigation to support agricultural uses over a 24-year period from 1994 through 2018 averaged at least 233 acre-feet per year while the proposed project's water usage would average approximately 21 acre-feet per year over the useful life of the project, including the construction period. Compared to past irrigation at the site, the proposed use would contribute to a net reduction in pumping of the aquifer over the long term. Therefore, the proposed project would substantially reduce the amount of water used at the site when compared with prior irrigated land uses, which would contribute incrementally toward potential long-term sustainability of the aquifer (Balance 2018, Appendix G).

While construction and operation of the project would result in water use far less than has been previously used on the site for irrigation, the Westside subbasin (over which the western portion of the project site is located) is classified by CA DWR as a critically overdrafted aquifer despite the efforts of WWD to import irrigation water and reduce pumping to maintain a sustainable groundwater supply. The long-term supply/demand comparison for the Westside subbasin shows an increasing supply deficit. Therefore, the WSA for the project evaluated several sources of water supply for the construction and operation phases of the project. Water use for decommissioning is anticipated to be similar to or less than the water uses required for construction and was not analyzed separately due to the timeframe of decommissioning. Each of the potential sources were evaluated in the WSA and the underlying water basins for each of the groundwater sources are described in Section 7.10.1, *Environmental Setting*. The potential water sources for use are listed below:

1. Pumping from an on-site or adjacent site WWD well, both of which draw groundwater from the underlying Westside groundwater subbasin.

2. Groundwater pumped from a well located approximately 50 miles northwest of the project site. This well also draws water from the Westside groundwater subbasin.

3. Purchase of water from a private well located on-site or on an adjacent property, which draws water either from the Westside groundwater subbasin or from the northwestern portion of the Tulare Lake subbasin.

4. Import water from the City of Lemoore, which obtains its supply solely from the underlying Tulare Lake subbasin.

5. Potable bottled water service for workers during construction and operation.

The project would not be tied to one particular source through the life of the project, which allows operational flexibility for consideration of pricing and water quality, and different sources are likely to be used for construction versus operational phases.

The City of Lemoore's 2015 UWMP concludes that the City has ample groundwater supply to support existing and projected future municipal demand. Although the City's UWMP did not consider he proposed project, the project's water demand is far less than the surplus water available. It is important to note, however, that the UWMP conclusion is based in-part on an assumption that the total groundwater volume would be available, which may not accurately reflect the overdraft conditions and declining groundwater levels of the subbasin. Even without considering groundwater recharge, there is enough groundwater volume in storage beneath the City to support municipal demand as well as the additional demand of both the construction and operational phases of the proposed project. The City acknowledges that projected groundwater supply may change after the Groundwater Sustainability Plan is developed, and that the City may need to seek additional supply in the future, which may affect the ability of the proposed project to purchase the small amount of water needed from the City.

Review of the Tulare Lake subbasin groundwater conditions in and near the project site (WMA C1) suggest that water would be available to support the relatively small amount of operational demand for the proposed project. Groundwater levels east of the site, while fluctuating from year-to-year, do not appear to be in long-term decline. The small amount of water required for operational conditions of the project site would be unlikely to change this trend, and overall demand within this area is not projected to increase over the planning period. Still, SGMA requirements applied at a subbasin-wide scale may

curtail water availability for purchase from neighboring parcels, introducing uncertainty as to the long-term supply available in that area.

As discussed above and in the WSA, all assessed potential water sources for this project have may be affected by regulatory changes as a result of the upcoming implementation of SGMA regulations. However, there is sufficient water supply available from several different sources to support the project. The following items are key in assessing the long-term availability of water:

1. The project proposes to use very low amounts of water per acre relative to other users in area, relative to what has been used in the past to irrigate the site, and relative to the safe yield of the underlying aquifer.

2. The project has several options for sources of water, including groundwater from both the Westside and Tulare Lake subbasins, increasing flexibility should one potential source become unsustainable in the long-term as the SGMA requirements are defined for each area.

3. The project is not necessarily tied to one particular source through the life of the project and could potentially change year-to-year based on availability and cost.

Based on the information above, groundwater supply (whether sourced on or adjacent to the site, trucked from a Westside subbasin source approximately 50 miles from the site, from the City of Lemoore, or some combination of those sources) is sufficient to meet the demand of the project, such that sustainable groundwater management of the basin would not be impeded. Impacts on water supply from project implementation would be *less than significant,* and no mitigation would be necessary.

Approximately 167 acres of impervious surface, consisting of inverters, transformers, power storage units, and other electrical equipment, would be built on concrete foundations. This total impervious surface area, making up 6.7 percent of the project site, would consist of small, widely spaced impervious areas, runoff from which would be promptly absorbed by surrounding pervious surfaces. Because 93.3 percent of the ground surface of the project site would remain pervious, and the project would not increase stormwater conveyance off the site, the project would not substantially reduce groundwater recharge in the project site such that sustainable groundwater management of the basin would be impeded. All potential impacts under this criterion would be *less than significant*.

c) *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:*

   i. *Result in substantial erosion or siltation on- or off-site?*

Less Than Significant Impact. There are no natural waterways on the project site. The nearest natural waterway is the Kings River, approximately 0.2 mile east of the project site at its nearest point. The project site is flat and surrounded by berms on all sides except the south; therefore, surface water runoff is not anticipated to result in sheet flow, and the existing berms would prevent stormwater from leaving the site. Irrigation canals transect the site, with no on-site drainage ditches connecting to the canals. The post-construction gradient, topography, and drainage patterns in the project site would be the same as under existing conditions.

As described in the discussion of "Project Entrances and Internal Driveways" in Section 3.6.1, *Solar Facility Construction*, existing levee roads along the existing canals may be used during construction, but the bed and banks of the canals would be completely avoided by the construction and operation of the solar facility and would remain outside of the project fences. As previously mentioned, pre-fabricated bridges may be installed to cross the existing canals to augment existing site access and circulation. These pre-fabricated bridges would fully span any canal, avoiding any impacts to canal banks and canal waters and would be constructed in a manner to ensure that no fill is placed within the canal limits. Similarly, improvements to existing canal crossings would completely avoid any impacts to the banks and any water within the canals, with the exception that the replacement of the existing culvert in the canal at Murphy Ranch Road may be required by the County. As such, there would be no impacts to the existing canals, and the potential for erosion or siltation would be minimized.

Ground disturbing activities during construction would be minimal due to the flat topography of the site and would be limited to areas requiring grading, which include: the O&M building and substations, parking area, and driveways; trenching for collection lines; construction material laydown; and installation of new steel power poles. Ground disturbing activities under the solar arrays would be limited to vegetation clearing and the minimal ground disturbance needed to install the supports for the solar panels. Existing topsoil under the solar arrays would not be removed, and once the installation of solar arrays in a given area is complete, the affected area would be revegetated with a native seed mix. The project would be constructed in phases, and the ground would only be exposed and/or vegetation removed within a given area when that area is scheduled for installation of solar arrays or other facilities. Project decommissioning would also result in ground disturbing activities associated with the removal of project structures and facilities. The minimal ground disturbance for project construction would minimize the potential for erosion and siltation during construction. Further, as described under item 'b)' in Section 7.7, *Geology and Soils*, soils on the project site have a low susceptibility for erosion. Therefore, the potential for erosion and siltation as a result of ground disturbing activities would be minimal.

The project would introduce 167 acres of impervious surfaces to the project site, which is approximately 6.7 percent of the total area of the site. The remaining 93.3 percent of the project site would consist of vegetated areas and permeable driveway surfaces which would allow water to percolate into the ground, thereby minimizing the potential for erosion and siltation during operation.

The project would not substantially alter the existing drainage pattern of the project site which could result in substantial erosion on or off site. The potential for erosion and siltation impacts on hydrology would be *less than significant*.

As described under item 'a)' above, projects disturbing one or more acres of soil are required to prepare and implement a SWPPP for the project. Because the project would be constructed in phases and involves a decommissioning phase, individual SWPPPs for each project phase would be developed. Each would specify BMPs such as storm water runoff control and hazardous waste management measures and would include monitoring and reporting procedures. Although impacts under this criterion would be *less than significant* without a SWPPP, impacts would further be reduced with the implementation of Mitigation Measure HYD-1.

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Less Than Significant Impact. The terrain of the project site is flat, with no impervious surfaces on the site. Irrigation canals transect the site and would be avoided by the proposed project. Under existing conditions, rainfall percolates into the ground with little or no runoff leaving the site. The post-construction gradient, topography, and drainage patterns in the project site would be the same as under existing conditions.

The proposed project would introduce approximately 167 acres of impervious surfaces to the project site, which is approximately 6.7 percent of the total site area. Driveways of the project would be surfaced with permeable gravel to allow percolation. The remainder of the site would feature vegetated soils and permeable gravel driveways that would allow storm water to percolate into the ground.

Impervious surfaces of the project would prevent percolation into previously permeable underlying soils. Storm water collected on these surfaces would be displaced to immediately adjacent permeable areas where this very small amount of runoff would be readily absorbed into the ground. The solar panels would be elevated above ground level with vegetated ground cover beneath. Thus, the solar arrays would not displace runoff, and rainwater collected by the panels would percolate into the ground. The relatively small increase in impervious surfaces would not substantially increase the rate or amount of surface runoff. Based on the results of the hydrology report, the project would discharge a 100-year storm similar to the existing flow pattern (Westwood 2018). The report also concluded that no retention basin would be required for the project (Westwood 2018). The County will have the opportunity to review the results of the hydrology report along with the final project design.

Because the gradient and topography of the site following construction would be similar to existing conditions, and the increase in impervious areas would be only approximately one percent of the total site area, the project would not substantially alter the drainage pattern of the project site and would not increase the rate or amount of surface runoff that would result in flooding on-or-off site. The project's potential impacts would be *less than significant*.

iii. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Less Than Significant Impact. As described under item 'b)', the proposed project would result in the addition of approximately 6.7 percent of impervious surfaces to a site that currently lacks impervious surfaces. The small increase in impervious surfaces would not generate runoff flows that would be significant enough to leave the site. Runoff from these small areas would be absorbed promptly by surrounding vegetated ground and would result in a negligible effect on drainage patterns at the site.

Existing irrigation canals transecting the site convey large volumes of irrigation water through the project site to be distributed to off-site areas. Under existing conditions, the canals in the project site only capture rainwater that enters the canals directly, or that flows from the adjacent banks. There is no existing system of drainage ditches on the site that conveys water from the site to the canals, and the project would not involve constructing a drainage system. Because runoff from the site would be negligible, the site does not contain an existing drainage system connected to the irrigation canals, nor would one be installed under the proposed project, the project would not result in a scenario that would create or contribute runoff water which would exceed the capacity of existing or planned storm water

drainage systems. Impacts related to runoff exceeding the capacity of existing or planned storm water drainage systems would be *less than significant*.

Operation of the project would not introduce substantial sources of storm water pollutants, such as oil, grease, metals, and debris typically associated with storm water pollution. The very minor potential for leaks from operation and maintenance vehicles and equipment would be similar to those from agricultural vehicles and equipment under existing conditions. Impacts associated with the potential for additional sources of polluted runoff to be generated by the project would be *less than significant*.

iv. Impede or redirect flood flows?

No Impact. The project site is not located within a FEMA 100-year flood hazard area; therefore, implementation of the project would not impede or redirect flood flows. The project would therefore have *no impact* under this criterion.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Impact. The project is not located within a FEMA 100-year flood hazard, tsunami, or seiche zone. The project would not become inundated as a result of flooding, tsunami, or seiches, and no associated release of pollutants would occur. The project would therefore have *no impact* under this criterion.

e) *Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

Less Than Significant Impact with Mitigation. Compliance with the Water Quality Control Plan for the Tulare Lake Basin would require the project to conform to the objectives and implementation plan contained in the Basin Plan. Existing and potential beneficial uses for surface waters on the Valley floor where the project site is located include agricultural supply (AGR), industrial (IND and PRO), recreation (REC-1 and REC-2), warm freshwater habitat (WARM), wildlife habitat (WILD), rare, threatened, and endangered species (RARE), and groundwater recharge (GWR). The project site does not contain any natural hydrologic features and the site is not hydrologically connected to a natural water feature. The project would not affect the existing surface water features through the site and because solar projects have a relatively low development of impermeable surfaces, groundwater recharge would not be affected. Beneficial groundwater uses for the project area are identified as MUN, AGR, IND and PRO. The Water Quality Control Plan identifies groundwater in the Tulare Lake Bed (in which the project is located) unsuitable for municipal, domestic, or agricultural irrigation. Maintenance of water quality objectives is necessary to protect the beneficial uses. As described under item ‘a),’ construction and decommissioning activities could result in potentially significant impacts to water quality. The applicant would be required to obtain coverage for the project under the Construction Stormwater General Permit from the RWQCB and comply with all conditions of the permit. The project would also implement an approved SWPPP during construction and decommissioning (Mitigation Measure HYD-1). Each would specify BMPs such as storm water runoff control and hazardous waste management measures and would include monitoring and reporting procedures.

Long-term operation and maintenance of the proposed project would not generate pollutants associated with most types of development such as nutrients, trash and debris, hydrocarbons, oxygen demanding substances, bacteria and viruses, and pesticides, or would generate very minor amounts of these pollutants which would be controlled by existing regulations and adherence to operational standards and BMPs. The very minor potential for leaks from operation and maintenance vehicles and

equipment would be similar to that from agricultural vehicles and equipment under existing conditions. In addition, the concomitant sheep grazing is a form of dry farming that would be consistent with the Basin Plan objective to control irrigated agriculture to reduce water salinity. As noted in the Basin Plan, uncontrolled grazing management may result in water quality impacts. In accordance with Mitigation Measure AG-1, the applicant shall prepare a Vegetation and Agricultural Management Plan in coordination with the County, which would require grazing monitoring and reporting to the County and implementing appropriate grazing practices.

There are currently no adopted sustainable groundwater management plans for the Tulare Lake subbasin. The proposed project would not conflict or obstruct implementation of a sustainable groundwater management plan.

With the proposed mitigation, the project would not conflict with or obstruct implementation of the Basin Plan and potential impacts to water quality would be reduced to a level of *less than significant*.

7.10.3 References

Balance 2018 — Balance Hydrologics, Inc. (Balance). 2018. Water Supply Assessment for the RE Slate Solar Project, Kings County, California. December.

CA DWR 2018 — California Department of Water Resources (CA DWR). 2018. State Groundwater Management Act Basin Prioritization Dashboard. Final 2018. Available at: https://gis.water.ca.gov/app/bp2018-dashboard/p1/. Accessed February 4, 2019.

CA DWR 2016 — California Department of Water Resources (CA DWR). 2016. Final List of Critically Overdrafted Basins. Available at: http://wdl.water.ca.gov/groundwater/sgm/pdfs/COD-basins_2016_Dec19.pdf.

CA DWR 2003 — California Department of Water Resources (CA DWR). 2003. "Tulare Lake Hydrologic Region." California's Groundwater Update. Bulletin 118: Chapter 7.

CDA 2010a — Kings County Community Development Agency (CDA). 2010a. 2035 Kings County General Plan – Resource Conservation Element. Kings County, CA. Adopted January 26, 2010.

CDA 2010b — Kings County Community Development Agency (CDA). 2010b. 2035 Kings County General Plan – Health and Safety Element. Kings County, CA. Adopted January 26, 2010.

CDA 2013 — Kings County Community Development Agency (CDA). 2013. "Public Hearing – Amending the County's Williamson Act Implementation Procedures to Clarify the Process for Making Compatibility Findings." *Agenda Item.* Hanford, CA. Board of Supervisors.

CVRWQCB 2004 California Regional Water Quality Control Board, Central Valley Region (CVRWQCB). 2004. *Water Quality Control Plan for the Tulare Lake Basin*. Revised May 2018 (with Approved Amendments).

NESDIS 2016 National Environmental Satellite, Data, and Information Service (NESDIS). 2016. Summary of Monthly Normals, 1981-2010 for Five Points 5 SSW, CA US, GHCND: USC00043083. National Centers for Environmental Information Administration, Asheville, North Carolina. Generated April 25, 2016.

Westwood 2018 Phase C Hydrology Study. RE Slate Solar Project. April.

7.11 LAND USE AND PLANNING

LAND USE AND PLANNING: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Physically divide an established community?	☐	☐	☐	■
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	■	☐

7.11.1 Environmental Setting

Existing Land Use

The project site has been intermittently fallowed, irrigated, and cropped for the past eight years. Surrounding land uses are a combination of agriculture and associated roads, canals and ditches and solar PV operations. Several existing and planned solar facilities are located west and south of the project site, including the undeveloped 150 MW Mustang Two facility directly southwest of the project site, the 20 MW Kent South Solar Generation facility west of the project site, and the 22 MW Westside Assets Solar Generation Facility west of the project site (refer to Figure 3).

There are no dwellings on the project site. The nearest residences is approximately 0.25 mile east of the project site, on Laurel Avenue, west of 22nd Avenue (refer to Figure 2). The nearest population centers include the community of Stratford located 2.5 miles east, the City of Lemoore located 3.2 miles northeast, the Santa Rosa Rancheria located 6.5 miles east, the City of Huron located 11.5 miles west, and the community of Kettleman City located 14 miles south. NAS Lemoore, and its associated base housing, is located approximately 0.4 mile north of the project site. The site is included in the Military Influence Area of NAS Lemoore and also lies within the NAS Lemoore flight approach/departure clearance and outer horizontal zones (JLUSPC 2011).

Planning Context

2035 Kings County General Plan

The Land Use Map in the Land Use Element of the 2035 General Plan shows the land use designation of the entire project site and gen-tie connection line as Exclusive Agriculture – 40-acre minimum, which generally applies to areas within flight paths of NAS Lemoore (CDA 2010).

The Exclusive Agriculture land use designation falls under the broader General Plan category of Agricultural Open Space. In addition to a range of agricultural uses and ancillary activities, the General Plan allows solar voltaic generating facilities within the Agricultural Open Space areas of the County, as set forth in Land Use Policy B7.1.3. Energy producing facilities are allowed in the Exclusive Agriculture land use designation where such facilities would not create a hazard for aircraft, as set forth in Resource Conservation Policy A1.2.4 (refer to Figure 5).

Kings County Zoning Ordinance

As designated in the Kings County Development Code and Zoning Plan (Zoning Ordinance), the northern half of the project site and gen-tie connection line are zoned AX, while the southern half is zoned General Agricultural - 40 acre minimum (AG-40) (refer to Figure 6). As provided in Article 4 of the Development Code, utility-scale PV electricity generation is a conditionally permitted use in both of the above agricultural zoning districts.

NAS Lemoore Joint Land Use Study

The JLUS involved a multi-agency effort managed by the Department of Defense for cooperative land use planning between NAS Lemoore and adjacent communities to provide for compatibility between future community growth and the training and operational missions of the military installation. Since the Department of Defense has no regulatory authority for local land use outside the boundaries of the naval air station, the JLUS also includes planning recommendations for consideration by local jurisdictions.

The noise contour mapping prepared for the JLUS shows bands of noise contours exceeding 60 dB community noise equivalent level (CNEL) which correspond closely to the flight corridors surrounding the airfield (JLUSPC 2011). The aircraft noise corridor is reflected in the 2035 General Plan Land Use Map, which designates lands within a three-mile buffer zone from the installation, plus the noise-impacted areas (exceeding 70 dB CNEL) south of the buffer zone, as “Exclusive Agriculture – 40-acre minimum (AX).” The intent of this land use designation is to provide a safety buffer zone around the base by limiting and discouraging intensive agricultural and structure-based land uses that may pose increased risks to inhabitants and base operations (CDA 2010). The JLUS also identifies height obstruction limits near NAS Lemoore, with the limits in a given area depending on its location relative to landing approach zones.

The project site is located within Height Restriction Zones “D” and “G” which both specify height limits for ground structures of 500 feet above the ground surface (JLUSPC 2011). Solar generating facilities are specifically addressed in JLUS Recommendation 17, which states: “Establish Minimum Technical Standards for Renewable Energy Facilities Located within NAS Lemoore Overlay Zones I, II, and III” (JLUSPC 2011). The concern is with “solar farms creating excessive glare from the reflection of the sun” (JLUSPC 2011). The main concern is with concentrating solar thermal technologies such as lenses or

mirrors on a large scale with their reflective characteristics and tall tower collectors. However, "if there is no central collection tower, the new solar panels can be made nonreflective and arrays could be installed that do not cause any height or reflective issues. Prior to the development of solar arrays within flight-sensitive areas, the height and effect of these installations along with the distribution system proposed to transmit the power from the source (solar farm) should be carefully considered" (JLUSPC 2011).

