

DRAFT

**Initial Study and Mitigated Negative Declaration
LEO Solar Project**

November 2019

Lead Agency:



**Kings County
1400 West Lacey Boulevard, Building. #6
Hanford, California 93230**

Prepared for:

**Apex Energy Solutions, LLC
604 Sutter Street, Suite 250
Folsom, California 95630
(916) 985-9461**

Prepared by:



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

**2525 Warren Drive
Rocklin, California 95677**

DRAFT MITIGATED NEGATIVE DECLARATION LEO SOLAR PROJECT

Lead Agency:	Kings County Community Development Agency, Kings County Government Center, 1400 West Lacey Boulevard, Hanford, California 93230
Project Proponent:	Apex Energy Solutions, LLC, 604 Sutter Street Suite 250, Folsom, California 95630
Project Location:	<p>The proposed Leo Solar Project (Project) occupies ±30 acres of a 40-acre parcel located near 25th Avenue 15 miles south of unincorporated Kettleman City, California (Assessor's Parcel Number [APN] 048-350-016-000). The project site is situated in the unincorporated area of Kings County, California, along the Kings County/Kern County border, between California State Route (SR) 33 and Interstate 5 (I-5), approximately 0.5 mile east of 25th Avenue. The site corresponds to a portion of Section 36, Township 24 South, and Range 19 East of the Mount Diablo Base and Meridian (MDBM) of the "Avenal Gap" topographic quadrangles 7.5-minute quadrangle (U.S. Geological Survey [USGS] 2015).</p>
Project Description:	<p>The Project includes the development of up to a 5-megawatt (MW) solar photovoltaic (PV) energy generating facility and battery storage system (BESS) facility on ±30 acres of 40 undeveloped acres. The facility would consist of solar PV modules mounted on stationary fixed-tilt, ground-mounted racking or single-axis trackers and would include up to 5-MW alternating current (AC) maximum capacity, four-hour battery energy storage system. At peak production, the 5-MW solar energy storage facility would supply enough clean energy to power up to 1,250 residential homes per year.</p> <p>Electricity generated by the site would be sold to an electric utility purchaser or another power purchaser under a long-term contract, power purchase agreement (PPA), or via the California Independent System Operator wholesale electricity markets. The Project includes the following physical site improvement components:</p> <ul style="list-style-type: none">■ Installation of solar PV modules mounted on stationary fixed-tilt, ground-mounted racking or single-axis trackers;■ PV panel support structures;

- Battery storage system enclosures;
- Combiner boxes, electrical inverters, and transformers;
- Overhead and buried electrical conduit, transmission, and collection lines;
- Data monitoring equipment;
- All-weather access road;
- Onsite, unpaved interior roads (i.e., drive aisles) and perimeter road conforming to Kings County Improvement Standards; and
- Wildlife permeable security fencing

The Project requires an application for Kings County review and approval of a Conditional Use Permit (CUP) for the construction of a solar energy facility. If constructed in a single phase, up to 14 months would be needed. However, the Project may be constructed in multiple phases with timing determined by electricity market demand. The Project is anticipated to operate for a period of up to 30 years. After the estimated 30-year Project service life, the Project would be decommissioned, and the Project site returned to its pre-Project condition.

Construction. Construction of the Project would require temporary containers with equipment in designated areas. The areas would be prepared with a compacted road base that would allow trucks to enter the site and deliver materials. During construction, the foundations for the racking system(s) may require the use of a pile driver. It is anticipated that the workforce during the construction period would peak at 30 employees.

Operation. During Project operations, two or three offsite employees would be reserved for maintenance and would be dispatched to the site for routine scheduled maintenance and on an as-needed basis for unscheduled maintenance. Vehicles for operation and maintenance would typically include trucks such as pickups or flatbeds, as well as water trucks for solar panel washing. Large heavy-haul transport equipment may be brought to the site infrequently for equipment repair or replacement.

Regional access to the Project site includes I-5, SR-33, SR-41, and SR-46, with direct access to the site proposed via a farm road accessed from 25th Avenue or King Road.

Public Review Period: November 15 – December 16.