California Public Utilities Commission General Order No. 131-D

Pursuant to General Order No. 131-D, CPUC regulates the planning and construction of electric generation, transmission/power/distribution line facilities and substations located in California. As such, the CPUC has jurisdiction over the PG&E Mustang Switching Station and would have jurisdiction over any project facilities constructed by PG&E. Although such projects are exempt from local land use and zoning regulations and discretionary permitting (i.e., they would not require any land use approval that would involve a discretionary decision to be made by the County), General Order No. 131-D, Section XIV.B requires that in locating a project "the public utility shall consult with local agencies regarding land use matters" (CPUC 1995). The project applicant would undertake construction of the gen-tie connection line; therefore, construction of the gen-tie line would not require a permit or other approval under General Order No. 131-D Section III.B(1)(f).

7.11.2 Environmental Evaluation of Land Use and Planning

a) Physically divide an established community?

No Impact. Neither the project site nor the gen-tie connection line are located within or near an established community. Therefore, implementation of the project would result in *no impact*.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Less Than Significant Impact. The potential for the project to conflict with the 2035 General Plan and Development Code, as well as applicable land use recommendations of the NAS Lemoore JLUS, is discussed below. Because the gen-tie line would not be constructed by PG&E, the regulatory requirements of the CPUC's General Order No. 131-D would not apply to the gen-tie line. Regardless, the County has reviewed the potential impacts of the gen-tie line as it relates to County land use plans, policies, and regulations as part of the analysis contained in this IS/MND.

2035 General Plan

The 2035 General Plan land use designation for the project site and gen-tie connection line is Exclusive Agriculture – 40 acre minimum which generally applies to areas within the flight paths of the NAS Lemoore. This land use designation is a subcategory under the broader General Plan category of Agricultural Open Space, which permits a range of agricultural uses and other activities, including solar voltaic generating facilities. Therefore, the planned installation of solar PV generating facilities would be consistent with the General Plan Land Use Map.

Zoning

As designated in the Kings County Development Code, the northern half and gen-tie connection line of the project site is currently zoned as "Exclusive Agricultural (AX)," while the southern half is zoned "General Agricultural-40 (AG-40)." As provided in Article 4 of the Development Code, utility-scale PV electricity generation is a conditionally permitted use in both of the above agricultural zoning districts. Therefore, the project would be consistent with the Development Code upon the granting of the CUP for the project.

The Development Code establishes specific findings for the granting of a CUP for a solar generating facility. Refer to Section 7.2, *Agriculture and Forestry Resources*, for the findings and the project's consistency with the findings.

NAS Lemoore Joint Land Use Study

Safety and Noise

The mapping prepared for the JLUS shows that the project site lies within the aircraft flight path and is subject to noise levels greater than 60 dBA CNEL. As discussed above, the 2035 General Plan "AX – Exclusive Agriculture" designation was specifically created to reflect the NAS Lemoore landing approach flight patterns and the corresponding high noise conditions on those lands. While the intent of the AX land use designation is to limit intensive land uses that may pose increased risks to inhabitants and base operations, low intensity solar PV generating facilities are not noise sensitive land uses and thus would be compatible with the higher noise levels from overhead flight operations.

Height Obstruction Limits

The JLUS also identifies height obstruction limits near NAS Lemoore, with the limits in a given area depending on its location relative to landing approach zones. The project site is mapped within Height Restriction Zones "D" and "G" which have a height limit for ground structures of 500 feet above the ground surface (JLUSPC 2011). The tallest structures within the project would be gen-tie power poles, up to approximately 135 feet high. Most project structures would consist of transformers, solar arrays, inverter pads, and meteorological stations that would be less than 15 feet high. Thus, the tallest project features would be well within the 500-foot height limit for this area and would not create operational obstructions. In addition, as discussed in Section 7.9, Hazards and Hazardous Materials, the project applicant would seek No Hazard Determinations from the FAA under CFR Title 14, Part 77 for the project utility poles prior to project construction.

Reflected Glare

The JLUS addresses concerns with aviation hazards from reflection and glare. To limit reflection, solar PV panels are constructed of dark, light-absorbing materials, and are given an anti-reflective coating or textured surface. With the addition of the anti-reflective coating or treatment, the reflectivity can be reduced to less than four percent of incoming sunlight. Since the solar panels would have low reflective intensity and would be covered with anti-reflective coating, any resulting glare effects would not be disruptive to aircraft operations in the area. Therefore, the solar PV panels to be installed at the project site would not pose a potential hazard to aircraft operations at NAS Lemoore due to reflected glare (see Section 7.1, *Aesthetics*, for further discussion of reflected glare).

Therefore, the project would be consistent with the applicable provisions of the 2035 General Plan, Development Code, and the local recommendations of the NAS JLUS. Therefore, the project would result in a *less than significant impact* with respect to potential conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project.

7.11.3 References

CDA 2010 — Kings County Community Development Agency (CDA). 2010. Land Use Element, 2035 Kings County General Plan. Kings County, CA. Adopted January 26, 2010.

CDFG 2008 — California Department of Fish and Game (CDFG). 2008. Findings of Fact of the California Department of Fish and Game under the California Environmental Quality Act (Pub. Resources Code, Section 21000 et seq.), For the Incidental Take Permit (ITP No. 2018-2008-001-00) And Master Streambed Alteration Agreement (MSAA No. 1600-2008-001-0000-HQ), Issued to The Pacific Gas and Electric Company, In Connection with the San Joaquin Valley Operations and Maintenance Habitat Conservation Plan, and Errata (December 2006). May 5. Available at: http://cvfpb.ca.gov/docs/Minutes/2012/May25_2012_Board_Meeting_Minutes.pdf.

CPUC 1995 — California Public Utilities Commission (CPUC). 1995. CPUC General Order 131-D – "Rules Relating to the Planning and Construction of Electric Generation Transmission/Power/Distribution Line Facilities and Substations Located in California." Modified August 11. Available at: http://docs.cpuc.ca.gov/PUBLISHED/Graphics/589.PDF.

JLUSPC 2011 — Naval Air Station Lemoore Joint Land Use Study Policy Committee (JLUSPC). 2011. NAS Lemoore Joint Land Use Study – Final Release.

Kings Co. 2014 — County of Kings (Kings County). 2014. Kings County Code of Ordinances, as amended through January 31, 2014. Available at: http://www.municode.com/library/CA/Kings_County.

PG&E 2006 — Pacific Gas & Electric Company (PG&E). San Joaquin Valley Operation and Maintenance Habitat Conservation Plan. 2006. December. Available at: https://www.fws.gov/ecos/ajax/docs/plan_documents/thcp/thcp_838.pdf.

7.12 MINERAL RESOURCES

MINERAL RESOURCES: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	■
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	■

7.12.1 Environmental Setting

Mineral Resources

The County has one surface mining permit for a non-active gravel operation and two agricultural reclamation sites that have been fully reclaimed. Historical mines that are now closed include an open pit gypsum mine and a mercury mine in southwestern Kings County (CDA 2010). Mineral extraction is not occurring on or adjacent to the project site nor the gen-tie connection line. There are no mineral resources zones mapped in the County (CDC 2018a). The project site and the short gen-tie connection are not located within the boundary of an oil and gas field (CDC 2018b).

Regulatory Framework

State

Under the California State Surface Mining and Reclamation Act of 1975, Mineral Resource Zones (MRZs) are used by the State Geologist to classify land according to its level of significance as a mineral resource. MRZs are used to help identify and protect state mineral resources from urban expansion or other irreversible land uses that might preclude mineral extraction.

Local

The State Geologist has not yet mapped and classified mineral resources in the County (CDC 2013). No MRZ designations have been identified within the County. Only limited commercial mining and mineral extraction takes place in the County and such activities are currently limited to excavation of sand, gravel, and some hydrocarbon drilling. Historical mining of gypsum, mercury, and hydrocarbons indicate that there may be deposits of these minerals within the County (CDA 2010).

7.12.2 Environmental Evaluation of Mineral Resources

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. The proposed project site and the short gen-tie connection are not within an established MRZ nor the administrative boundary of an oil and gas field. Therefore, the project would not result in

the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. There would be *no impact* under this criterion.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. The current and historic use of the project site has been agricultural production. The project site is not within an established MRZ, and economically viable mineral deposits are not known to be present. The project would have *no impact* under this criterion.

7.12.3 References

CDA 2010 — Kings County Community Development Agency (CDA). 2010. Resource Conservation Element, 2035 Kings County General Plan. Kings County, CA. Adopted January 26, 2010.

CDC 2018a — California Department of Conservation (CDC). 2018a. "Mine Information from the Office of Mine Reclamation." Available at: http://maps.conservation.ca.gov/mol/index.html. Accessed January 18, 2018.

CDC 2018b — California Department of Conservation (CDC). 2018b. "District 5 Oil and Gas Fields. Division of Oil, Gas, and Geothermal Resources." Division of Oil, Gas, and Geothermal Resources. Available at: ftp://ftp.consrv.ca.gov/pub/oil/maps/dist5/552/Map552.pdf. Accessed January 16, 2018.

CDC 2013 — California Department of Conservation (CDC). 2013. Publications of the Surface Mining and Reclamation Act (SMARA) Mineral Land Classification Project Dealing with Mineral Resources in California. Sacramento, CA. California Geological Survey. Available at: http://www.conservation.ca.gov/cgs/minerals/mlc/Documents/SMARA_Publications_March_2013.pdf.

7.13 NOISE

NOISE: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	■	☐
b) Result in generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	■	☐

NOISE: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■

7.13.1 Environmental Setting

Existing Noise Environment

The existing noise environment in the project vicinity is typical of rural agricultural environments. The primary noise sources in the project vicinity include: (1) traffic on Avenal Cutoff Road and Laurel Avenue; (2) agricultural machinery and crop dusters; and (3) the occasional overflights by military aircraft from NAS Lemoore.

The project site is surrounded by agricultural land uses, and maximum noise levels generated by farm-related tractors typically range from 77 to 85 dB at a distance of 50 feet from the tractor, depending on the horsepower of the tractor and the operation conditions. Due to the seasonal nature of the agricultural industry, there are often extended periods of time when no noise is generated on properties, which are actively being farmed, followed by short-term periods of intensive mechanical equipment usage and corresponding noise generation (CDA 2010). In addition, the project site is located 5 miles southeast of the airfield at NAS Lemoore and is included in the study area for the JLUS. The project site is located within the NAS Lemoore flight pattern and falls between the 60 dBA and 74 dBA CNEL noise contours as mapped on Figure N-8 of the Noise Element of the 2035 General Plan (CDA 2010).

Noise sensitive receptors in the project site include the residents of homes located east and southeast of the project site, and at NAS Lemoore. The residences east of the project site are located along Murphy Ranch Road (approximately 0.4 mile east of the project site); a residence east of the project site along Laurel Avenue (approximately 0.25 mile east of the project site); and two residences along 22nd Avenue (approximately 0.61 mile east and 0.47 mile southeast of the project site). Residences at NAS Lemoore are approximately 0.4-mile northwest of the project site.

Regulatory Framework

2035 Kings County General Plan Noise Element

Regulating environmental noise is the responsibility of local governments, as outlined in the Noise Element of the 2035 General Plan (CDA 2010). The Noise Element establishes noise standards based on land use as presented in Table 7.13-1.

TABLE 7.13-1
NON-TRANSPORTATION NOISE STANDARDS

Land Use	Average (L_{EQ}) / Maximum (L_{MAX})		
	Outdoor Area		Interior
	Daytime	Nighttime	Day and Night
All Residential	55/75	50/70	35/55
Transient Lodging	55/75	---	35/55
Hospitals and Nursing Homes	55/75	---	35/55
Theaters and Auditoriums	---	---	30/50
Churches, Meeting Halls, Schools, and Libraries, etc.	55/75	---	35/60
Office Buildings	60/75	---	45/65
Commercial Buildings	55/75	---	45/65
Playgrounds and Parks, etc.	65/75	---	---
Industry	60/80	---	50/70

Source: Table N-8 in the Noise Element of the 2035 Kings County General Plan (CDA 2010)
L_{EQ} = equivalent continuous sound level; L_{MAX} = maximum noise level
The Table N-8 standards shall be reduced by 5 decibels (dB) for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards of Table N-8, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.

The Noise Element includes a policy (N Policy B1.1.3) that noise associated with construction activities shall be considered temporary, but that construction noise must comply with applicable Noise Element standards.

7.13.2 Environmental Evaluation of Noise

a) Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact. Noise would be generated during the construction, operation, and decommissioning phases of the project. In accordance with the policies contained in the Noise Element of the 2035 General Plan, a significant noise impact would occur if the maximum noise level emanating from the project site during construction, operation, or decommissioning would exceed County standards, outlined in Table 7.13-1 above, at the sensitive receptors in the area (CDA 2010). As previously mentioned, noise sensitive receptors in the area include residences east and southeast of the project site (0.25 mile to 0.61 mile from the project site boundary), and at NAS Lemoore approximately 0.4-mile northwest of the project site. The potential for project-generated noise to exceed applicable noise standards is discussed for each project phase in turn below.

Noise level thresholds identified in the Noise Element of the General Plan are presented in L_{MAX}, which is the maximum sound level during a measurement period of time, and L_{EQ}, which is the equivalent of a continuous sound level over a period of time.

Construction Noise

Use of heavy construction equipment during construction of the project would generate noise. The construction noise levels would depend on the noise generated by various pieces of construction

equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise sensitive receptors.

Construction noise levels would be highest during site grading, excavation, and installation of solar equipment. A worst-case scenario for project construction noise was modeled using the Federal Highway Administration's Roadway Construction Noise Model (RCNM) Version 1.1. The nearest sensitive noise receptor is a residential dwelling approximately 0.25 mile east of the project site so the construction noise model input for distance to the sensitive receptor is 1,320 feet. The worst-case scenario that was modeled assumed that a bull dozer, dump truck, water truck, and roller would be employed at the exact same time at the property line, which is 1,320 feet from the nearby residence. Maximum noise levels generated by the construction equipment listed above would be approximately 53.2 dBA L_{MAX} and 52.1 dBA L_{EQ} measured at a distance of 1,320 feet (0.25 mile). As presented in Table 7.13-1, the daytime ambient noise threshold for residences is 55 dBA L_{EQ} and the daytime maximum noise threshold is 75 dBA L_{MAX}. Under the worst-case scenario, the maximum noise levels generated during construction would remain well below the L_{MAX} threshold established in the Noise Ordinance, and the continuous sound levels generated during construction would be approximately 3 dBA below the L_{EQ} threshold. Therefore, while construction noise will be perceptible at the nearby residence, the ambient noise levels from construction of the proposed project would not exceed a threshold of significance. In addition, the increase in construction noise levels would only occur for the duration of construction (approximately 14 months) and would not contribute to a long-term increase in ambient noise levels of the area.

As described in Section 3.6.6, *Construction Schedule*, construction equipment would only operate between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, for up to a maximum of eight hours per piece of equipment, daily. There would be no impacts related to the nighttime noise level thresholds established in the Noise Element of the General Plan. Therefore, project construction activities would not exceed applicable noise standards and impacts would be *less than significant*.

Operational Noise

Operational noise would be generated by solar PV panels, several substations, inverters, storage systems, and transformers. Substations would be located near the intersection of Avenal Cutoff Road and the unimproved Kent Avenue alignment, over 2.6 miles from the nearest noise sensitive receptor (residences along Murphy Ranch Road). Inverter and transformers would be located within the substation facility and are expected to generate a noise level of about 72 dBA at the source. Solar PV panels would also emit noise as they track the sun; however, the noise would be inaudible off site. The storage system could include a battery, which would be operationally silent or a flywheel storage system that would have a rating of 45 dBA. Maintenance activities at the project site would typically include panel repairs; panel washing; maintenance to transformers, inverters, and other electrical equipment as needed. The intermittent presence of up to 25 workers at the project site may be required for repairs or replacement of equipment. Such activities could emit noise; however, the levels of noise emitted from standard maintenance activities would be similar to noise emitted by intermittent agricultural activities. The project would result in permanent noise increases during project operations; however, the resulting noise levels at the nearest sensitive receptors would not exceed applicable noise standards and impacts from operation noise would be *less than significan*t.

Decommissioning Noise

Noise levels generated during deconstruction activities would be similar to those generated during construction except that some of the noisiest construction equipment, such as pile drivers and vibratory rollers, would not be used during decommissioning. As with construction noise, the on-site noise generated during decommissioning would be well below County noise standards at the nearest sensitive receptors. Traffic volumes generated during decommissioning would be similar to those associated with construction, and the resulting noise levels would be well below applicable County standards. Therefore, the decommissioning activity and traffic associated with the project would not result in a substantial temporary increase in ambient noise levels in the project vicinity, and the impact would be *less than significant*.

In summary, the noise generated during the construction, operational, and decommissioning phases of the project would not exceed applicable noise standards. The impact on temporary and permanent ambient noise levels would be *less than significant*.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less Than Significant Impact. The construction of the project may generate vibration in the immediate vicinity of the project site when heavy equipment or impact tools are used. Groundborne vibration levels would be highest during solar array installation when the H-beams (cylindrical steel posts) are installed using non-vibrating pile drivers.

The level at which humans begin to perceive vibration is 0.015 inches per second (in/sec) peak particle velocity (PPV), and vibrations at 0.2 in/sec PPV are considered bothersome to most people (Caltrans 2013). The vibration levels typically produced by a sonic pile driver can reach 0.170 in/sec PPV at a distance of 25 feet. Vibratory rollers and large bulldozers typically generate vibration levels ranging from of 0.089 to 0.210 in/sec PPV at a distance of 25 feet.

There are no residences or other sensitive receptors near enough to the project site to be potentially affected by the construction-generated vibration. The Mustang Two Solar Generation Facility, adjacent to the western project boundary of the project site, may occasionally involve the presence of workers as close as 200 feet from the nearest construction activity on the project site. At 200 feet, the greatest vibration from the nearest construction activity would decrease to 0.0093 in/sec PPV, which would not be perceptible to those workers. Therefore, project construction activities would not expose persons to excessive vibration levels.

In summary, the heaviest construction equipment that would be used for project construction would produce vibration levels that would be far below the vibrations levels to be perceptible to the nearest off-site persons. Therefore, the project would not result in the exposure of persons to, or generation of, excessive groundborne vibration levels, and the impact would be *less than significant*.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. There are two private airstrips within a five-mile radius of the site, the nearest of which is 1.1 miles east at the Jones Farms Airport near Stratford. As such, the project would not expose people working at the project site to excessive noise levels associated with the operation of a private airstrip.

The proposed project is not located within two miles of a public airport or public use airport. The project site is located 5 miles southeast of the airfield at NAS Lemoore and is included in the study area for the JLUS. The project site is located within the NAS Lemoore flight pattern and falls between the 60 dBA and 70 dBA CNEL noise contours as mapped in the NAS Lemoore JLUS. The northeast half of the project site is exposed to aircraft noise levels of 65 dBA CNEL or greater, while the southwestern half of the site is exposed to aircraft noise levels of 65 dBA CNEL or less (JLUSPC 2011).

Noise levels exceeding 76 dBA CNEL are considered hazardous to health as determined by the USEPA (USEPA 1974). Aircraft overflights would expose construction workers, who would be on the site temporarily, and the permanent workers, who would visit the site periodically, to noise levels of up to 70 dBA CNEL, which is below the 76 dBA CNEL threshold. Therefore, the project would not expose workers on the project site to excessive noise levels from flight operations at NAS Lemoore.

The project would have *no impact* on human exposure to excessive noise levels from either private airstrips or a public airport.

7.13.3 References

Caltrans 2013 — California Department of Transportation (Caltrans). 2013. Transportation and Construction Vibration Guidance Manual. September. Available at: http://www.dot.ca.gov/hq/env/noise/pub/TCVGM_Sep13_FINAL.pdf.

CDA 2010 — Kings County Community Development Agency (CDA). 2010. 2035 Kings County General Plan – Noise Element. Adopted January 26, 2010. Available at: http://www.countyofkings.com/home/showdocument?id=3120.

JLUSPC 2011 — Naval Air Station Lemoore Joint Land Use Study Policy Committee, 2011. NAS Lemoore Joint Land Use Study – Final Release. August 30. Available at: http://www.kingscog.org/documents.html.

USEPA 1974 — United States Environmental Protection Agency (USEPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. March. Available at: nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=2000L3LN.TXT.

7.14 POPULATION AND HOUSING

POPULATION AND HOUSING: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	■	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

7.14.1 Environmental Setting

The project site is located in rural area of the County with very few existing residents in the area. The site is used for agricultural purposes and there are no existing residences on the project site. The site is not within the City of Lemoore's urban fringe area or primary or secondary spheres of influence (CDA 2010).

Population

According to U.S. Census Bureau American Community Survey estimates for 2012-2016, the City of Lemoore had a population of approximately 25,169 people, which is an approximately 5 percent population increase since the 2006-2010 American Community Survey estimates (Census 2012-2016a; 2006-2010). According to U.S. Census Bureau population estimates, Kings County had a population of approximately 150,101 in 2017, which is an approximately 2 percent population decrease since 2010 (Census 2017). However, between 2020 and 2035, the population in Kings County is projected to increase by approximately 16 percent (DOF 2018).

Housing

According to U.S. Census Bureau American Community Survey estimates for 2012-2016, the County had approximately 44,953 housing units, with a vacancy rate of 6.9 percent. Of the total housing units in the County, 73 percent are single-family structures, 10 percent are 2- to 4-unit structures, and the remaining units are 5-unit or more structures or mobile homes (Census 2012-2016b). The vacancy rates and housing characteristics in the City of Lemoore are similar to or slightly lower than the County (Census 2012-2016c).

Employment

The economy of the region is predominantly agriculture-based, with approximately 90 percent of land in the County devoted to agricultural uses (CDA 2010). In 2013, Government, Agriculture, Trade, Transportation and Utilities, and Manufacturing were the County's largest employers. Together, these industries accounted for 31,900 jobs (74 percent) of the County's industry employment (43,200 jobs). Government, the largest employer, provided 14,300 jobs (33 percent), while Agriculture accounted for 6,400 jobs (15 percent). Trade, Transportation and Utilities contributed 5,700 jobs (13 percent), and Manufacturing, 4,500 jobs (10 percent) (EDC & JTO 2015). According to the California Farmland Conversion Report 2010-2012, of the 890,785 total acreage inventoried in the County, 823,917 was zoned as farmland and grazing land, contributing significant cultural and economic value to the local economy (CDC 2015).

7.14.2 Environmental Evaluation of Population and Housing

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less Than Significant Impact. The proposed project is a solar generation facility and does not involve the construction of new homes or businesses or extension of publicly accessible roads. There would be a temporary influx of construction workers (an average of 421 workers during peak construction and

decommissioning periods) to the area when construction is initiated as well as during the decommissioning phase. Construction and decommissioning workers would likely be local and commute into the area. Temporary relocation of some construction workers would minimally affect the population, even if some of those workers should remain residents. Since the County presently has a 6.9 percent vacancy rate with over 3,000 housing units available, no new housing would be required. Project operation would require up to six full-time workers which would not necessitate new housing or induce substantial population growth, either directly or indirectly. Therefore, the project would have a *less than significant* impact on population growth.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The proposed project would be located on existing agricultural land. There are no residences on the project site. Therefore, neither housing units nor people would be displaced, and no replacement housing would be required. *No impact* would occur.

7.14.3 References

CDA 2010 — Kings County Community Development Agency (CDA). 2010a. 2035 Kings County General Plan- Land Use Element. Kings County, CA. Adopted January 26, 2010.

CDC 2015 — California Department of Conservation (CDC). 2015. California Farmland Conversion Report 2015. Summarizing land use conversion between 2010 and 2012, with comparisons to historic data. Kings County. Division of Land Resource Protection. Available at: http://www.conservation.ca.gov/dlrp/fmmp/Documents/fmmp/pubs/2010-2012/FCR/FCR%202015_complete.pdf.

DOF 2018 — California Department of Finance (DOF). 2018. Total Estimated and Projected Population for California and Counties: July 1, 2010 to July 1, 2060 in 1-year Increments. Kings County. Accessed on April 26, 2018 and available at: http://www.dof.ca.gov/Forecasting/Demographics/Projections/.

EDC & JTO 2015 — Economic Development Corporation & Job Training Office (EDC & JTO). 2015. Comprehensive Economic Development Strategy 2015. Kings County, CA. Kings County.

U.S. Census 2017 — United States (U.S.) Census Bureau (Census). 2017. Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2017. Kings County, California. 2017 Population Estimates. Accessed on April 26, 2018.

U.S. Census 2012-2016a — United States (U.S.) Census Bureau (Census). 2012-2016a. Table DP05: ACS Demographics and Housing Estimates. City of Lemoore, California. 2012-2016 American Community Survey 5-Year Estimates. Accessed on April 26, 2018.

U.S. Census 2012-2016b United States (U.S.) Census Bureau (Census). 2012-2016b. Table DP04: Selected Housing Characteristics. Kings County, California. 2012-2016 American Community Survey 5-Year Estimates. Accessed on April 26, 2018.

U.S. Census 2012-2016c United States (U.S.) Census Bureau (Census). 2012-2016c. Table DP04: Selected Housing Characteristics. City of Lemoore, California. 2012-2016 American Community Survey 5-Year Estimates. Accessed on April 26, 2018.

U.S. Census 2006-2010 United States (U.S.) Census Bureau (Census). 2006-2010. Table DP05: ACS Demographics and Housing Estimates. City of Lemoore, California. 2006-2010 American Community Survey 5-Year Estimates. Accessed on April 26, 2018.

7.15 PUBLIC SERVICES

PUBLIC SERVICES: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a) Fire protection?	☐	☐	☐	■
b) Police protection?	☐	☐	☐	■
c) Schools?	☐	☐	☐	■
d) Parks?	☐	☐	☐	■
e) Other public facilities?	☐	☐	☐	■

7.15.1 Environmental Setting

Fire Protection Services

KCFD provides fire protection services for the project area. KCFD is staffed by 89 professional firefighters and assisted by 10 volunteer companies with approximately 100 volunteers. They respond to 5,100 calls annually, averaging 14 calls daily (KCFD 2018). KCFD is headquartered in Hanford, and ten other stations serve the County. The station closest to the project site is Station 10, which is located at 20200 Main Street in Stratford, approximately 2 miles southeast of the project site. The response time to the project site from Station 10 is approximately nine minutes.

The KCFD maintains a mutual aid agreement with the City of Hanford Fire Department and other outside agency fire departments. Each station conducts assessments of proposed industrial and business facilities to assure compliance with safety and design capacity requirements. Fire stations also handle weed abatement on a complaint basis. Additional fire protection response services in the County include

City of Lemoore Volunteer Fire Department, NAS Lemoore Fire Department, and Santa Rosa Rancheria Fire (CDA 2010). The KCFD Heliport located at Station 4 also serves as the County's local staging area for SkyLife emergency medical helicopter transport.

Police Protection Services

Kings County Sheriff's Department (KCSD) provides law enforcement services in the project area from its headquarters at 1444 West Lacey Boulevard in Hanford (approximately 13 miles northeast) and five substations throughout the County. The Department currently has 148 sworn officers and 101 non-sworn personnel. There are six beat districts within the County, where at least one deputy sheriff is on duty at all times to serve the unincorporated communities and surrounding County areas. The response time from the Sheriff's Department headquarters to the project site is approximately 20 minutes. The KCSD has mutual-aid agreements statewide (KCSD 2018).

The California Highway Patrol provides traffic enforcement along state highways and County roadways within the County. The nearest area offices are located in Hanford and Coalinga. In addition to providing traffic enforcement, California Highway Patrol also provides other services to support the overall safety of the County's residents. They serve to pace traffic along highways during dense fog season and have implemented the El Protector Program that utilizes Spanish speaking officers that work with agricultural related businesses on traffic safety education and enforcement. They also implement Skywatch, a program which aids in the reduction of accidents involving commercial vehicles, using fixed wing aircraft, RADAR, and LIDAR that informs police vehicles on SR-99 and I-5 (CDA 2010).

Other Public Services and Facilities

Other public services near the project area include schools, parks and recreation, libraries, and social services, among other things. The project would generate little or no demand for these public services and their related facilities.

7.15.2 Environmental Evaluation of Public Services

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

a) Fire protection?

No Impact. Construction and operation of the proposed project would not be expected to result in an increase in demand of fire protection services leading to the construction of new or physically altered facilities. During construction, there is a small risk of construction equipment and materials posing potential fire hazards. The proposed project could include, at the applicant's option, a battery or flywheel storage system capable of storing up to 300 MW of electricity and conducting energy to the regional electricity grid. If provided, the storage system would consist of battery or flywheel banks housed in electrical enclosures and buried electrical conduit. The project could use one of a number of commercially available energy storage technologies, including but not limited to Lithium-ion (Li-ion), flow batteries, sodium sulfur or mechanical fly wheels. Dependent on the battery technology and design selected, the addition of a battery storage system could trigger additional KCFD requirements including,

but not limited to, the purchase of specialized hazmat vehicles and equipment along with mandated training of KCFD personnel. However, as described in Section 3.7.5, *Site Safety and Security*, the applicant would implement fire prevention measures and would work with the KCFD to obtain specialized hazmat vehicles, if necessary, and train workers in fire prevention and safety. Similar training and fire prevention measures would be conducted for workers employed during operation of the site. Additionally, the construction of the 20-foot-wide driveway following the perimeter of the site would act as a fire break between the site and off-site areas, thereby limiting the potential for a fire at the site to spread off-site.

During operation, site workers would perform routine maintenance, including maintenance of solar panels and other components, repairs inside the project substation, and vegetation management which would limit the volume and height of combustible vegetation. Daily site maintenance, fuels reduction through vegetation management, and proper training and fire prevention measures would reduce the demand for fire emergency services during construction and operation of the proposed project. The proposed project would result in *no impact* related to an increase in fire protection services that would necessitate the alteration or construction of fire stations or other infrastructure to combat fire.

b) Police protection?

No Impact. Construction and operation of the proposed project would not be expected to increase the demand for sheriff protection services leading to the construction of new or physically altered facilities. During construction and operation of the proposed project, the site would be protected by installation of 8-foot-high perimeter fencing with three strands of barbed wire. As described in the discussion of SCADA in Section 3.5.4, *Support Facilities*, and 3.7.5, *Site Safety and Security*, the facility would be designed with infrared security cameras, motion detectors, and/or other similar technology to allow 24-hour monitoring. If the security monitoring detected unauthorized persons and/or illegal activity on the site, a security representative would be dispatched to the facility and appropriate local authorities (e.g., the KCSD) would be notified. With the security measures that would be employed by the applicant for the project construction and operation, the proposed project would likely rarely rely on police protection services. The proposed project would not result in a change to the provision of law enforcement protection that would require the County to add personnel or facilities or alter existing facilities. The proposed project would result in *no impacts* related to an increase in demand for law enforcement services that would necessitate the alteration or construction of new or expanded facilities to maintain adequate service levels.

c) Schools?

No Impact. The proposed project would not significantly increase the number of residents in the County, as the project does not include residential units. Construction and operation workers would likely be local and commute into the area. Because the demand for schools is driven by population growth, the proposed project would not increase demand for more schools. As such, the proposed project would result in *no impact*.

d) Parks?

No Impact. The proposed project would not significantly increase the number of residents in the County, as the project does not include residential units. Construction and operation workers would likely be local and commute into the area. Because the demand for parks is driven by population, the proposed

project would not increase demand for more recreational facilities. As such, the proposed project would result in *no impact*.

e) Other public facilities?

No Impact. The proposed solar facility would not significantly increase the number of residents in the County, as the project does not include residential units. Construction and operation workers would likely be local and commute into the area. Because the demand for other public facilities is driven by population, the proposed project would not increase demand for additional public service facilities. As such, the proposed project would result in *no impact*.

7.15.3 References

CDA 2010 — Kings County Community Development Department (CDA). 2010. 2035 Kings County General Plan - Health and Safety. Kings County, CA. Adopted January 26, 2010.

KCFD 2018 — Kings County Fire Department (KCFD). 2018. Information page. Available at: http://www.countyofkings.com/departments/fire-department. Accessed on April 26, 2018.

KCSD 2018 — Kings County Sheriff's Department (KCSD). 2018. Information page. Available at: http://www.countyofkings.com/departments/public-safety/sheriff. Accessed on April 26, 2018.

7.16 RECREATION

RECREATION: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	■	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	■

7.16.1 Environmental Setting

The proposed project would be located on agricultural land of the valley floor in unincorporated Kings County. Surrounding land uses are a combination of agriculture and solar PV operations. The site is not within the City of Lemoore's urban fringe area or primary or secondary spheres of influence (CDA 2010a). There are very few residents in the project area.

Kings County General Plan

The 2035 General Plan provides the background objectives D1.1 and D1.2 in the "Open Space Element," in order to maintain the existing County park system and encourage further development of recreational facilities through implementation of the following policies (CDA 2010b):

OS Policy D1.1.1: Apply the "Public/Quasi-Public" land use designation to County parks.

OS Policy D1.1.2: Community plans should facilitate the development and maintenance of community park(s) within Community District areas to expand recreational resources available to residents.

OS policy D1.1.3: Support community involvement that builds capacity for the long-term maintenance and upkeep of open space and community park space within Community Districts.

OS Policy D1.2.1: Support the establishment of new commercial recreational development, provided it is compatible with surrounding land uses and the intensity of such development does not exceed the ability of the natural environment of the site and the surrounding area to accommodate it. Such facilities may include, but are not limited to campgrounds, recreational camps, hotels and destination resorts, ball courts and ball fields, skeet clubs and facilities, hunting and fishing clubs, and equestrian facilities.

7.16.2 Environmental Evaluation of Recreation

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less Than Significant Impact. The proposed solar facility would not significantly increase the number of residents in the County, as the project does not include residential units. Construction of the proposed project would involve a peak workforce of approximately 1,003 workers per day when construction of Phase 1, Site Preparation, and Phase 2, PV Installation, overlap, which could temporarily increase the use of existing parks and recreational facilities in the County. However, the scenario discussed above is a worst-case scenario, and many of the construction workers are expected to come from the existing local workforce. Therefore, any potential increase in the use of the existing parks and recreational facilities would be short-term and temporary. During operation, up to six permanent staff would be employed, and up to 25 workers would be occasionally required for major repairs and panel washing. The maximum number of staff on-site at any time would be 24 (four permanent staff and 20 temporary staff). The small number of workers needed for project operation would not significantly contribute to an increase in the use of existing neighborhood and regional parks or other recreational facilities that would result in deterioration of the facilities. Therefore, the proposed project would result in a *less than significant* impact to existing recreational facilities.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact. The proposed project does not include or require the construction or expansion of recreational facilities. Therefore, the proposed project would result in *no impact*.

7.16.3 References

CDA 2010a — Kings County Community Development Agency (CDA). 2010a. 2035 Kings County General Plan - Land Use Element. Kings County, CA. Adopted January 26, 2010.

CDA 2010b — Kings County Community Development Agency (CDA). 2010b. 2035 Kings County General Plan - Open Space Element. Kings County, CA. Adopted January 26, 2010.

7.17 TRANSPORTATION

TRANSPORTATION: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	■	☐	☐
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b)?	☐	■	☐	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	■	☐	☐
d) Result in inadequate emergency access?	☐	■	☐	☐

A Traffic Impact Study was prepared by LSA and is included as Appendix I (LSA 2018).

7.17.1 Environmental Setting

State highways in the vicinity that serve the project area include SR-198 located approximately 0.1 mile north, SR-41 located 2.5 miles east, SR-43 located 14.5 miles east, SR-269 located 11.5 miles west, and I-5 located 14 miles southwest. The County roads serving the project include Avenal Cutoff Road, Laurel Avenue, and Murphy Ranch Road.

The nearest public transit routes of the Kings Area Rural Transit are along SR-198 to the north of the project site and SR-41 to the east. The nearest existing bikeway runs along the Avenal Cutoff Road project frontage, extending from SR-198 in the north to the Fresno County line to the south (CDA 2010a).

Transportation Setting

Highways and Roads

Kings County contains approximately 337 miles of city streets, 956 miles of county roads, 130 miles of state facilities, and 27 miles of interstate highways. Two public use (noncommercial passenger) airports and approximately 67 miles of freight rail lines also are present (KCAG 2014, CDA 2010a).

The Kings County Association of Governments (KCAG) serves as the state-designated Regional Transportation Planning Agency and federally-designated Metropolitan Planning Organization. As part of their responsibilities, the KCAG develops a list of transportation projects as part of a regional transportation plan. This plan is updated every three years to account for funds and changing conditions (CDA 2010a).

The following provides a description of important roadways, and if applicable, any associated planned or proposed projects, within the County. The following provides a description of the existing roadways in the vicinity of the project.

SR-198: This route serves as an important connection between the Central Coast and the Sierra Nevada Mountains and I-5. It is a designated large truck route and primary commuter route (KCAG 2014). Similar to SR-41, it also varies between two and four lanes of traffic. This roadway has an average annual daily traffic (AADT) of between 7,700 (between the Fresno County line and NAS Lemoore) and 21,800 (between 18th Avenue and Houston Avenue) (CDA 2010a). According to the KCAG 2018 Regional Transportation Improvement Program, no proposed projects that affect the alignment or configuration of the roadway are planned for the 2018 year along this route within the County (KCAG 2017). Long range plans for this roadway are shown in Table 7.17-1.

Avenal Cutoff Road: Avenal Cutoff Road is a two-lane undivided roadway located west of the project site, providing a regional connection between I 5 and SR-198. According to the County's General Plan Circulation Element, Avenal Cutoff Road is classified as a Minor Arterial. In the vicinity of the project, the posted speed limit is 55 mph. No sidewalks or bicycle facilities are provided on this roadway.

Laurel Avenue: Laurel Avenue is a two-lane undivided local roadway located directly south of the project site that provides direct access to the project site. According to the County's General Plan Circulation Element, SR-198 is classified as a Major Collector. In the vicinity of the project, the posted speed limit is 55 mph. No sidewalks or bicycle facilities are provided on this roadway.

***Murphy Ranch Road*:** Murphy Ranch Road is a two-lane local roadway that provides direct access to the project site. There is no posted speed limit. No sidewalks or bicycle facilities are provided on this roadway.

TABLE 7.17-1
LONG RANGE STATE HIGHWAY PROJECTS 2021-2035 IN THE VICINITY OF THE PROJECT SITE

Highway	Location	Description
SR-198	At 9th Avenue	Construct Interchange
SR-198	At 13th Avenue/Hanford Armona Road	Reconstruct Interchange
SR-198	At 16th Avenue Construct Overcrossing	At 16th Avenue Construct Overcrossing
SR-198	At 21st Avenue Alignment Construct Interchange	At 21st Avenue Alignment Construct Interchange
SR-198	Fresno Co. Line to LNAS Construct Passing Lanes	Fresno Co. Line to LNAS Construct Passing Lanes
SR-198	At 6th Avenue	Construct Interchange
SR-198	At 2nd Avenue Construct Interchange	At 2nd Avenue Construct Interchange

Source: KCAG 2014
SR = State Route

The County has adopted LOS standards to evaluate existing operating conditions. Roadway operations and the relationship between traffic volumes and capacity is generally expressed in terms of LOS, which are defined using the letter grades A through F, where LOS A represents free-flow activity and LOS F represents overcapacity operation. The County uses an LOS threshold for which to gauge acceptable levels of operating standards. LOS A – C typically exhibit an acceptable level of service. Roadway segments operating at a level of LOS "E" or worse for urban areas and LOS "D" or worse for rural areas are considered unacceptable levels of service. Each local agency that owns and operates transportation facilities, however, may select an LOS standard more stringent than the minimum LOS standards (CDA 2010a).

Table 7.17-2 provides roadway descriptions, existing (year 2006) and future (year 2035) traffic volume data, and existing and future LOS, where available, for local and regional roadways that might be used during construction and operation of the project. The roadway segments for SR-198 listed in Table 7.17-2 include all those within the County, even if not in immediate proximity to the project site. All roadway segments in the project vicinity operate at acceptable or better LOS conditions (CDA 2010a).