Mitigation Measures Incorporated into the Project to Avoid Significant Effects:

Biological Resources

Mitigation Measures

BIO-1 Preconstruction Surveys for Burrowing Owl: Preconstruction surveys for burrowing owl shall be conducted by a qualified biologist. The surveys shall follow the methods described in the California Department of Fish and Wildlife's (CDFW's) Staff Report on Burrowing Owl Mitigation (CDFG 2012). Two surveys shall be conducted, with the first survey being scheduled between 30 and 14 days before initial ground disturbance (grading, grubbing, and construction), and the second survey being conducted no more than 24 hours prior to initial ground disturbance. If burrowing owls and/or suitable burrowing owl burrows are identified on the Project site during the survey, consultation with CDFW and the Kings County Community Development Agency (CDA) shall take place and methods listed in the CDFW's Staff Report on Burrowing Owl Mitigation (CDFG 2012) for avoidance and/or passive relocation shall be followed.

Timing/Implementation: *Prior to Construction*

Monitoring/Enforcement: *Kings County*

BIO-2 Preconstruction Survey for San Joaquin Kit Fox and American Badger: A preconstruction survey for San Joaquin kit fox and American badger shall be conducted between 30 and 14 days prior to the beginning of ground disturbance and/or construction activities or any Project activity likely to impact San Joaquin kit fox. The survey shall be conducted according to the guidelines listed in the U.S. Fish and Wildlife Service (USFWS) Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 2011). If San Joaquin kit fox or American badger and/or suitable San Joaquin kit fox or American badger dens are identified on the Project site during the preconstruction survey, consultation with CDFW, USFWS, and the Kings County CDA shall take place before proceeding and shall follow the USFWS guidelines for avoidance, exclusion, and/or passive relocation.

Timing/Implementation: *Prior to Construction*

Monitoring/Enforcement: *Kings County*

BIO-3 Preconstruction Burrow Survey for Special-Status Small Mammal Species and Blunt-Nosed Leopard Lizard: Special-status small mammal and blunt-nosed leopard lizard are dependent on burrows to survive. Therefore, a preconstruction burrow survey for San Joaquin antelope squirrel, giant kangaroo rat, Tipton kangaroo rat, and blunt-nosed leopard lizard shall be conducted to determine if there are suitable burrows for these species on the Project site. The survey should be conducted by a biologist experienced in identifying small mammal burrows. The survey should consist of walking the entire Project site and identifying all burrows suitable for special-status small mammals and blunt-nosed leopard lizard. All small mammal burrows shall be marked with a Global Positioning System unit and avoided by construction. A 50-foot disturbance limit buffer will be placed around all identified small mammal burrows. The burrow and associated buffer must be avoided by construction; if avoidance of suitable small mammal burrows is not possible,

the Project shall conduct focused surveys for special-status small mammal species and blunt-nosed leopard lizard according to the accepted USFWS and/or CDFW protocols. If special-status small mammal species or blunt-nosed leopard lizard are identified on the Project site during the focused surveys, the Project shall initiate consultation with USFWS, CDFW, and the Kings County CDA to obtain the necessary incidental take permit authorizations or provided evidence that such a permit is not required before proceeding.

Timing/Implementation: *Prior to Construction*

Monitoring/Enforcement: *Kings County*

BIO-4 Preconstruction Nesting Bird and Raptor Survey: If construction or other Project activities are scheduled to occur during the bird breeding season (February through August for raptors and March through August for most other birds), a pre-construction nesting-bird survey shall be conducted by a qualified biologist. The survey shall be completed no more than 14 days prior to initial ground disturbance. The nesting-bird survey shall include the Project site and adjacent areas where Project activities have the potential to cause nest failure. If any active nests are identified, a qualified biologist shall establish an appropriate disturbance-limit buffer around the nest using flagging or staking. Construction activities will need to be avoided within any disturbance-limit buffer zones until the nest is deemed no longer active by the biologist.

Timing/Implementation: *Prior to Construction*

Monitoring/Enforcement: *Kings County*

BIO-5 Rare Plant Survey: Focused surveys for special-status plants, including the federally listed endangered San Joaquin woollythreads, should be conducted on the Project site. The survey shall be conducted according to the California Native Plant Society (CNPS) Botanical Survey Guidelines (CNPS 2001). The survey shall be conducted during the appropriate time of year required for identification of the species (February-May for most San Joaquin Valley species). If the surveys are conducted outside of the appropriate blooming periods for the target species the results may be rejected by CDFW. If special-status plants are found on the Project site, CDFW and/or USFWS and the Kings County CDA shall be consulted to discuss appropriate mitigation measures. Mitigation measures could include, but are not limited to, seed collection and/or transplanting.