TABLE 7.17-2
REGIONAL ROADWAY CHARACTERISTICS

Roadway	Limits	2006			2035		
		Number of Lanes	AADT	LOS	Number of Lanes	AADT	LOS
SR-198	Fresno Co. Line – LNAS	2	7,700	C	4	11,940	A
	LNAS – Avenal Cutoff Road	4	14,700	B	4	31, 890	B
	Avenal Cutoff Road – SR-41	4	18,500	B	4	43,990	C
	SR-41 – 18th Avenue	4	20,900	B	6	54,820	C
	18th Avenue – Houston Avenue	4	21,800	B	4	58,280	D
	Houston Avenue – 14th Avenue	4	29,000	B	4	67,350	E
	14th Avenue – Hanford-Armona Road	4	32,000	B	4	67,710	E
	Hanford Armona Road – 12th Avenue	4	28,500	B	4	60,250	D
	12th Avenue – 11th Avenue	4	20,700	B	4	59,780	D
	11th Avenue – 10th Avenue	4	19,500	B	4	39,650	C
	10th Avenue – SR-43	4	19,800	B	4	33,040	B
	SR-43 – 6th Avenue	4	18,900	B	4	35,110	B
	6th Avenue – Tulare Co. Line	2	19,800	F	4	33,910	B

Source: Kings County CDA 2010a
AADT = average annual daily traffic; LOS = level of service; I = Interstate; SR = State Route; A = free flowing traffic; B = relatively free flowing traffic; C = stable flow, at or near free flow of traffic; D = approaching unstable flow of traffic; E = unstable flow operating at or beyond capacity; F = forced or breakdown flow of traffic.

The County strives to maintain a circulation system that provides a variety of safe and efficient transportation alternatives. The roadway system is only one component of this. As such, objectives of the 2035 General Plan for roadway elements are intended to facilitate coordination on transportation with the regional authority, reduce potential environmental hazards (e.g., energy usage, noise, and land use), and maintain an appropriate LOS and maintenance on existing roadways (CDA 2010a).

Regulations for transportation facilities are included in Article 13 of the Development Code (Kings County 2017). These regulations provide for requirements for parking, loading areas, and access driveways. Other regulations pertinent to the movement of vehicles and the design of facilities are included within the 2015 State Vehicle Code and the Caltrans Highway Design Manual (Caltrans 2015).

Evacuation Routes and Local Emergency Response

Evacuation routes are relied upon during emergency or disaster responses. According to the Health and Safety Element of the 2035 General Plan, "Primary Routes" are state highways that can accommodate larger volumes of traffic, and "Secondary Routes" are county arterial roadways that provide critical secondary passages in times of emergency. Both the primary and secondary routes are maintained as priorities within the county (CDA 2010b).

Primary evacuation routes consist of I-5, Highway 33, Highway 269, Highway 41(also known as SR-41), Highway 43 (also known as SR-43), and Highway 198 (also known as SR-198) (CDA 2010b). Secondary east-west routes include Excelsior Avenue, Grangeville Boulevard, Houston Avenue, Jackson Avenue, Kansas Avenue, Lacey Boulevard, Laurel Avenue, Quebec Avenue, Utica Avenue, and Virginia Avenue. Secondary north-south routes include 6th Avenue, 10th Avenue, 10th ½ Avenue, 12th Avenue, 14th Avenue, 18th Avenue, 22nd Avenue, and Avenal Cutoff Road (CDA 2010a).

The 2035 General Plan includes a goal to "ensure maintenance and upkeep of key emergency access routes, and critical facilities and infrastructure to minimize delays or disruptions in emergency response" (CDA 2010b).

Waterways and Railroads

Waterways in the project area or vicinity are not used for transportation purposes. Waterways in the area are primarily lined and unlined ditches used for irrigation and agricultural water delivery.

Rail service within the County includes Amtrak passenger rail service and freight rail service. However, railroads are not located within the project site. Passenger rail service is serviced by two rail stations, one located in Hanford and one in Corcoran. Both stations are used for other methods of transportation, as well (CDA 2010a).

Freight rail utilizes two lines within the County. The north/south rail line service is the Burlington Northern & Santa Fe Railway line that runs from Bakersfield in the south to Roseville in the north. The east/west rail line service is the Union Pacific/San Joaquin Valley Railroad (SJVRR), which travels from Visalia in the east to Huron in the west. The Union Pacific/SJVRR right-of-way has also been identified as a strategic transportation corridor that should be preserved for possible future passenger rail, light rail, or non-motorized transportation development. The nearest railroad is the east-west Union Pacific/SJVRR, 4 miles north of the project site (CDA 2010a).

Alternate Modes of Transportation

Alternate modes of transportation in the project vicinity include bus, pedestrian, and bicycle travel. Kings Area Rural Transit (KART) is the County's public rural and urban transportation service provider that provides countywide bus service. The Corcoran Area Transit also provides public transportation service, but it has limited service within the Corcoran area (CDA 2010a). The nearest bus route in the project vicinity runs along SR-198 between Lemoore and NAS Lemoore (KART 2018).

Pedestrian facilities within the County include sidewalks, paths, and over-crossings. The Union Pacific/SJVRR right-of-way has been identified as a viable option for both pedestrians and bicyclists. The construction for this facility began in Lemoore to provide access along Hanford-Armona Road (CDA 2010a).

Several bicycle routes are located in the County, and all state routes in the County are open to bicycle travel as shared rights-of-way except for closed freeway segments of SR-198 and SR-41 (KCAG 2011). The 2035 General Plan and the regional plan for the County indicate a planned bicycle route within the vicinity of the project site at the intersection of Avenal Cutoff Road and Nevada Avenue (CDA 2010a; KCAG 2011).

7.17.2 Environmental Evaluation of Transportation and Traffic

a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less Than Significant Impact with Mitigation. For state highways and county roads, the relevant measure of effectiveness for performance is the LOS standard. Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D, while lower LOS is accepted in areas of existing congestion, such as urban highways segments (Caltrans 2002). Kings County has established LOS D as the minimum acceptable LOS on their roadways in rural areas (CDA 2010a). The traffic generated by the project would conflict with an established measure of effectiveness if it resulted in a degradation of LOS to lower than LOS C on a State highway, or lower than LOS D on a County road in rural areas. The Kings County Circulation Element does not provide guidance for analyzing project impacts to intersections already operating at LOS E or F in rural areas; however, the Traffic Impact Study prepared by LSA assumes that additional project-related traffic increasing delay at already deficient intersections would result in a significant project impact.

As typical of all PV solar facilities, the proposed project would generate the greatest volume of traffic during the construction phases when substantial numbers of workers are on-site during site preparation, grading, panel installation, and electrical equipment installation for the project. The construction period is also when the greatest number of truck deliveries are made, including deliveries of grading and construction equipment, solar panels, racking systems, electrical equipment, gravel, asphalt, and concrete, among other materials. The following analysis is based on the Traffic Impact Study included as Appendix I (LSA 2018). For the purposes of this analysis, because heavy equipment and large trucks have a greater effect on intersection operations than passenger vehicles, the volume of heavy construction equipment and large trucks was converted to passenger car equivalent (PCE) to account for their slower movement and lack of mobility.

During construction, the period with the highest trip generation is the overlap between PV Phase 2 and Storage Phases 1 and 2. During this period, construction of the project is expected to generate 1,706 PCE average daily trips, 116 inbound a.m. peak-hour PCE trips, and 199 outbound p.m. peak-hour PCE trips (LSA 2018).

Based on the proposed location of the project in relation to major freeways, highways, and cities, the roadway facilities most likely to be utilized have been summarized for the project site. For the purposes of the traffic analysis, it was assumed that project trips would be distributed 80 percent east of SR-198, 10 percent west on SR-198, and 10 percent south on Avenal Cutoff Road. The three proposed project

site access points are the intersections of Murphy Ranch Road/Avenal Cutoff Road, Kent Avenue/Avenal Cutoff Road, and Laurel Avenue/Avenal Cutoff Road. Entering and exiting trips were distributed equally between the project access points (LSA 2018).

As discussed above, roadway operations and the relationship between traffic volumes and capacity (i.e., volume-to capacity [v/c] ratios) are generally expressed in terms of LOS, which are defined using the letter grades A through F, where LOS A represents free-flow activity and LOS F represents overcapacity operation. The traffic analysis evaluated the following five intersections:

- 25th Avenue/State Route 198 (SR-198)
- Avenal Cutoff Road/SR-198 westbound ramps
- Avenal Cutoff Road/SR-198 eastbound ramps–Jackson Avenue
- 25th Avenue/Avenal Cutoff Road
- Avenal Cutoff Road/Laurel Avenue

In order to establish existing conditions, existing intersection turning movement volumes were collected at the study area intersections by an independent data collection company, National Data and Surveying Services (NDS), on a typical weekday during the a.m. and p.m. peak hours on Tuesday, June 5, 2018 (LSA 2018).

The County's threshold of significance for intersections in rural areas is LOS D. Satisfactory LOS (LOS D) is 35 seconds of delay or less at an unsignalized intersection. Project traffic impacts are considered significant if project traffic causes any intersection to deteriorate from satisfactory (LOS A through D) to unsatisfactory LOS (LOS E or F) or increases delay at already deficient intersections. Table 7.17-3 summarizes the results of the existing peak-hour LOS analysis for the study area intersections.

TABLE 7.17-3
INTERSECTION LEVEL OF SERVICE SUMMARY
(EXISTING, EXISTING PLUS PROJECT CONSTRUCTION, AND EXISTING PLUS PROJECT OPERATIONS)

Intersection	Baseline				Plus Project Construction				Plus Project Operations				Significant Impact?
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
25th Avenue/ SR-198	8.5	A	9.3	A	8.7	A	12.4	B	8.7	A	12.0	B	No
Avenal Cutoff Road/SR-198 WB Ramps	15.1	C	12.6	B	19.1	C	12.9	B	16.2	C	12.7	B	No
Avenal Cutoff Road/SR-198 EB Ramps	21.3	C	88.0	F	24.5	C	352.8	F	22.3	C	112.9	F	Yes
25th Avenue/ Avenal Cutoff Road	11.7	B	11.9	B	13.8	B	12.7	B	12.4	B	12.1	B	No
Avenal Cutoff Road/Laurel Avenue	14.0	B	16.4	C	15.8	C	16.9	C	14.6	B	16.1	C	No

Source: LSA 2018
Notes: Delay is reported in seconds; LOS = level of service; Shading indicates an exceedance in County's LOS criteria

As shown in Table 7.17-3, all intersections currently operate at satisfactory LOS during both peak hours, with the exception of Avenal Cutoff Road/SR-198 eastbound ramps (LOS F during the p.m. peak hour). With the construction of the project, all study area intersections are anticipated to continue to operate at satisfactory LOS, with the exception of Avenal Cutoff Road/SR-198 EB Ramps which will continue to operate at LOS F during the p.m. peak hour. The addition of project-related traffic increasing the delay at the already deficient intersection would be a potentially significant impact for both the construction and operation periods because, although project construction traffic would not cause a change in LOS rating at this intersection, it would result in an increased delay by 265 seconds (construction) and 25 seconds (operation).

As an alternate route to and from the project site via Avenal Cutoff Road/SR-198 eastbound ramps–Jackson Avenue, project vehicles may utilize Avenal Cutoff Road and 25th Avenue to and from SR-198. LSA conducted an LOS analysis to ensure that the addition of project trips to this alternate route would result in satisfactory LOS during the existing and cumulative conditions at all study area intersections, with the exception of Avenal Cutoff Road/SR-198 eastbound ramps–Jackson Avenue. All study area intersections (except for Avenal Cutoff Road/SR-198 eastbound ramps–Jackson Avenue) would continue to operate at a satisfactory LOS during the p.m. peak hour with the addition of construction and operations and maintenance trips on this alternate route, as summarized below in Table 7.17-4. As such, the project would neither contribute to an existing deficiency (no additional delay would result at the intersection at Avenal Cutoff Road/SR-198 eastbound ramps–Jackson Avenue) nor create a significant impact at any study area intersections with this alternate route that avoids adding trips to Avenal Cutoff Road/SR-198 eastbound ramps–Jackson Avenue.

TABLE 7.17-4
ALTERNATIVE ROUTE INTERSECTION LEVEL OF SERVICE SUMMARY (PM PEAK HOUR)
(EXISTING, EXISTING PLUS PROJECT CONSTRUCTION, AND EXISTING PLUS PROJECT OPERATIONS)

Intersection	Baseline		Plus Project Construction		Plus Project Operations		Significant Impact?
	PM Peak Hour		PM Peak Hour		PM Peak Hour		
	Delay	LOS	Delay	LOS	Delay	LOS	
25th Avenue/ SR-198	9.3	A	12.4	B	12.0	B	No
Avenal Cutoff Road/SR-198 WB Ramps	12.6	B	12.6	B	12.6	B	No
Avenal Cutoff Road/SR-198 EB Ramps	88.0	F	88.0	F	88.0	F	No
25th Avenue/ Avenal Cutoff Road	11.9	B	14.5	B	12.3	B	No
Avenal Cutoff Road/Laurel Avenue	16.4	C	16.9	C	16.1	C	No

Source: LSA 2018
Notes: Delay is reported in seconds
LOS = level of service
Shading indicates an exceedance in County's LOS criteria

Mitigation Measure TRA-1 requires the applicant identify an alternate route or timing for project-related vehicles during the p.m. peak hour during project construction, operation and maintenance, and decommissioning to reduce potential impacts on the LOS. With implementation of Mitigation Measure TRA-1, project-related traffic impacts would be reduced to a level of *less than significant*. Traffic impacts from project decommissioning would result in a potentially significant cumulative impact to Avenal Cutoff Road/SR-198 eastbound ramps–Jackson Avenue, which is discussed in detail in Section 7.21, *Mandatory Findings of Significance*.

The Regional Bike Routes plan in the 2035 General Plan "Circulation Element" shows an existing bikeway on Avenal Cutoff Road that passes along the project site frontage. The project would introduce new entrances along the Avenal Cutoff Road frontage, which would increase potential interaction between bicyclists on the roadway and vehicles entering and exiting the project site. However, project egress would be controlled by stop signs, and sight-lines in all directions would be very good given the flat terrain and lack of visual obstructions. As such, the project would not pose a safety hazard to bicyclists or otherwise decrease the performance of the existing bikeway. The nearest planned bikeways in the project vicinity are along Nevada Avenue between Avenal Cutoff Road and SR-41, and along Jackson Avenue between Avenal Cutoff Road and 18th Avenue. These planned bikeway segments are several miles from the project site and would not be directly affected by the project and would not be indirectly affected since little if any project-generated traffic would use those roadway segments. The project would not conflict with any adopted policies, plans, or programs regarding bicycle facilities, or otherwise decrease the performance or safety of bicycle facilities (CDA 2010a).

There are no existing or planned public transit routes or pedestrian facilities in the project vicinity, so the project would not decrease the performance or safety of such facilities. The project would not conflict with any adopted policies, plans, or programs regarding transit or pedestrian facilities, or otherwise decrease the performance or safety of transit or pedestrian facilities (CDA 2010a). The project would result in no potential conflicts with transit, bicycle, or pedestrian plans, policies, or programs, or otherwise decrease the performance or safety of such facilities. Therefore, the project would have a less than significant impact in this regard.

With implementation of Mitigation Measure TRA-1, potentially significant impacts associated with conflicts with an applicable plan, ordinance, or policy would be reduced to a level of *less than significant*.

> **Mitigation Measure TRA-1: Minimize Impacts to Traffic Level of Service During Construction, Operation and Maintenance, and Decommissioning.** As a condition of approval and prior to the issuance of encroachment permits, the applicant shall consult with the Kings County Public Works Department regarding construction-related traffic that may affect LOS. To minimize impacts on LOS at the Avenal Cutoff Road/SR-198 eastbound ramps construction worker arrival and departures and delivery of equipment shall not be allowed to use the Avenal Cutoff Road/SR-198 intersection during peak traffic hour traffic periods in the p.m. (4:00 to 6:00 is the p.m. peak period). The applicant shall identify alternate travel times for workers and deliveries or identify alternate routes during the peak hour and provide to the County for approval.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

No Impact. State CEQA Guidelines Section 15064.3 requires that transportation impacts be analyzed based on vehicle miles traveled (VMT). For a land use project, VMT exceeding an applicable threshold of significance may indicate a significant impact. The Lead Agency is responsible for establishing the thresholds of significance and has until July 1, 2020 to establish those thresholds. At this time the County has not adopted thresholds to determine impacts based on VMT as a result of a project. This threshold is not yet in effect; therefore, the project would have *no impact*.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less Than Significant Impact with Mitigation. The project would have three access points on Avenal Cutoff Road at Murphy Ranch Road, the unimproved Kent Avenue alignment, and Laurel Avenue. These new access points would result in turning movements in and out of the project site which would increase the potential for interaction with through traffic along Avenal Cutoff Road. However, these project entrances would be designed in accordance with the County Improvement Standards and would be subject to prior design review and approval by the County Public Works Department. Project egress would be controlled by stop signs, and sight-lines would be very good in all directions given the flat terrain, absence of visual obstructions, and linear alignment of Avenal Cutoff Road. Thus, the potential traffic hazard resulting from the project would be generally negligible, particularly during project operations when the solar facility would generate very little traffic.

Slow moving trucks during project construction could result in temporary congestion near the project entrances and could pose a safety concern due to abrupt changes in the speed of traffic flow, or due to slow turning movements across on-coming lanes of traffic. While traffic generated during decommissioning would be less than that generated during construction, the use of equipment for decommissioning activities would be similar to or less than during the construction phase and has the potential to result in temporary congestion resulting from slow moving trucks. Potential impacts to traffic as a result of slow-moving trucks or slow turning movements would be potentially significant.

The project site is located in an agricultural area and parking, storing, or operating equipment and vehicles in certain locations may affect farm worker vehicle and equipment access. Potential impacts related to construction traffic and access of nearby agricultural areas by farm workers would be a potentially significant impact. The contractor would be required to implement traffic management measures during construction activities (Mitigation Measure TRA-2) that would avoid and minimize the potential impacts. The measure requires that appropriate signage along public rights-of-way be provided, appropriate truck routes be identified, and that safe farm worker, pedestrian, and vehicle access be provided. Implementation of the measure would reduce potential impacts to a level of less than significant.

> **Mitigation Measure TRA-2: Traffic Management During Construction and Decommissioning Activities.** As a condition of approval, and prior to the issuance of encroachment permits, the applicant shall consult with Caltrans and/or the Kings County Public Works Department prior to initiation of construction and decommissioning activities that may affect area traffic (such as equipment and supply delivery necessitating lane closure, trenching, etc.). Additionally, the project plans will be reviewed by the appropriate County departments for conformance with all applicable fire-safety code and ordinance requirements for emergency access. The contractor shall implement appropriate traffic controls in accordance with the California Vehicle Code and other state and local requirements to avoid or minimize impacts on traffic. Traffic measures that shall be implemented during construction and decommissioning activities include:
>
> a. Construction traffic shall not block emergency equipment routes.

b. Construction activities shall be designed to minimize work on, and delays to or safety concerns for other users of, public rights-of-way and local streets. As examples, this might include the following:

   i. Identify designated off-street parking areas for all project-related vehicles throughout the construction and decommissioning periods.

   ii. Identify approved truck routes for the transport of all construction and decommissioning-related equipment and materials.

   iii. Limit the employee arrivals and departures, and the delivery of equipment and materials, to non-peak traffic periods.

   iv. Provide for farm worker vehicle access and safe pedestrian and vehicle access.

   v. Provide advance warning and appropriate signage whenever road or lane closures are necessary.

c. Construction shall comply with San Joaquin Valley Air Pollution Control District standards for unpaved roads, which include a requirement to keep vehicle speeds below 15 miles per hour.

d) Result in inadequate emergency access?

Less Than Significant Impact with Mitigation. The Health and Safety Element of the 2035 General Plan (CDA 2010b) identifies two primary evacuation routes, SR-41 and SR-198, and two secondary evacuation routes, Avenal Cutoff Road and Kansas Avenue, near the project site. These routes would remain operational through construction, and emergency access would not be limited by construction activities at the project site. The applicant would coordinate any potential road closures in advance per Mitigation Measure TRA-2 and would ensure accessibility and ground clearance for emergency vehicles. Interior circulation for emergency vehicles also would be maintained during all weather conditions. Additionally, the project plans would be reviewed by the appropriate County departments for conformance with all applicable fire-safety code and ordinance requirements for emergency access. Therefore, with mitigation, the project would result in *less than significant impacts* with respect to adequacy of emergency access.

7.17.3 References

Caltrans 2015 — California Department of Transportation (Caltrans). 2015. Highway Design Manual. Available at: http://www.dot.ca.gov/hq/oppd/hdm/pdf/english/HDM_Complete_30Dec2015.pdf. Accessed August 16, 2016.

Caltrans 2002 — California Department of Transportation (Caltrans). 2002. Guide for the Preparation of Traffic Impact Studies.

CDA 2010a — Kings County Community Development Agency (CDA). 2010. 2035 Kings County General Plan – Circulation Element. January 26, 2010. Available at: http://www.countyofkings.com/home/showdocument?id=3116.

CDA 2010b — Kings County Community Development Agency. 2010. 2035 Kings County General Plan – Health and Safety Element. Adopted January 26, 2010. Available at: http://www.countyofkings.com/home/showdocument?id=3118.

JLUSPC 2011 — Naval Air Station Lemoore Joint Land Use Study Policy Committee (JLUSPC). 2011. NAS Lemoore Joint Land Use Study – Final Release. August 30. Available at: http://www.kingscog.org/documents.html.

KART 2018 — Kings Area Rural Transit (KART). 2018. Kings County Route Overview. Accessed August 2, 2018. Available at: http://mykartbus.com/kings-county-routes-overview/.

KCAG 2017 — Kings County Association of Governments (KCAG) 2017. 2018 Regional Transportation Improvement Program. Lemoore, CA. Adopted December 6, 2017. Available at: https://www.kingscog.org/vertical/sites/%7BC427AE30-9936-4733-B9D4-140709AD3BBF%7D/uploads/Final_Kings_County_2018_RTIP.pdf.

KCAG 2014 — Kings County Association of Governments (KCAG). 2014. Regional Transportation Plan. Adopted July 30, 2014. Available at: http://www.kingscog.org/index.asp?SEC=20849C03-018A-4805-BA34-568DAAB5D89C&Type=B_BASIC.

KCAG 2011 — Kings County Association of Governments (KCAG). 2011. *2011 Kings County Regional Bicycle Plan*. Lemoore, CA. Transportation Policy Committee. Available at: http://www.ca-ilg.org/sites/main/files/file-attachments/2011_regional_bicycle_plan_-_e-version.pdf.

Kings County 2017 — Kings County. 2017. Development Code, Article 13. Off-Street Parking and Loading. Effective April 27, 2017. Available at: https://www.countyofkings.com/home/showdocument?id=15885.

LSA 2018 — LSA. 2018. Traffic Impact Study for RE Slate in Kings County, California.

7.18 TRIBAL CULTURAL RESOURCES

TRIBAL CULTURAL RESOURCES: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				

TRIBAL CULTURAL RESOURCES: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC section 5020.1(k), or	☐	■	☐	☐
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	■	☐	☐

7.18.1 Environmental Setting

Effective July 1, 2015, AB 52 amended CEQA to mandate consultation with California Native American tribes during the CEQA process to determine whether a proposed project may have a significant impact on a tribal cultural resource, and that this consideration be made separately from cultural and paleontological resources. Recognizing that California tribes are experts in their tribal cultural resources and heritage, AB 52 requires that CEQA lead agencies carry out consultation with tribes at the commencement of the CEQA process to identify tribal cultural resources. Furthermore, because a significant effect on a tribal cultural resource is considered a significant impact on the environment under CEQA, consultation is required to develop appropriate avoidance, impact minimization, and mitigation measures. By including tribal cultural resources early in the CEQA process, the legislature intended to ensure that local and tribal governments, public agencies, and project proponents would have information available to identify and address potential adverse impacts to tribal cultural resources.

A tribal cultural resource is a site, feature, place, cultural landscape, sacred place, or object which is of cultural value to a tribe. Tribal cultural resources are either listed in or eligible for the CRHR or a local historic register. Tribes may choose not to share information regarding these resources with the public, in accordance with state and/or federal laws.

*AB 52 T*ribal Consultation

Consultation efforts were initiated in March 2018 by the Kings County CDA for the proposed project. The CDA notified the Santa Rosa Rancheria Tachi Yokut Tribe (Tribe) who formally requested notification on CEQA projects under AB 52. On March 19, 2018, a formal consultation meeting was held at the Santa Rosa Rancheria Tachi Yokut Tribal Administration Office at 16835 Alkali Drive in Lemoore, California. The meeting was attended by Tribal members Vernon Vera, Robert Jeff, Greg Cuara, Glenn Jeff, Dakota Jeff, and Silas Summers. Attendees from the CDA included Chuck Kinney, Sandy Roper, and Matt Donnelly. Also, in attendance were Christy Herron and Scott Dawson, representing the project applicant, as well as Catherine Silvester and Carrie D. Wills from HELIX Environmental Planning, Inc. (HELIX).

The meeting provided an opportunity to share with the Tribal members the change in the size and location of the currently proposed project from the 2016 project. HELIX provided a map showing that the project had decreased in size from 3,782 acres to approximately 2,490 acres and had been moved to the west, away from the Kings River. Both changes were well received by the Tribal members as proximity to the Kings River is problematic due to the possibility of Tribal burials, and because the smaller project footprint meant lower risk of impact to sensitive Tribal lands and resources.

The Tribe did not indicate that there were any tribal cultural resources within the project area. The Tribal members confirmed that the Tribe is interested in having members participate as monitors of disturbance during project construction and to provide training to construction teams regarding identification of tribal cultural resources that may be encountered during construction. The Tribal members also confirmed that the Tribe curates cultural resources at their own facility. The County encouraged the Tribe and project applicant to initiate conversations concerning an agreement to formalize procedures for the treatment of tribal cultural resources if any are found at the project site during construction, as well as procedures for Tribal monitoring activities (i.e., a pre-excavation agreement). The Tribe stated that they preferred that any human remains identified during construction be left in situ. Additionally, the Tribal members requested to participate in biological surveys to be conducted at the project site. Tribal members Robert Jeff and Greg Cuara were notified of upcoming biological surveys in an e-mail from Catherine Silvester on May 9, 2018. No response was received as of circulation of this IS/MND.

7.18.2 Environmental Evaluation of Tribal Cultural Resources

a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC section 5020.1(k)?

ii. *A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?*

Less Than Significant Impact with Mitigation. Consultation between the Kings County CDA and the Santa Rosa Rancheria Tachi Yokut Tribe pursuant to AB 52 demonstrated that there are no known tribal cultural resources within the project site that could potentially be affected by the proposed project. Although the proposed project would not result in potentially significant impacts to known tribal cultural resources, there is always the possibility that previously undiscovered tribal cultural resources are present within the project site. Ground disturbing activities such as trenching and grading could damage or destroy previously undiscovered tribal cultural resources, which would result in a potentially significant impact. Implementation of Mitigation Measure CUL-2 (see Section 7.5.2) during construction would reduce the impact to a level of *less than significant*.

7.18.3 References

HELIX 2018 HELIX Environmental Planning, Inc. (HELIX). 2018. Cultural Resources Assessment for the RE Slate Solar Project in Kings County, CA. April.

7.19 UTILITIES AND SERVICE SYSTEMS

UTILITIES AND SERVICE SYSTEMS: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	■	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	■	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	■
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	■	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	■	☐

7.19.1 Environmental Setting

Water

Project Water Demand and Supply

A WSA has been prepared for the proposed project to evaluate project construction and operation water requirements within the larger context of water supply and demand in the region (Balance 2018, Appendix H). The project construction phase would require a total of 260 acre-feet of water for the entire project. Construction water use would be primarily for dust control and soil conditioning and may be trucked to the site or pumped from local canals. The project operation phase (which could last 40 years or more) would require 15 acre-feet of water per year, primarily for panel washing and sheep watering. During operation, water may be sourced from a combination of an existing on-site well, potable water delivery service, or trucked in from an off-site purveyor. There are no existing potable water sources in the project site.

Westlands Water District

The western portion of the project site is located within the WWD, which administers and distributes water from the CVP to farming operations within its service area and implements the groundwater management plan within the Westside groundwater basin. Water supply for the proposed project would not be provided by WWD.

Current groundwater pumping in the area varies substantially from year to year depending on availability of surface water deliveries of CVP water delivered through the WWD. In 1963, WWD contracted with the US Bureau of Reclamation to obtain imported water supply for the CVP in order to reduce the need for groundwater extraction within the District's service area. During years when WWD receives most of its CVP water allocation, groundwater provides a minor portion of irrigation requirements. During years of severe drought, such as 2013 and 2014, groundwater pumping increases substantially to make up for shortfalls of surface water deliveries. The WWD has determined that the "safe yield" of the groundwater resource, or the average volume of groundwater that can be pumped annually within the WWD service area without lowering groundwater levels over the long term, is 200,000 acre-feet. This is equivalent to approximately 0.35 acre-feet per year per acre over the 568,000 irrigable acres within WWD's service area (WWD 2013, 2014a, 2014b).

Empire West Side Irrigation District

The eastern portion of the project site is located within the EWSID, which manages irrigation infrastructure within a small area of land between WWD and the Kings River. Water supply for the proposed project would not be provided by EWSID.

The EWSID is not a full CVP contractor. However, EWSID is a "non-CVP" subcontractor through the KRCD. Through this agreement, EWSID may receive up to 3,000 acre-feet per year of CVP water when excess supply is available, based on reservoir operations, hydrologic conditions, and other constraints. This supply, however, is unlikely to be available in most years when primary CVP contractors may have priority (Balance 2018).

Solid Waste and Wastewater

Solid Waste/Landfills

Solid waste collection and disposal service in the County is provided by the Kings Waste and Recycling Authority (KWRA). The KWRA was formed in 1989 by agreement between the County and the cities of Lemoore, Hanford, and Corcoran. Solid waste from the member jurisdictions is transported to KWRA Materials Recovery Facility in Hanford where wastes are separated for recycling, composting, or landfill disposal (CDA 2010a).

Non-recyclable materials are transferred to the B-17 Landfill Unit at the Chemical Waste Management, Inc. Kettleman Hills Facility located on SR-41 in Kettleman Hills approximately 20 miles southwest of the project site. The B-17 Landfill Unit has a maximum disposal rate of 2,000 tons per day, and currently accepts an average of 1,350 tons per day (Waste Management 2018). The total permitted capacity of B-17 Landfill Unit is 18.4 million cubic yards, with a remaining capacity of 17.5 million cubic yards, as of November 2010. The facility's estimated cease operation date is January 1, 2030, with the actual closure date depending on the rate of fill (CalRecycle 2018).

Wastewater

The project site is not within the service area of any community wastewater collection and treatment system. For projects in rural areas of the County that include permanent on-site employees, the wastewater disposal needs are typically met by individual septic tank and leach field systems which are designed, constructed, and operated in accordance with the requirements and standards of the County and the RWQCB.

During the construction phase, wastewater disposal would be provided via portable restrooms which would be serviced by a licensed provider. During operation, a septic system and leach field would be installed adjacent to the O&M building to support the restroom facilities and sewage needs of up to six permanent staff. A Waste Discharge Permit would not be required from the RWQCB because the project would have an anticipated peak flow into the leach field less than 300 gallons per day and would therefore not exceed 2,500 gallons per day of sewage. The septic system and leach field would be designed in accordance with the Kings County Plumbing Code (Ordinance No. 567.4, Section 5-82). Personnel who are on-site to perform module washing (up to four times per year) would be provided with portable restrooms serviced by a licensed provider. No surface discharges are proposed, other than natural storm water runoff.

7.19.2 Environmental Evaluation of Utilities and Service Systems

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less Than Significant Impact. The project includes a septic system and leach field as part of the proposed O&M building that would be staffed by up to six permanent employees during project operation. This leach field would have a maximum daily flow of 300 gallons, which is well below the 2,500 gallons per day threshold for requirement of a Waste Discharge Permit from the RWQCB. The proposed septic system and leach field would be scaled similar to that of a single-family residence and would be designed in accordance with the Kings County Plumbing Code (Ordinance No. 567.4, Section 5-82) which regulates septic system designs in unincorporated areas of the County. To ensure that there would be no environmental impacts, the on-site septic system would be required by ordinance to be engineered in a manner that avoids discharge into groundwater.

Water used during construction and operations for purposes of dust control, panel washing, and sheep watering would be promptly absorbed by the pervious ground surface that would make up the majority of the project site. The project site does not drain to off-site lands or existing storm water drainage facilities. Drainage in the existing agricultural fields within the project site is internal due to the presence of bordering berms associated with canals and roads. The project would be constructed and operated under an approved SWPPP that would include construction BMPs and storm water and erosion control measures that would prevent significant discharge of storm water off-site. In addition, CDA staff may require the applicant to prepare drainage studies, and/or include additional drainage elements in the design of the projects, as part of the application process for the CUP. The project would comply with County requirements and conditions of the CUP for construction activities, including measures addressing drainage. The project would not produce wastewater or runoff that would require disposal or treatment off-site, and no construction or expansion of off-site water or wastewater facilities would

be required as a result of the project. The project would therefore have a *less than significant impact* under this criterion.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less Than Significant Impact. As indicated above in Section 7.19.1 *Environmental Setting*, the safe yield for the WWD groundwater basin is 0.35 acre-feet per acre per year. Project construction is expected to use a total of 260 acre-feet, or 0.13 acre-feet per acre. Project decommissioning is expected to have similar water demands. Project operations would use only 15 acre-feet per year for panel washing and other activities, which is only 0.007 acre-feet per acre per year. By comparison, during years when sufficient supplies of irrigation water are available, the crops historically grown on the project site include wheat and cotton, which require approximately 1.5 and 2.5 acre-feet per acre per year of irrigation water respectively. As discussed in Section 7.10, *Hydrology and Water Quality*, the project would operate within the safe yield and would use less water per year during the life of the project than the volume used per year during the site's recent history. Further, as also described in Section 7.10, the WSA prepared for the project (Balance 2018, Appendix H) identified multiple potential water sources for the project to demonstrate sufficient water supplies during the life of the project during normal, dry, and multiple dry years. The impact of the project on water supplies would be *less than significant*.

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact. As discussed above, the project's wastewater needs would be provided by portable chemical toilets and a small septic system and leach field, and the project would not require the service of a wastewater treatment provider. The project would therefore have *no impact* under this criterion.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Less Than Significant Impact. Non-recyclable waste from construction and operation of the project would be disposed of at the B-17 Landfill Unit in Kettleman City, California. Construction waste would be sorted on-site and recyclable materials would be transported to an appropriate regional recycling facility. It is estimated that 10 percent of total construction waste would be recycled.

The project would have a *less than significant* impact on the B-17 Landfill Unit because the project would generate a relatively small amount of construction waste that would easily be accommodated by the existing landfill, which currently receives approximately 650 tons less than its maximum daily disposal rate of 2,000 tons per day (Waste Management 2018). As of November 2010, the facility had a remaining capacity of 17.5 million cubic yards (CalRecycle 2018). The applicant estimates that the project would produce 10 cubic yards of solid waste for every MW; therefore, the project would produce a maximum total of 3,000 cubic yards of solid waste during construction, of which 300 cubic yards would be recycled.

Operation and maintenance activities would produce negligible volumes of solid and liquid wastes that would be disposed of in accordance with applicable requirements.

Decommissioning would result in the generation of additional solid waste. Anticipated solid waste flows include concrete, metal, plastics, and PV panels. Recyclable materials, including PV panels, would be removed from the waste stream and recycled prior to disposal of solid waste in an approved landfill. Furthermore, decommissioning of the solar facility could occur after the B-17 Landfill Unit has reached its permitted capacity in 2030 but would be required to comply with all waste disposal regulatory requirements (CalRecycle 2018). If the solar facility was decommissioned after the closure of the B-17 Landfill Unit, waste would be hauled to the nearest active landfill facility. Additionally, in order to comply with the California Integrated Waste Management Act, the County will continue to be required to demonstrate on a 5-year reporting cycle that it has at least 15 years of remaining landfill capacity available within the County, and it is therefore anticipated that during decommissioning, expanded capacity will be available at the B-17 Landfill Unit, or another location will be provided within the County with sufficient capacity to accommodate the solid waste generated from the solar project.

Therefore, project waste disposal would have a minimal impact on the remaining capacity of Municipal Solid Waste (MSW) Landfill B-17 and would not require the development of new or expanded landfills. The project would result in a *less than significant* impact under this criterion.

e) C*omply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

Less Than Significant Impact. The project would comply with the California Integrated Waste Management Act of 1989 (AB 939), which requires each city and county in California to prepare, adopt, and implement a Source Reduction and Recycling Element. Policies pertaining to solid waste, source reduction, and recycling are identified in the Source Reduction and Recycling Element and the Household Hazardous Waste Element of the Kings County Integrated Waste Management Plan (EBA Wastechnologies 1995). The KWRA serves all County unincorporated areas, and the cities of Corcoran, Hanford and Lemoore. Municipal waste generated in these areas are first directed to the KWRA facility and then transferred to the Chemical Waste Management, Inc. Kettleman Hills Facility which operates both municipal waste and hazardous waste landfills at their site located west of I-5 along SR-41 (CDA 2010b).

As described above, the project applicant has estimated that the project would generate a maximum of 3,000 cubic yards of solid waste during construction. Materials would be disposed of at Chemical Waste Management, Inc. Unit B-17 (16-AA-0027), in Kettleman City, California, which is permitted by the County and inspected monthly by the Kings County Health Department, Environmental Health Services Division. Some construction waste would be recycled rather than going to the Chemical Waste Management, Inc. Unit B-17 facility. As discussed above, this landfill has sufficient capacity to accept anticipated waste from project construction. During operation and decommissioning, project waste would be disposed of consistent with applicable federal, state, and local recycling, reduction, and waste requirements and policies. Any hazardous materials and wastes would be recycled, treated, and disposed of in accordance with federal, state, and local laws. The project would therefore have a *less than significant impact* under this criterion.

7.19.3 References

Balance 2018 Balance Hydrologics, Inc. (Balance). 2018. Final Water Supply Assessment for the Slate Solar Project, Kings County, California. May 4.

CalRecycle 2018 — California Department of Resources Recycling and Recovery (CalRecycle). 2018. Facility/Site Summary Details: Chemical Waste Management, Inc. Unit B-17 (16-AA-0027). Available at: https://www2.calrecycle.ca.gov/swfacilities/Directory/16-AA-0027. Accessed November 26, 2018.

CDA 2010a — Kings County Community Development Agency (CDA). 2010a. 2035 Kings County General Plan - Land Use Element. Kings County, CA. Adopted January 26, 2010.

CDA 2010b — Kings County Community Development Agency (CDA). 2010b. 2035 Kings County General Plan - Resource Conservation Element. Kings County, CA. Adopted January 26, 2010.

EBA Wastechnologies 1995 — EBA Wastechnologies. 1995. Kings County Countywide Integrated Waste Management Plan. Adopted by the Kings County Board of Supervisors. April.

Waste Management 2018 — Waste Management. 2018. "Kettleman Hills Facility Overview." Available at: http://kettlemanhillslandfill.wm.com/fact-sheets/2011/facility-overview.jsp. Accessed April 12, 2018.

WWD 2014a — Westlands Water District (WWD). 2014a. Westlands Water District – 2013 Crop Acreage Report. ND. Available at: http://wwd.ca.gov/wpcontent/uploads/2014/04/coprpt13.pdf.

WWD 2014b — Westlands Water District (WWD). 2014b. Westlands Water District – Annual Water Use and Supply. ND. Available at: http://wwd.ca.gov/wpcontent/uploads/2014/06/Water-Supply-Charts.pdf.

WWD 2013 — Westlands Water District (WWD). 2013. Rules and Regulations – Article 19. Regulations Regarding the Application for and Use of Municipal and Industrial Water Within Westlands Water District. As revised January 15, 2013. Available at: http://wwd.ca.gov/wp-content/uploads/2014/12/rules19.pdf.

WWD 1996 — Westlands Water District (WWD). 1996. Westlands Water District Groundwater Management Plan. 32p.

7.20 WILDFIRE

WILDFIRE: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■

WILDFIRE: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	■
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	■
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	■

7.20.1 Environmental Setting

SB 1241 (2012) requires the legislative bodies of cities and counties to update their general plan safety elements to address the protection of the community from unreasonable risks associated with wildland and urban fires. The update of the safety element must address fire risks on land classified as State Responsibility Area (SRA) and very high fire hazard severity zones. The proposed project is not located in an SRA, or an area classified as being a very high fire hazard severity zone. The nearest SRA is approximately 18 miles southwest (CAL FIRE 2019). Kings County Fire Department performs fire protection services for the project site.