Timing/Implementation: *Prior to Construction*

Monitoring/Enforcement: *Kings County*

Cultural Resources

Mitigation Measures

CUL-1 Protection of Cultural Resources. In order to avoid the potential for impacts to historic and prehistoric archaeological resources, the following measures shall be implemented, as necessary, with the construction each phase of the Project:

- a. Cultural Resources Alert on Project Plans: The Project proponent shall note on any plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources.
- b. Pre-Construction Briefing: The Project proponent shall retain Santa Rosa Rancheria Cultural Staff to provide a pre-construction Cultural Sensitivity Training to construction staff regarding the discovery of cultural resources and the potential for discovery during ground disturbing activities, which will include information on potential cultural material finds and, on the procedures, to be enacted if resources are found.
- c. Stop Work Near any Discovered Cultural Resources: The Project proponent shall retain a professional archaeologist on an "on-call" basis during ground disturbing construction for the project to review, identify and evaluate cultural resources that may be inadvertently exposed during construction. Should previously unidentified cultural resources be discovered during construction of the Project, the Project proponent shall cease work within 100 feet of the resources, and Kings County CDA shall be notified immediately. The archaeologist shall review and evaluate any discoveries to determine if they are historical resource(s) and/or unique archaeological resources under CEQA.
- d. Mitigation for Discovered Cultural Resources: If the professional archaeologist determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource, he/she shall notify the Project proponent and other appropriate parties of the evaluation and recommended mitigation measures to mitigate the impact to a less than significant level. Mitigation measures may include avoidance, preservation in place, recordation, and additional archaeological testing and data recovery, among other options. Treatment of any significant cultural resources shall be undertaken with the approval of the Kings County CDA. The archaeologist shall document the resources using DPR 523 forms and file said forms with the California Historical Resources Information System, Southern San Joaquin Valley Information Center. The resources shall be photo-documented and collected by the archaeologist for submittal to the Santa Rosa Rancheria's Cultural and Historical Preservation Department. The archaeologist shall be required to submit to the Kings County for review and approval a report of the findings and method of curation or protection of the resources. Further grading or site work within the area of discovery shall not be allowed until the preceding steps have been taken.
- e. Native American Monitoring: Prior to any ground disturbance, the Project proponent shall offer the Santa Rosa Rancheria Tachi Yokut Tribe the opportunity to provide a Native American Monitor during ground disturbing activities during both construction and decommissioning. Tribal participation would be dependent upon the availability and interest of the Tribe.
- f. Disposition of Cultural Resources: Upon coordination with the Kings County CDA, any pre-historic archaeological artifacts recovered shall be donated to an appropriate Tribal custodian or a qualified scientific institution where they would be afforded applicable cultural resources laws and guidelines.

Timing/Implementation:

During the Construction period

Monitoring/Enforcement:

Kings County and Project Contractor

CUL-2 Discovery of Human Remains. In the event that evidence of human remains is discovered, construction activities within 100 feet of the discovery will be halted or diverted and the requirements of Mitigation Measure #1 will be implemented. In addition, the provisions of Section 7050.5 of the California Health and Safety Code, § 5097.98 of the California Public Resources Code (PRC), and Assembly Bill (AB) 2641 will be implemented. When human remains are discovered, State law requires that the discovery be reported to the County Coroner (§ 7050.5 of the Health and Safety Code) and that reasonable protection measures be taken during construction to protect the discovery from disturbance (AB 2641). If the Coroner determines the remains are Native American, the Coroner notifies the Native American Heritage Commission (NAHC), which then designates a Native American Most Likely Descendant (MLD) for the Project (§ 5097.98 of the PRC). The designated MLD then has 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains (AB 2641). If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (§ 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§ 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a document with the County in which the property is located (AB 2641).

Timing/Implementation: *During the Construction period*

Monitoring/Enforcement: *Kings County*

Hazards and Hazardous Materials

Mitigation Measures

HM-1 Hazardous Materials Business Plan. The Project applicant shall prepare and implement a Hazardous Materials Business Plan (HMBP) in accordance with the requirements of the Kings County Public Health Department Environmental Services Division, which is the Certified Unified Program Agency (CUPA) for Kings 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 would specify procedures for proper disposal. 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. Implementation of the HMBP for the Project would ensure that minor spills or releases of hazardous materials would not pose a significant risk to the public or the environment.