The Kings County General Plan Health and Safety Element addresses fire hazard risks throughout the county. The primary risk factors identified include the presence of dry vegetation, as well as hot and dry weather. The remoteness of some areas of the county adds an additional hazard, as the distance from fire stations and lack of road access may prevent a timely response. While topography can be an important factor in wildfire risk, Kings County is essentially flat, reducing the wildfire risk. Health and Safety Objective C2.2 from the General Plan identifies fire prevention policies that center around ensuring that the Kings County Fire Department receives necessary funding and that structures adhere to Fire Code Standards (CDA 2010).

7.20.2 Environmental Evaluation of Wildfire

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No impact. The project site is not located in or near a SRA or a very high fire hazard severity zone. Therefore, the project has *no impact* related to these criteria.

7.20.3 References

CAL FIRE 2019 — California Department of Forestry and Fire Protection (CAL FIRE). 2019. State Responsibility Area Viewer. Accessed on January 29, 2019 and available at: http://www.fire.ca.gov/firepreventionfee/sraviewer.

CDA 2010 — Kings County Community Development Agency (CDA). 2010a. 2035 Kings County General Plan - Land Use Element. Kings County, CA. Adopted January 26, 2010.

7.21 MANDATORY FINDINGS OF SIGNIFICANCE

MANDATORY FINDINGS OF SIGNIFICANCE: Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
The lead agency shall find that a project may have a significant effect on the environment and thereby require an EIR to be prepared for the project where there is substantial evidence, in light of the whole record, that any of the following conditions may occur. Where prior to commencement of the environmental analysis a project proponent agrees to MMs or project modifications that would avoid any significant effect on the environment or would mitigate the significant environmental effect, a lead agency need not prepare an EIR solely because without mitigation the environmental effects would have been significant (per Section 15065 of the State CEQA Guidelines):				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	■	☐	☐

MANDATORY FINDINGS OF SIGNIFICANCE: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of past, present and probable future projects)?	☐	■	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	■	☐	☐

7.21.1 Environmental Evaluation of Mandatory Findings of Significance

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less Than Significant with Mitigation. As discussed in Section 7.4, *Biological Resources*, the project could result in potentially significant effects to several species including San Joaquin kit fox, burrowing owl, nesting Swainson's hawk, and ground nesting birds. However, with the implementation of Mitigation Measures BIO-1a-e, BIO-3a-c, BIO-4, and BIO-5, these potential impacts would be reduced to *less than significant levels*. Potential impacts to Swainson's hawk foraging habitat are identified in Section 7.4; the project would result in a less than significant impact to Swainson's hawk foraging habitat.

As discussed in Section 7.5, *Cultural Resources*, the project would result in potentially significant effects to historic and prehistoric archaeological resources, including human burials, and paleontological resources. However, with the implementation of Mitigation Measures CUL-1, CUL-2, CUL-3, and CUL-4, these potential impacts would be reduced to *less than significant* levels.

In summary, with the implementation of mitigation measures to be incorporated into the proposed project, it is expected that the project would not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or pre-history.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are significant when

viewed in connection with the effects of past projects, the effects of other current projects, and the effects of past, present and probable future projects)?

Less Than Significant with Mitigation. The cumulative analysis is based on consideration of past, present, and probable future projects in the vicinity of the proposed project. The projects considered in the cumulative analysis include those that would be constructed concurrently with the proposed project and those that would be in operation at the same time as the proposed project. The cumulative list was compiled using data provided by the Kings County CDA.

The cumulative projects considered in this analysis are limited to projects that would result in similar impacts as the proposed project due to their potential to collectively contribute to significant cumulative impacts. The cumulative projects considered are provided below, in Table 7.21-1. Refer to Figure 10 for the locations of the cumulative projects in the County.

TABLE 7.21-1
PENDING, APPROVED, AND COMPLETED SOLAR PV PROJECTS

Project	Area (Acres)	Generating Capacity (MW)	Status (as of April 2019)
2275 Hattesen	15.70	1.83	CUP Approved
Alamo Springs	985.00	130.00	Pending
American Kings	978.00	125.00	CUP Approved
Aurora Solar	--	--	Withdrawn
Avenal Park	86.29	9.00	Constructed
CED Corcoran Solar 2	124.00	19.75	Constructed
CED Corcoran Solar 3	138.00	20.00	Constructed
CED Corcoran Solar 3 Modification	17.00	3.12	CUP Approved
Corcoran Irrigation District (EDF)	200.00	20.00	Constructed
SPS Corcoran	228.00	20.00	Constructed
Daylight Solar	2,103.00	300.00	Pending
Freshwater Solar (Guernsey)	--	20.00	Constructed (PG&E Owned and Operated)
Gales 3 MW Solar Project	--	--	Expired
Grangeville	--	--	Expired
Hanford 12	19.00	3.00	Constructed
Jacob's Corner (60 MW)	--	--	Withdrawn
Java Solar	96.14	15.00	CUP Approved
Kansas	200.00	20.00	Constructed
Kansas South	230.00	20.00	Constructed
Kent South	200.00	20.00	Constructed
Kettleman Solar	220.00	20.00	Constructed
Lemoore 14	60.39	8.00	Constructed
Leo Solar Project	20.00	3.00	Pending
Lincoln	--	--	Expired
Mustang	1,422.00	160.00	Constructed

TABLE 7.21-1 (cont.)
PENDING, APPROVED, AND COMPLETED SOLAR PV PROJECTS

Project	Area (Acres)	Generating Capacity (MW)	Status (as of April 2019)
Mustang Two	2,459.15	150.00	CUP Approved
Orion	200.00	20.00	Constructed
Quay Valley Solar One			Withdrawn
Sand Drag	240.00	19.00	Constructed
Stratford Land	--	--	Withdrawn
Sun City	180.00	20.00	Constructed
Sunpower Henrietta (Riverwest)	836.00	136.00	Constructed
Trafalgar Solar	--	--	Withdrawn
Westlands Aquamarine	2,527.00	250.00	Pending
Westlands Blue	980.00	150.00	Pending
Westlands Chestnut	1950.00	250.00	Pending
Westlands Solar Park	21,000.00	2,000.00	Pending
Westside Solar	287.00	22.00	Phase 1 Constructed
Total	**36,557.67**	**3,684.7**	

Source: Kings County CDA 2019

The potential of the proposed project, together with the cumulative projects (including other solar PV developments), to contribute to cumulative impacts with regard to aesthetics, agriculture, air quality, biological resources, GHGs, hydrology and water quality, and traffic and transportation are described below.

Aesthetics. The proposed project and the majority of the cumulative solar projects are located in the western portion of the County which is primarily agricultural. At full build-out, these projects would generally form a contiguous block of solar development; however, they and other solar projects in the County are generally located in areas with relatively low visual quality and no significant scenic resources.

Sensitive viewers in the area include motorists, pilots, and residents. Due to the generally lower visual effect of views on motorists, the combined effect of the solar facilities on motorists would be generally low. The number of residences is low, and are they are associated with agricultural or light industrial surrounding land uses. Some of the cumulative projects may be viewed from residences (specifically, individual projects under the Westlands Solar Park Project would be located near a small block of rural residences along Avenal Cutoff Road near the western boundary of the County); however, the low profile of the solar arrays would not be out of place in the rural setting, and due to the existing surrounding land uses and visual setting of the residences in the area, the individual projects would not be expected to result in significant visual impacts on residents.

The proposed project would be similar in appearance to the cumulative projects listed in Table 7.21-1. Although the proposed project would contribute to a visual change in the area due to the addition of more solar facility uses in a currently undeveloped agricultural area, the contribution of the proposed project would not be cumulatively considerable because of the already low visual quality of the overall area and the significant existing solar developments (i.e., Kent South, Orion, Mustang, Mustang Two, Westside Kings) in the immediate vicinity of the project site. The individual projects would not combine to result in a cumulatively significant impact related to aesthetics, and the proposed project's contribution to cumulative aesthetic impacts would be *less than significant*. While the majority of the

cumulative projects would be concentrated in the western portion of the County, all solar projects in the area would incorporate non-reflective and non-glare producing panels to minimize glare. The impacts on aerial viewers (i.e., pilots) would be less than significant. In addition, the projects would incorporate minimum and non-intrusive lighting for security; therefore, the incremental lighting from the cumulative projects would not combine to result in a cumulatively significant impact. The incremental lighting and glare from the cumulative projects would not combine to result in a cumulatively significant impact, the proposed project's contribution to light and glare impacts would be *less than significant*.

Agriculture Resources. The project site is comprised of approximately 2,490 acres of disturbed agricultural land with approximately 1,617 acres classified as Farmland of Statewide Importance and 873 acres of Grazing Land by the California Department of Conservation. In addition, the entire site is designated as Exclusive Agricultural (AG-40) by the County. In 2016, the County had approximately 479,839 acres of Important Farmlands (including Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance) and an additional 338,243 acres of grazing land (CDC 2018). The proposed project and cumulative projects in the vicinity would use up to 38,174.7 acres (approximately 4.7 percent) of available farmland in the County for solar development and other purposes. The project site and other cumulative solar projects would potentially be used for livestock grazing during project operation; therefore, the project site and a number of cumulative projects may remain in agricultural land uses. At the end of their productive lives, all of the cumulative projects would be decommissioned. In addition, the applicant would be required to implement Mitigation Measures AG-1 (Vegetation and Agricultural Management Plan), AG-2 (Soil Reclamation Plan), and AG-3 (Financial Assurances), and AG-4 (Solid Waste Management Plan) to reduce potential impacts on agriculture resources to less than significant. The cumulative projects would adhere to mitigation requirements, including soil reclamation and financial assurances, similar to the mitigation for the proposed project. The incremental effects of the cumulative projects would not combine to result in a cumulatively significant impact, and the proposed project would result in a *less than significant* contribution to cumulative impacts on agriculture resources in the area.

Air Quality. The region where the proposed project would be built is designated as nonattainment for the ozone precursors, PM_{10} and $PM_{2.5}$. The SJVAPCD states that if project emissions exceed the significance thresholds for the criteria pollutants, then a project would have a project-level and cumulatively, significant impact (SJVAPCD 2015).

The SJVAPCD significance thresholds for PM_{10} and $PM_{2.5}$ are each 15 tons per year, for construction and operational emissions. The maximum PM_{10} emission for the year would total 4.38 tons per year before the applicant's mitigation, and 4.25 tons per year after mitigation. Emission levels below the significance thresholds are not expected to cause exceedance of the air quality standards in the vicinity of the source, which is the area of highest concentrations. In the case of the project, because the construction emissions of PM_{10} before the applicant's mitigation are less than the significance thresholds, the ambient air concentrations would also be expected to be below the air quality standards in the vicinity of the source, decreasing even further with distance from the source.

In order to assess cumulative impacts, the significance of the incremental effects of the project was estimated in connection with the effects of past, current, and probable future projects within the same geographic area. The projects with a potential to generate emissions that would cumulate with those of the proposed project are all solar generation facilities, either under construction or operational.

Of the projects closest to the project site, the following may be under construction during the same timeframe as the proposed project; American Kings, Westlands Aquamarine, Daylight Solar, and Westlands Solar. Assuming construction activities from these projects would occur during the exact timeframe as the proposed project, the total construction emissions of PM_{10} could be estimated to be about 14.5 tons per year, which is below the significance threshold of 15 tons per year for a project's construction emissions. In addition, the significance thresholds have been designed to provide reference emission levels for the most conservative scenario, which is a single source. Emissions originating from multiple sources distributed over an area have substantially lower air quality impacts compared to a single source. Therefore, it can be reasonably inferred that the cumulative air quality impacts of PM_{10} emissions are expected to be well below the air quality standards and, therefore, would not result in a considerable net increase of PM_{10} levels in the region.

Operational emissions from the proposed project are lower than construction emissions and would cumulate with similar levels of operational emissions from a smaller number of projects compared to the projects under construction in the same area. Therefore, the cumulative impacts from operational emissions of PM_{10} would also be expected to be below the air quality thresholds and, therefore, would not result in a considerable net increase of PM_{10} levels in the region.

The project would not result in a cumulatively considerable net increase of any criteria pollutants for which the region is nonattainment and impacts under this criterion would be *less than significant*.

Biological Resources. As discussed in Section 7.4, *Biological Resources*, the project would not contribute to a significant cumulative impact to biological resources. The project would have no impact on riparian habitat, wetlands, local policies protecting biological resources, or an adopted habitat conservation plan; therefore, it would not contribute to any cumulative impact to those resources. The project would have a less than significant impact on wildlife movement and would be bordered on all sides by existing unpaved road and canal rights-of-way as well as the Kings River floodplain, which would provide corridors for wildlife movement; therefore, the project would not contribute to a significant cumulative impact on wildlife movement.

Implementation of Mitigation Measures BIO-1a-e, BIO-2, BIO-3a-c, BIO-4, and BIO-5 would reduce project impacts to biological resources to less than significant. Potential project impacts to occupied burrowing owl breeding habitat would be mitigated through preservation of suitable breeding habitat that would offset project impacts and reduce cumulative impacts to less than significant. As described in Section 7.4, an analysis of the project's contribution to the cumulative effect on Swainson's hawk foraging habitat was conducted. Based on the results of the analysis; the project would not contribute to a significant cumulative impact to Swainson's hawk foraging habitat (Table 7.4-3). Project impacts to San Joaquin kit fox, bird species of special concern, and common nesting birds would be less than significant and are assessed at the level of individuals rather than populations; consequently, the project would not contribute to a significant cumulative impact to those resources.

Cultural Resources. The project could contribute to a cumulative impact and loss of Cultural Resources, as described in Section 7.5, *Cultural Resources*; however, implementation of Mitigation Measures CUL-1: Damage to Historic Levee Roads, CUL-2: Discovery of Previously Unknown Historic Resources, CUL-3: Discovery of Previously Unknown Archaeological Resources; CUL-4: Discovery of Paleontological Resources; and CUL-5: Discovery of Human Remains would reduce impacts to less than significant. The individual cumulative projects would be required to implement mitigation measures similar to those

identified for the proposed project. Therefore, the project's contribution would be less than significant and cumulative impacts on cultural resources would be *less than significant*.

Greenhouse Gases. Potential cumulative impacts that could occur with regard to GHGs are addressed in Section 7.8, *Greenhouse Gas Emissions*. GHG emissions and their contribution to the global effect known as climate change are an inherently cumulative impact. Similar to the proposed project, the cumulative projects would help increase the proportion of renewables in the statewide energy portfolio, thereby furthering the implementation of RPS by the target year instead of hindering or delaying its implementation. The addition of the proposed project's solar generation to the State's electrical supply would help facilitate the retirement of existing older fossil-fueled generation plants, thereby avoiding or offsetting those sources of GHG emissions. Therefore, the proposed project would not contribute to adverse cumulative impacts due to GHG emissions. As described above, the proposed project and cumulative projects would result in a beneficial effect on GHG.

Geology and Soils. The context for analyzing cumulative impacts to geological and soils resources is limited to the immediate area of the geologic constraint, with the exception of some geologic impacts that are regional, such as earthquake risk. As discussed in Section 7.7, *Geology and Soils,* the primary cumulative impacts would be associated with the loss of topsoil. Implementation of Mitigation Measure HYD-1 requires the applicant to prepare a SWPPP, reducing the potential for cumulative impacts to *less than significant*. Therefore, the project's contribution would be less than significant and cumulative impacts on geological and soils resources would be *less than significant*.

Hydrology and Water Quality. The proposed project would be located on disturbed agricultural land, as would all of the cumulative solar projects taken into consideration. As shown in Section 7.10, *Hydrology and Water Quality*, the proposed project would require less water for construction and operation than would be required for irrigated agriculture. Because the cumulative solar projects would be similar technologically to the proposed project, these projects would have comparable water use requirements. Therefore, the combined water use of these solar projects would be less than what has been required to sustain cumulative agricultural production on these parcels in the past, and there would be no significant cumulative impact on water use. The reduced water demand and multiple potential water sources identified for the proposed project could have a small beneficial impact in that it would slightly alleviate the ongoing cumulative subsidence impacts by reducing the overall groundwater use in the area. With respect to storm water drainage and water quality, the proposed project and other cumulative projects occur on similar flat topography, in a semi-arid climate. Most of these project sites contain permeable soil and vegetated cover during operation, and runoff from even a major storm event would be captured by the many agricultural ditches spread throughout the County. Like the proposed project, each project would also be required to prepare and implement a SWPPP (included as Mitigation Measure HYD-1 for the proposed project) that would put measures in place to control erosion and discharge of hazardous materials from the site. As such, the potential cumulative impacts related to storm water runoff and water quality would be less than significant and the contribution of the proposed project would be *less than significant.*

Transportation. Several solar projects similar to the proposed project are currently pending approval or have already been approved for construction and operation by the County. In order to determine whether implementation of the project during a period in which surrounding projects are either under construction or operational, a cumulative analysis has been conducted for the project opening year (2021). This analysis is presented in detail in Appendix I (LSA 2018).

The project is expected to begin operations in 2021. The total trip generation for the cumulative projects was manually assigned to the existing traffic volumes of the project study area using the same trip distribution percentages as the proposed project. To determine the impact of the cumulative plus operations condition, traffic generated by the operations of the proposed project was added to the cumulative baseline traffic volumes at the study area locations. With the operations of the project, all study area intersections are anticipated to continue to operate at satisfactory LOS, with the exception of Avenal Cutoff Road/SR-198 eastbound ramps–Jackson Avenue which will continue to operate at LOS F during the p.m. peak hour. The addition of operational traffic increasing delay at the already deficient intersection results in a cumulative impact.

Although the project is expected to operate for 40 years, the traffic associated with the decommissioning of the project has also been analyzed under cumulative (Year 2021) conditions. To determine the impacts of the cumulative plus decommissioning condition, traffic generated by the decommissioning of the project was added to cumulative baseline traffic volumes at the study area locations. With the decommissioning of the project, all study area intersections are anticipated to continue to operate at satisfactory LOS, with the exception of Avenal Cutoff Road/SR-198 eastbound ramps–Jackson Avenue which will continue to operate at LOS F during the p.m. peak hour. The addition of decommissioning traffic increasing delay at the already deficient intersection results in a cumulative impact (LSA 2018).

Mitigation measure TRA-1, which identifies an alternate route for project-related vehicles to take during the p.m. peak hour throughout all project phases, would be implemented to reduce potential impacts on the LOS. With implementation of Mitigation Measure TRA-1, cumulative traffic impacts would be reduced to less than significant.

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

Less Than Significant Impact with Mitigation. The ways in which people can be subject to substantial adverse effects from projects include: potential exposure to significant levels of local air pollutants; potential exposure to seismic and flooding hazards; potential exposure to contamination from hazardous materials; potential exposure to traffic hazards, and; potential exposure to excessive noise levels. The risks from these potential hazards would be avoided or reduced to less than significant levels through compliance with existing laws, regulations, or requirements. The potential risk of being exposed to Valley Fever spores during construction would be mitigated to less than significant through the implementation of Mitigation Measure AQ-3. Additional risks associated with the potential release of hazardous material would be mitigated to less than significant by the appropriate handling of hazardous material described in Mitigation Measures HAZ-1, HAZ-2, HAZ-3, and HAZ-4. With the implementation of these measures to address potential impacts, it is expected that the project would not have the potential to result in significant effects which would cause substantial adverse effects on human beings, either directly or indirectly.

7.21.2 References

CDA 2018 Kings County Community Development Agency (CDA). 2018. Solar Projects in Kings County.

CDC 2018 California Department of Conservation (CDC). 2018. Table A-11: Kings County, 2014-2016 Land Use Conversion. Accessed April 27, 2018 and available at http://www.conservation.ca.gov/dlrp/fmmp/Pages/Kings.aspx.

LSA 2018 LSA. 2018. Traffic Impact Study for RE Slate in Kings County, California.

8.0 MITIGATION AND MONITORING REPORTING PROGRAM

A Mitigation Monitoring and Reporting Program (MMRP) has been prepared by the County per Section 15097 of the State CEQA Guidelines and is presented in Appendix J**.**

9.0 INITIAL STUDY PREPARERS

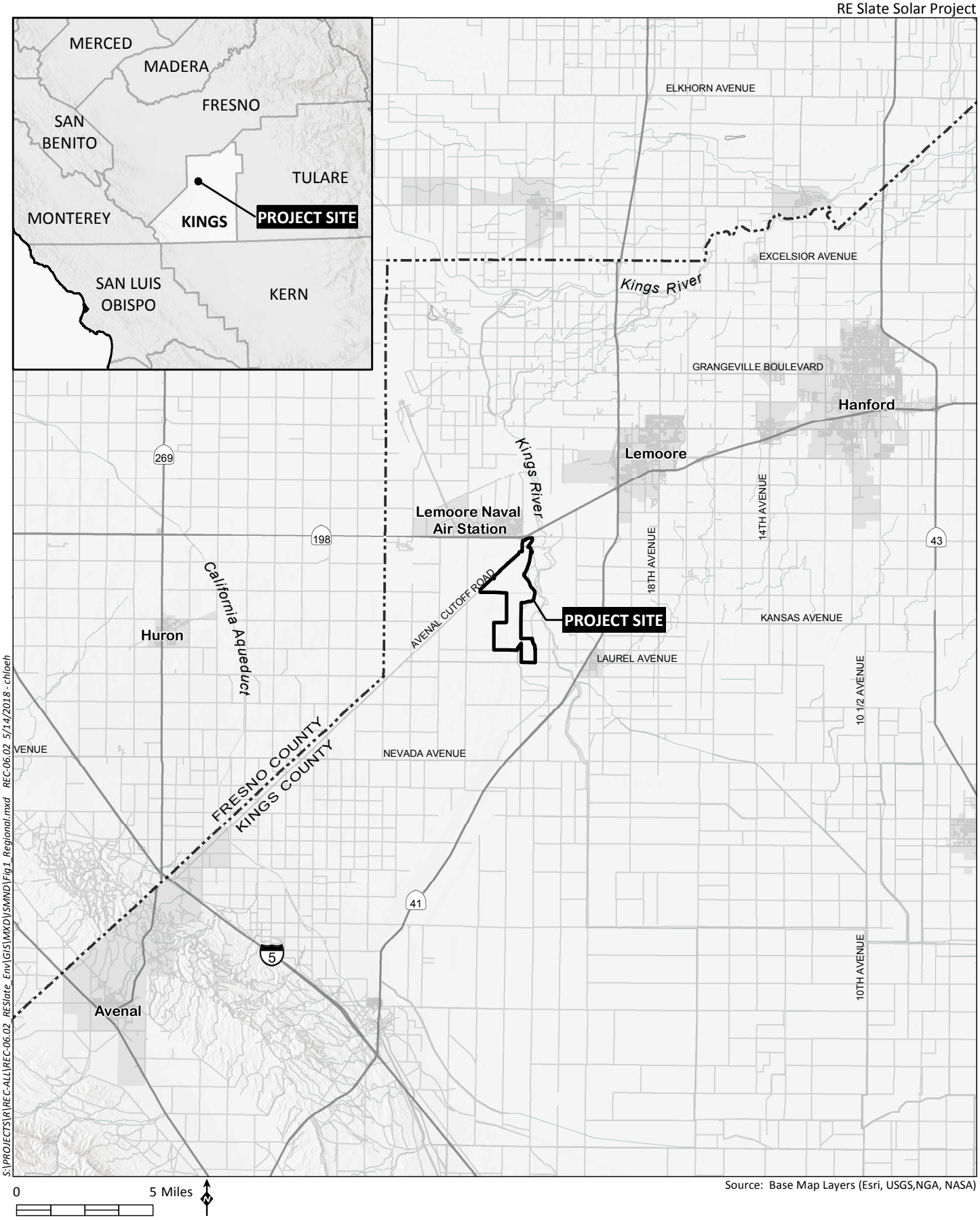
County of Kings
Chuck Kinney, Environmental Planner

HELIX Environmental Planning, Inc.
Shelby Howard, Principal
David Claycomb, AICP, Quality Assurance/Quality Control
Catherine Silvester, Project Manager
Lesley Owning, Environmental Planner/GIS Technician
Hunter Stapp, Environmental Planner
Carrie Wills, Senior Archaeologist
Clarus Backes, Senior Archaeologist
Stephen Stringer, Senior Scientist
George Aldridge, Biologist
Joanne Dramko, Senior Energy Specialist
Victor Ortiz, Air Quality Specialist

This page intentionally left blank

Appendix A

Figures

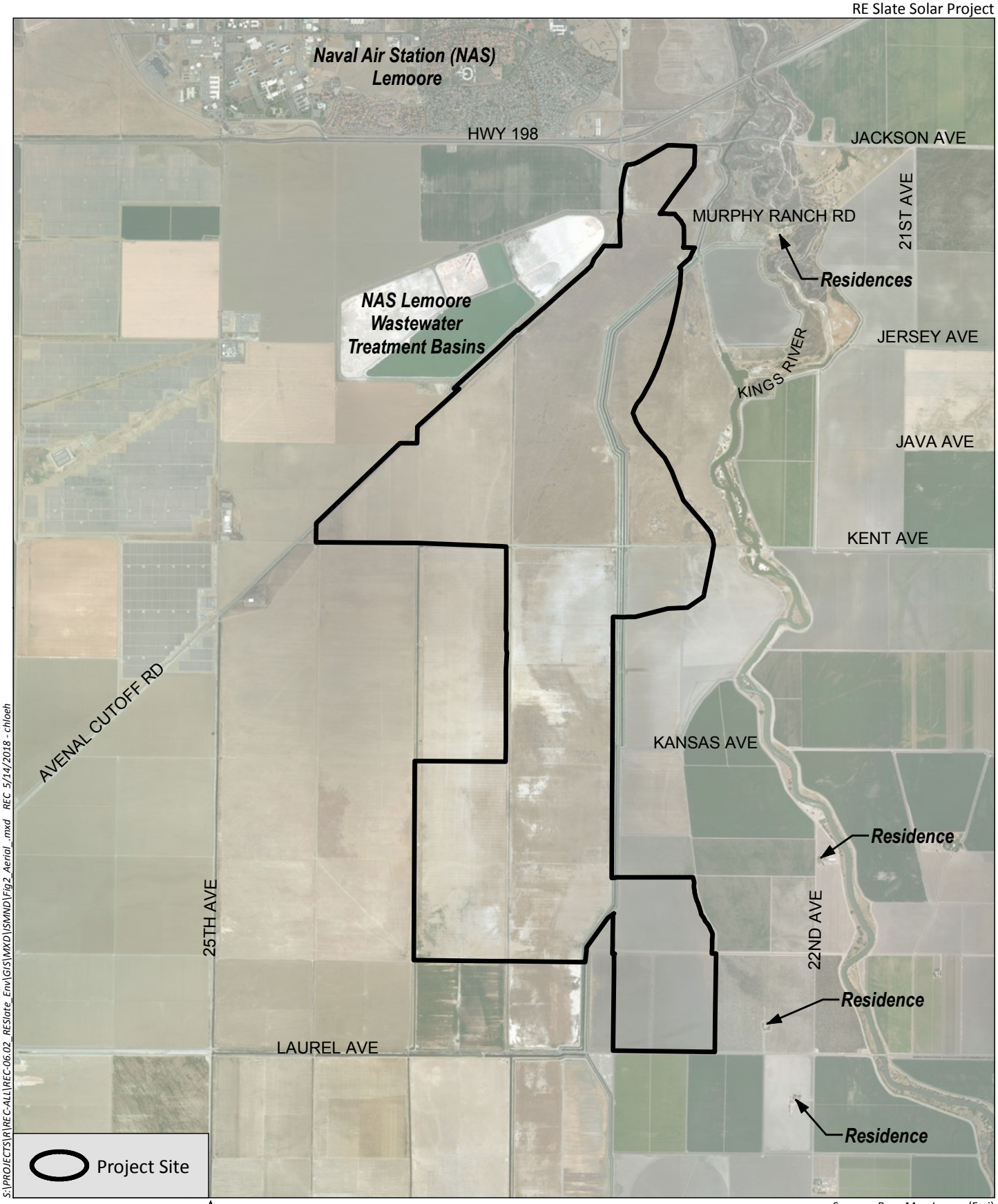


Source: Base Map Layers (Esri, USGS,NGA, NASA)

HELIX Environmental Planning

Regional Location

Figure 1



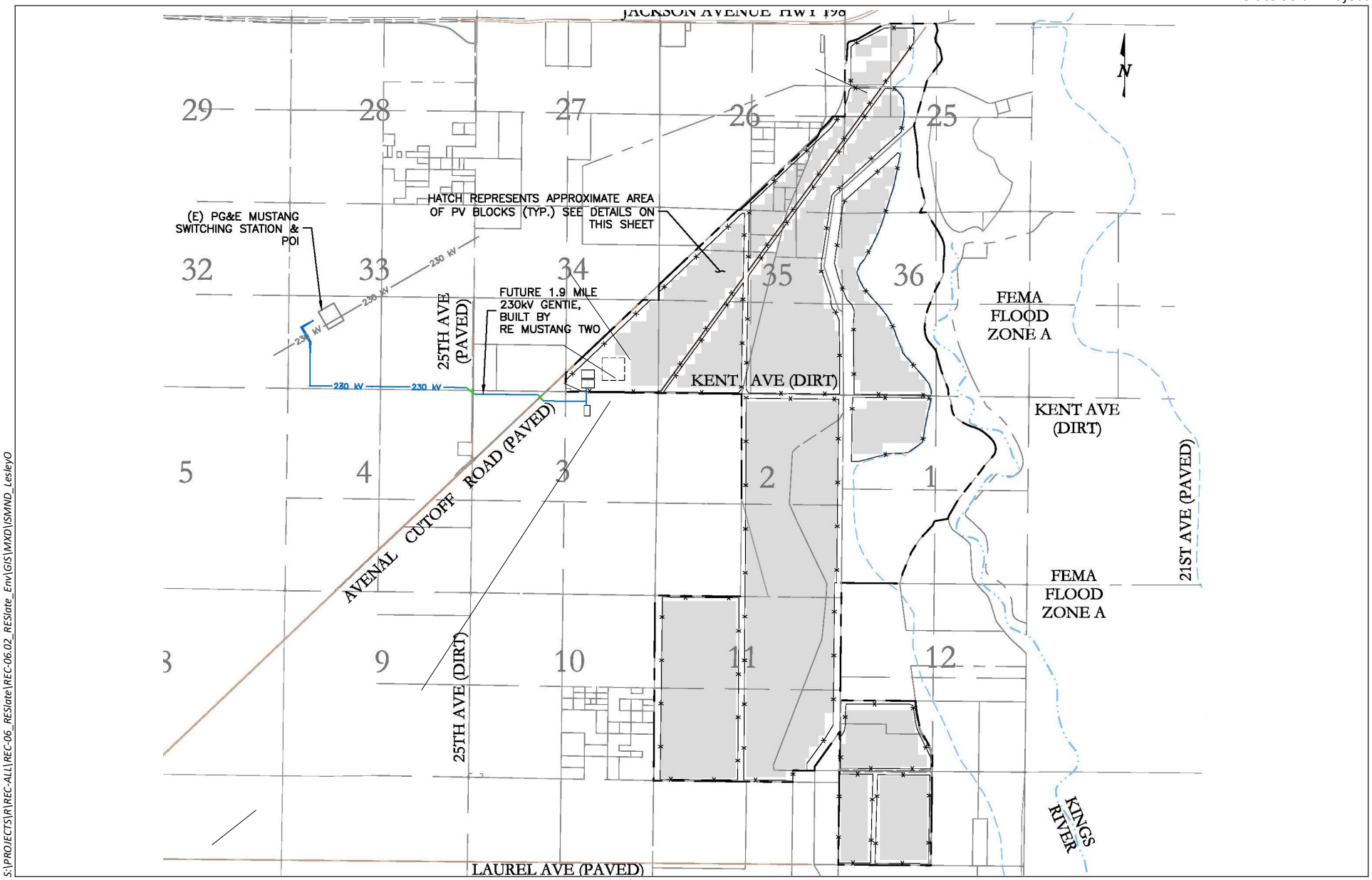
S:\PROJECTS\R\REC-ALL\REC-06.02_RESlate_Env\GIS\MXD\SMND\Fig2_Aerial_.mxd REC 5/14/2018 - chloeh

Source: Base Map Layers (Esri)

HELIX Environmental Planning

Aerial Map

Figure 2



S:\PROJECTS\R\REC-ALL\REC-06_RESlate\REC-06.02_RESlate_Env\GIS\MXD\SMND_LesleyO

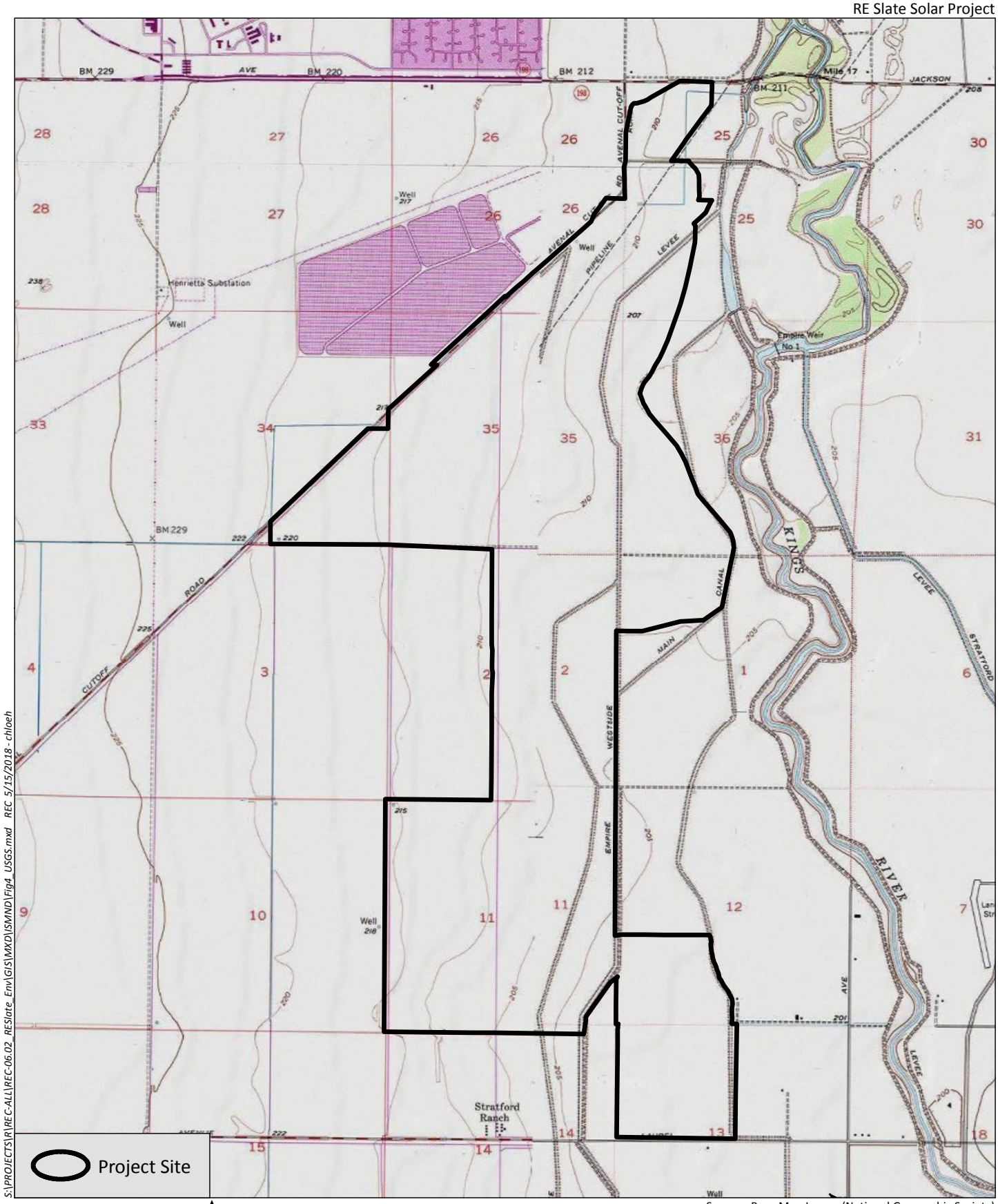
0 2,500 Feet

Source: Recurrent Energy 2018

HELIX Environmental Planning

Site Plan

Figure 3



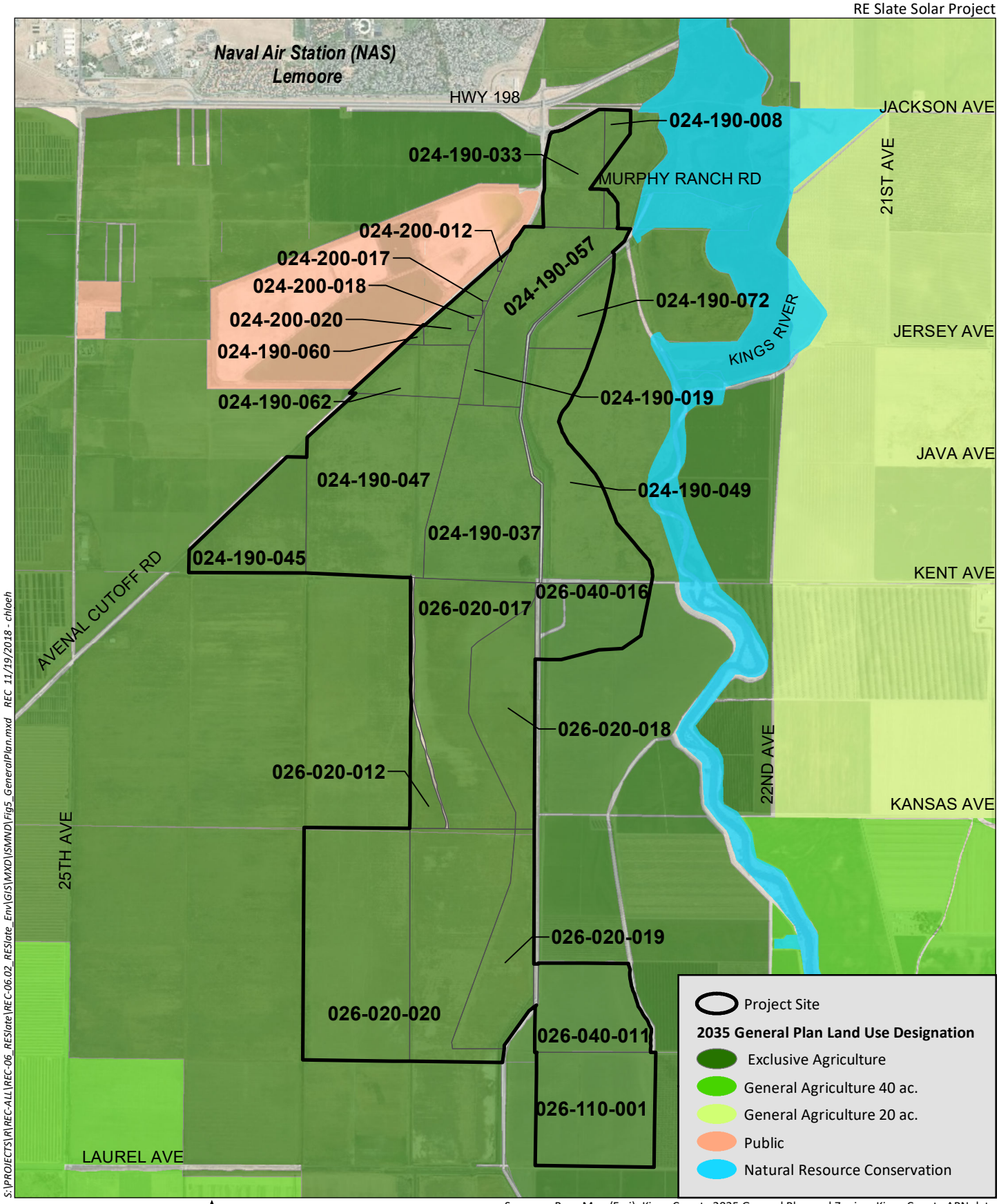
S:\PROJECTS\R\REC-ALL\REC-06.02_RESlate_Env\GIS\MXD\SMND\Fig4_USGS.mxd REC 5/15/2018 - chloeh

Source: Base Map Layers (National Geographic Society)