Timing/Implementation: *Prior to Construction*

Monitoring/Enforcement: *Kings County*

HM-2 Emergency Contingency Plan. In coordination with the Kings County Office of Emergency Management (OEM), the applicant shall develop an emergency contingency plan (ECP), which may also function as the Occupational Safety and Health Administration (OSHA) Emergency Action Plan. The emergency contingency plan shall, at a minimum, indicate and describe in detail the backup fire suppression equipment that will be available to Kings County Fire Department responders that can be used in the event of a battery storage container fire. A map or plan identifying the locations of nearby specialized fire suppression retardants and existing water sources shall be included. Any specialized fire response manuals or technical guidelines applicable to the Project shall be included in the plan. Provisions for fire suppression training for Kings County Fire personnel shall be included. The ECP shall effectively address all emergencies that may be reasonably expected to occur at the BESS Project site. The ECP shall be submitted for approval by the Kings County Fire Marshall.

Timing/Implementation: *Prior to BESS activation/operations*

Monitoring/Enforcement: *Kings County*

Hydrology and Water Quality

Mitigation Measures

HYD-1 Stormwater Quality Protection. Prior to construction grading and prior to the decommissioning, the applicant shall be required to file a Notice of Intent with the State Water Resources Control Board to comply with the General Permit and prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP shall be prepared by a licensed engineer and shall detail the treatment measures and best management practices (BMPs) to control pollutants that shall be implemented and complied with during the construction and post-construction phases of solar project development. The SWPPP(s) required for decommissioning shall specify BMPs to be implemented during that final Project phase. Construction contracts shall include the requirement to implement the BMPs in accordance with the SWPPP(s).

Timing/Implementation: *Prior to Construction*

Monitoring/Enforcement: *Kings County and Project Contractor*

With incorporation of the mitigation measures listed above, Project impacts would be reduced to levels of less than significant.

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LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
AC	Alternating current
APN	Assessor's Parcel Number
BAU	Business-as-usual
BESS	Battery storage system
BMPs	Best Management Practices
BMS	Battery management system
BTU	British thermal units
CAL FIRE	California Department of Forestry and Fire Prevention
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCR	California Code of Regulations
CDA	Kings County Community Development Agency
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH ₄	Methane
CI	<i>Coccidioides immitis</i>
CM	<i>Coccidioidomycosis</i>
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNPSEI	California Native Plant Society Electronic Inventory
CO	Carbon monoxide
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalents
CRHR	California Register of Historical Resources
CUP	Conditional Use Permit
DC	Direct current
DFIRM	Digital Flood Insurance Rate Map
DOC	California Department of Conservation
DPM	Diesel particulate matter
DTSC	Department of Toxic Substance Control
Eagle Act	Bald and Golden Eagle Protection Act of 1940
EIR	Environmental Impact Report
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
GHG	Greenhouse gas
HMP	Hazard Mitigation Plan
HVAC	Heating, ventilation, and air conditioning
I-5	Interstate 5
IS	Initial Study
KART	Kings Area Rural Transit
KCCSD	Kettleman City Community Services District

LIST OF ACRONYMS AND ABBREVIATIONS

kV	Kilovolt
KWRA	Kings Waste & Recycling Authority
Li-ion	Lithium ion
LOS	Level of service
M	Mercalli Index
MBTA	Migratory Bird Treaty Act
MDBM	Mount Diablo Base and Meridian
MIA	Military Influence Area
MLD	Most Likely Descendant
MND	Mitigated Negative Declaration
MRZs	Mineral Resource Zones
msl	Mean sea level
MTCO ₂ e	Metric tons of carbon dioxide-equivalent per year
MW	Megawatt
N ₂ O	Nitrous oxide
NAS	Naval Air Station
NCCP	Natural community conservation plan
NHMLA	Natural History Museum of Los Angeles County
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OEM	Office of Emergency Management
O ₃	Ozone
OSHA	Occupational Safety and Health Administration
PG&E	Pacific Gas & Electric Company
PM	Particulate matter
POI	Point of interconnection
PPA	Power purchase agreement
Project	Z Global – Leo Solar Project
PV	Photovoltaic
ROG	Reactive organic gases
ROW	Right of way
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO ₂	Sulfur dioxide
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminant

LIST OF ACRONYMS AND ABBREVIATIONS

USC	U.S. Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	Volatile organic compound