HELIX Environmental Planning

USGS 7.5-minute Quadrangle Map

Figure 4

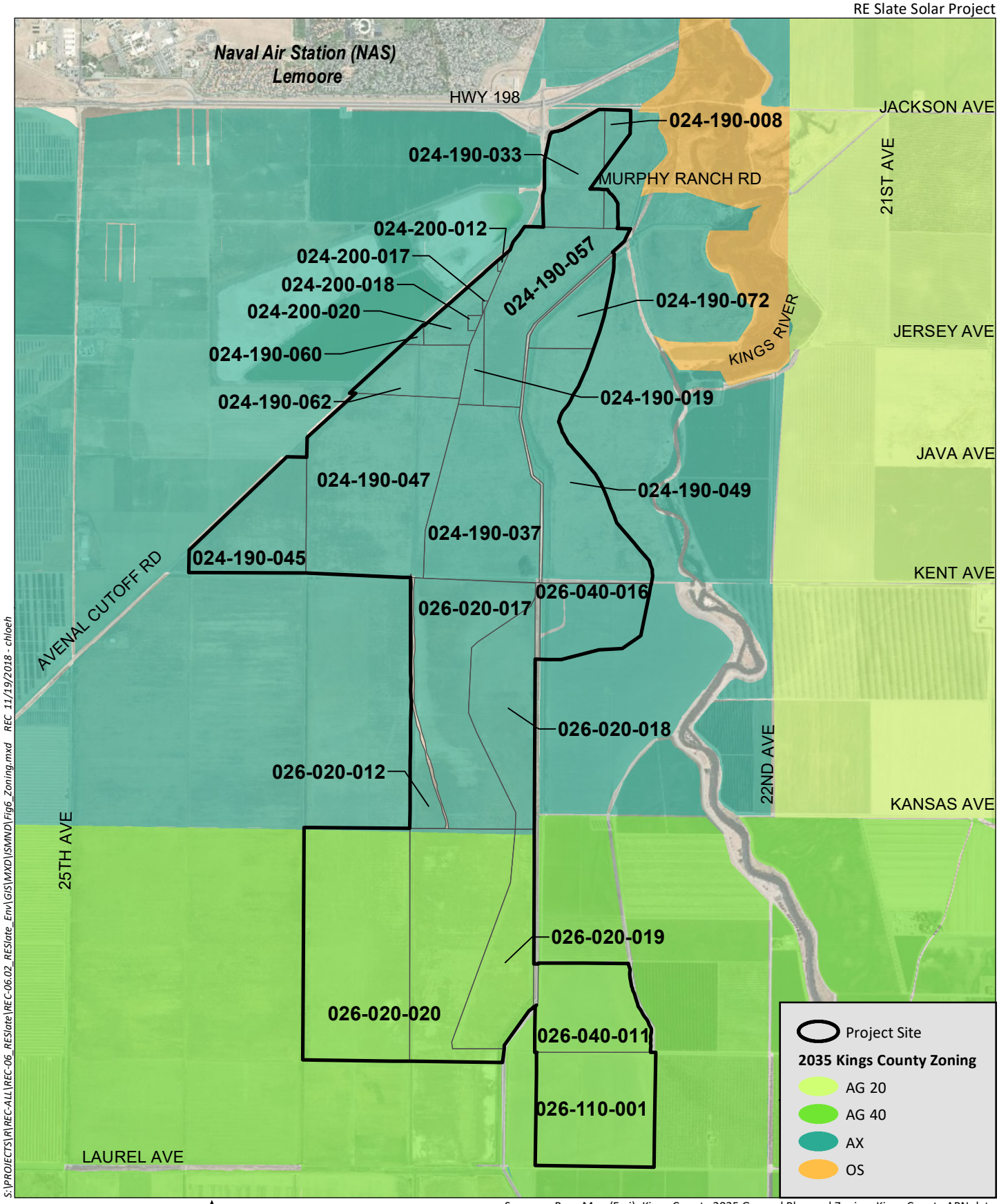


Sources: Base Map (Esri), Kings County 2035 General Plan and Zoning, Kings County APN data

HELIX Environmental Planning

General Plan Land Use Map

Figure 5



S:\PROJECTS\R\REC-ALL\REC-06_RESlate\REC-06.02_RESlate_Env\GIS\MXD\SMND\Fig6_Zoning.mxd REC 11/19/2018 - chloeh

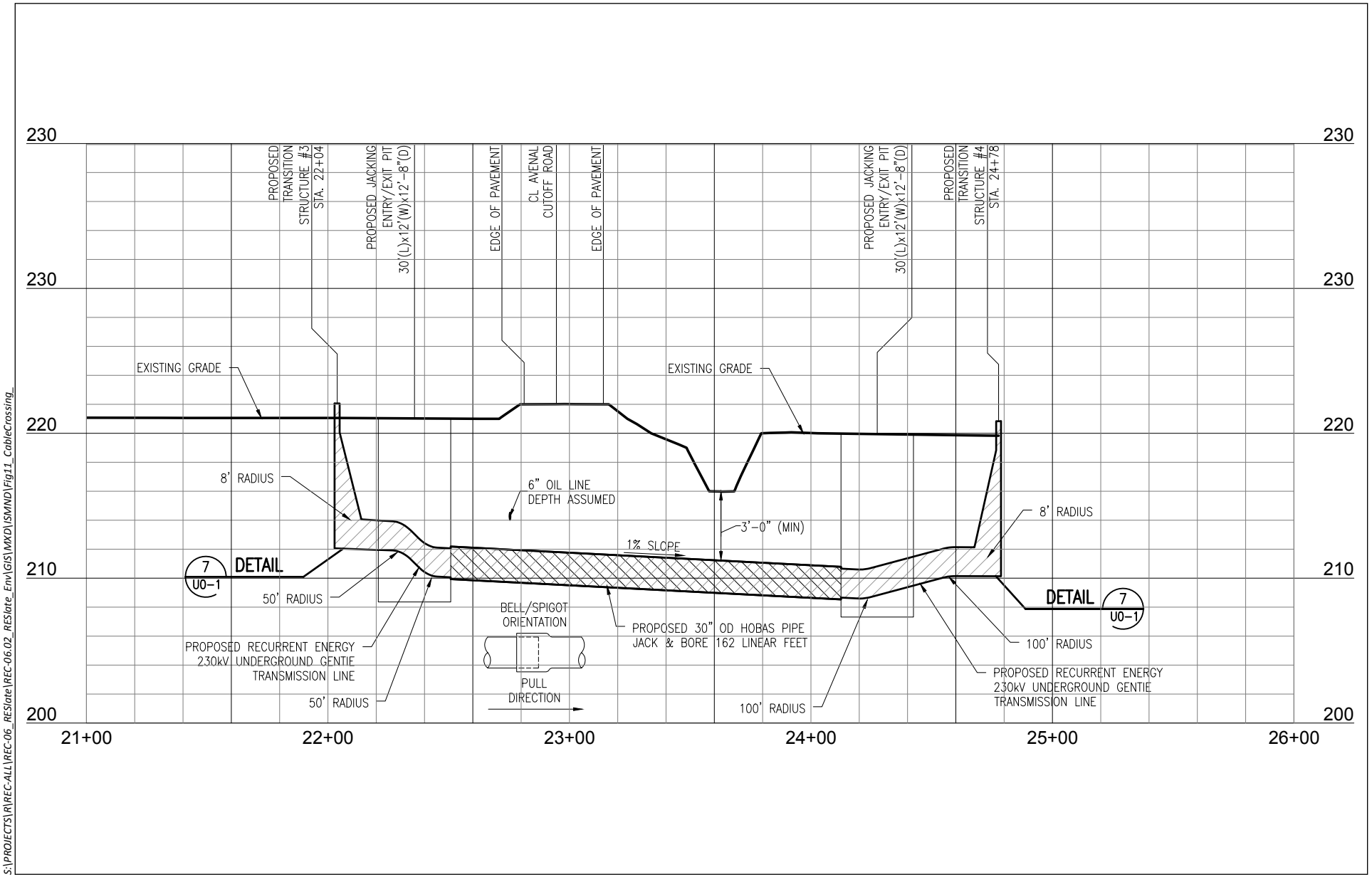
0 3,000 Feet

Sources: Base Map (Esri), Kings County 2035 General Plan and Zoning, Kings County APN data

HELIX Environmental Planning

Zoning Ordinance Map

Figure 6



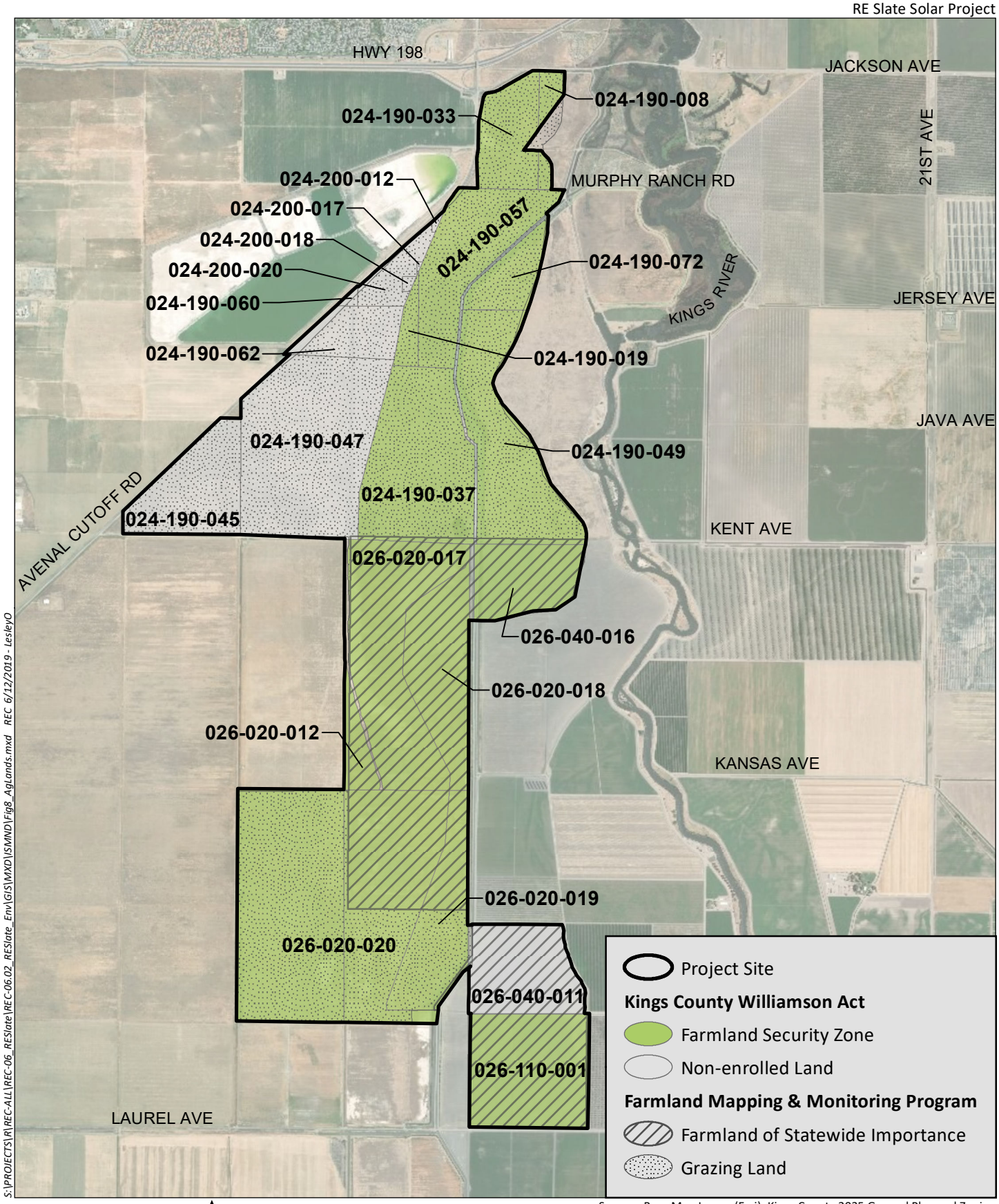
S:\PROJECTS\R\REC-ALL\REC-06_RESlate\REC-06.02_RESlate_Env\GIS\MXD\SMND\Fig11_CableCrossing_

Source: Recurrent Energy 2018

HELIX Environmental Planning

Cross Section of Example Underground Cable Crossing

Figure 7



S:\PROJECTS\R\REC-ALL\REC-06_RESlate\REC-06.02_RESlate_Env\GIS\MXD\SMND\Fig8_AgLands.mxd REC 6/12/2019 - LesleyO

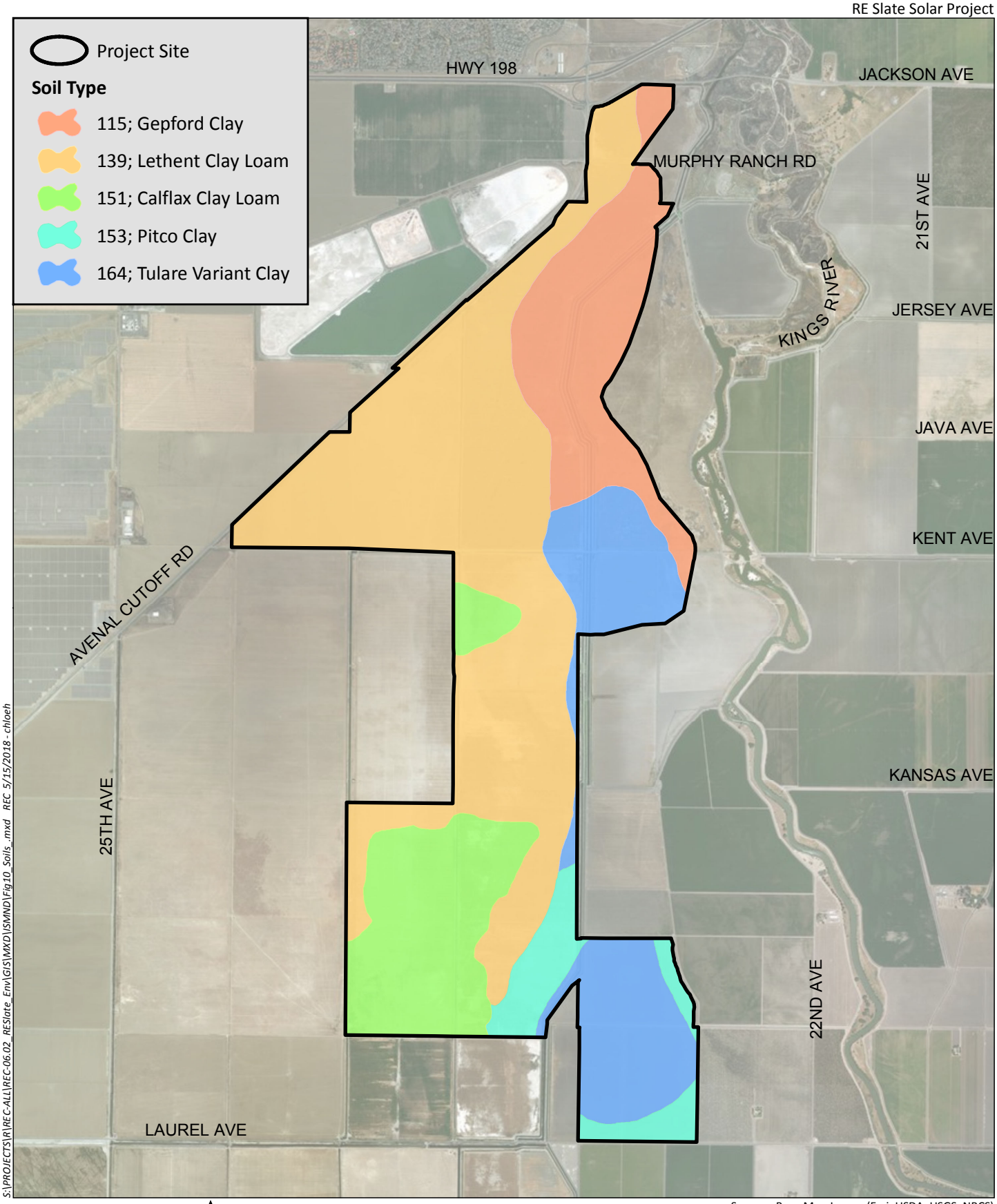
0 3,000 Feet

Source: Base Map Layers (Esri), Kings County 2035 General Plan and Zoning

HELIX Environmental Planning

Agricultural Lands

Figure 8



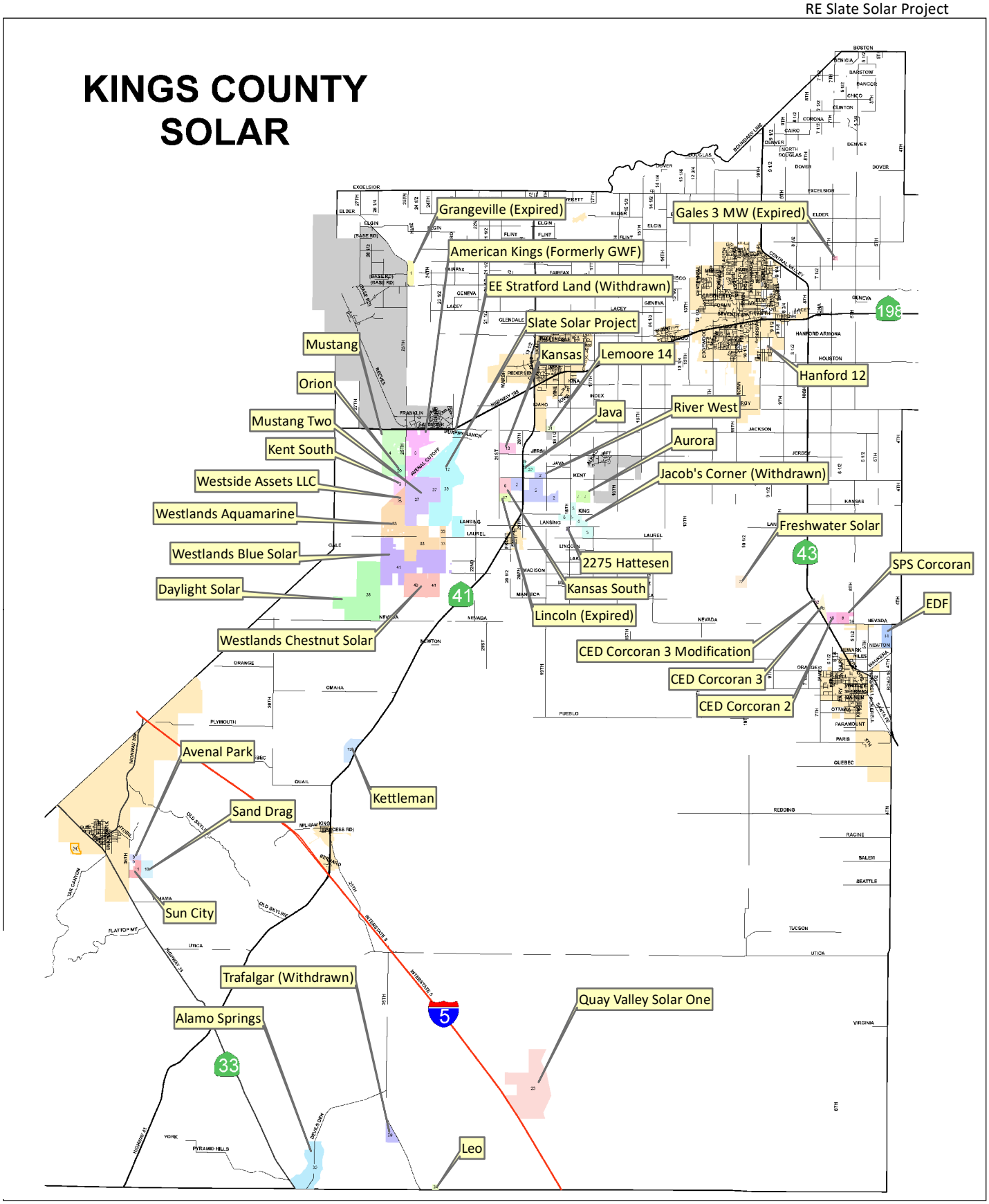
S:\PROJECTS\R\REC-ALL\REC-06.02_RESlate_Env\GIS\MXD\SMND\Fig10_Soils_.mxd REC 5/15/2018 - chloeh

Source: Base Map Layers (Esri, USDA, USGS, NRCS)

HELIX Environmental Planning

Soils Map

Figure 9



Source: Kings County Community Development Agency 2019

S:\PROJECTS\R\REC-ALL\REC-06_RESlate\REC-06.02_RESlate_Env_Figures\Admin Draft ISMND\Fig11_Cumulative_callouts.mxd Layers 5/31/2019 - lesleyo

HELIX Environmental Planning

Solar PV Projects in Kings County

Figure 10