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SECTION 1.0 BACKGROUND

1.1 Summary

Project Title:	Leo Solar Project
Lead Agency Name and Address:	Kings County 1400 West Lacey Boulevard, Building #6 Hanford, California 93230
Contact Person and Phone Number:	Chuck Kinney, Deputy Director -Planning (559) 852-2670
Project Location:	Unincorporated area of Kings County, California, along the Kings County/Kern County border, between California SR-33 and I-5, approximately 0.5 mile east of 25th Avenue
General Plan Designation:	General Agricultural (AG-40)
Zoning:	AG-40 – General Agricultural-40 District

1.2 Introduction

Kings County is the Lead Agency for this Initial Study (IS) and Mitigated Negative Declaration (MND). This IS has been prepared to identify and assess the anticipated environmental impacts of the proposed Leo Solar Project (Project). This document has been prepared to satisfy the California Environmental Quality Act (CEQA) (Public Resource Code [PRC], § 21000 et seq.) and State CEQA Guidelines (14 California Code of Regulations [CCR] 15000 et seq.). CEQA requires that all State and local government agencies consider the environmental consequences of projects over which they have discretionary authority before acting on those projects. A CEQA IS is generally used to determine which CEQA document is appropriate for a project (Negative Declaration, MND, or Environmental Impact Report [EIR]).

1.3 Surrounding Land Uses/Environmental Setting

The Project site is located on unincorporated land south of Kettleman City, California (Assessor's Parcel Number [APN] 048-350-016-000). The site is situated within Kings County, California, along the Kings County/Kern County line, between California State Route 33 (SR-33) and Interstate 5 (I-5), approximately 0.5 mile east of 25th Avenue. The site corresponds to a portion of Section 36, Township 24 South, and Range 19 East of the Mount Diablo Base Meridian (MDBM) of the "Avenal Gap" topographic quadrangles 7.5-minute quadrangle (U.S. Geological Survey [USGS] 2015) (Figure 1. *Project Vicinity* and Figure 2. *Project Location*).

Major freeways and highways that could be used to access the Project site include I-5, SR-33, SR-41, and SR-46, with direct access to the site proposed via a farm road accessed from 25th Avenue or King Road. The California Aqueduct is located approximately 900 feet east of the Project site.

The Project site consists of nonnative grassland that has been grazed by cattle. No wetlands or hydric soils occur on the Project site (Natural Resources Conservation Service [NRCS] 2017). Elevation on the Project site is approximately 315 feet above mean sea level [msl]. A Pacific Gas & Electric Company (PG&E) overhead transmission line (230 kilovolt [kV]) runs diagonally across the site southwest to northeast within a 150-foot-wide easement. A 60-kV line runs just south along the southerly parcel boundary but is not contained within or has any easement rights to the Project parcel (Figure 3. *Representative Site Photographs*). The Project site has a General Plan designation of AG-40 (General Agriculture – 40 acres) (Kings County 2010). The entire site is zoned AG-40 (General Agricultural-40 District) pursuant to the County of Kings Development Code (Kings County 2019).

The Project site is immediately surrounded by undeveloped land to the north, east, and west, and active agriculture and undeveloped land to the south. Land uses included agriculture, livestock grazing, and open land. Land immediately adjacent to the Project site is relatively flat; however approximately two miles west the terrain becomes rolling hills toward SR-33. Table 1 summarizes the existing land uses and zoning on the Project site and in the vicinity.

Table 1. Existing Land Uses in the Project Vicinity			
Location	Present Land Use	Existing General Plan Designation	Existing Zoning
Project Site	Fallowed field	AG-40 - General Agriculture	AG 40
North	Fallowed field and orchards	AG-40 – General Agriculture	AG 40
South	Fallowed field; orchards, row crops	A – Intensive Agriculture	A – Exclusive Agriculture
East	Fallowed field and orchards	AG-40 – General Agriculture	AG 40
West	Fallowed field	AG-40 – General Agriculture	AG 40

Historically, land in the region has been used for intensive agricultural purposes. Much of the cultivated land has supported grain and row crops and been tilled regularly for weeds, pests, and fire control purposes. Lands to the east, north, and south of the Project site still support crops or orchards and grazing may take place in some of the open space lands to the north and west. However, due to competing demands on increasingly limited surface and groundwater supplies, the sustainability of irrigated agriculture in the region faces significant challenges.

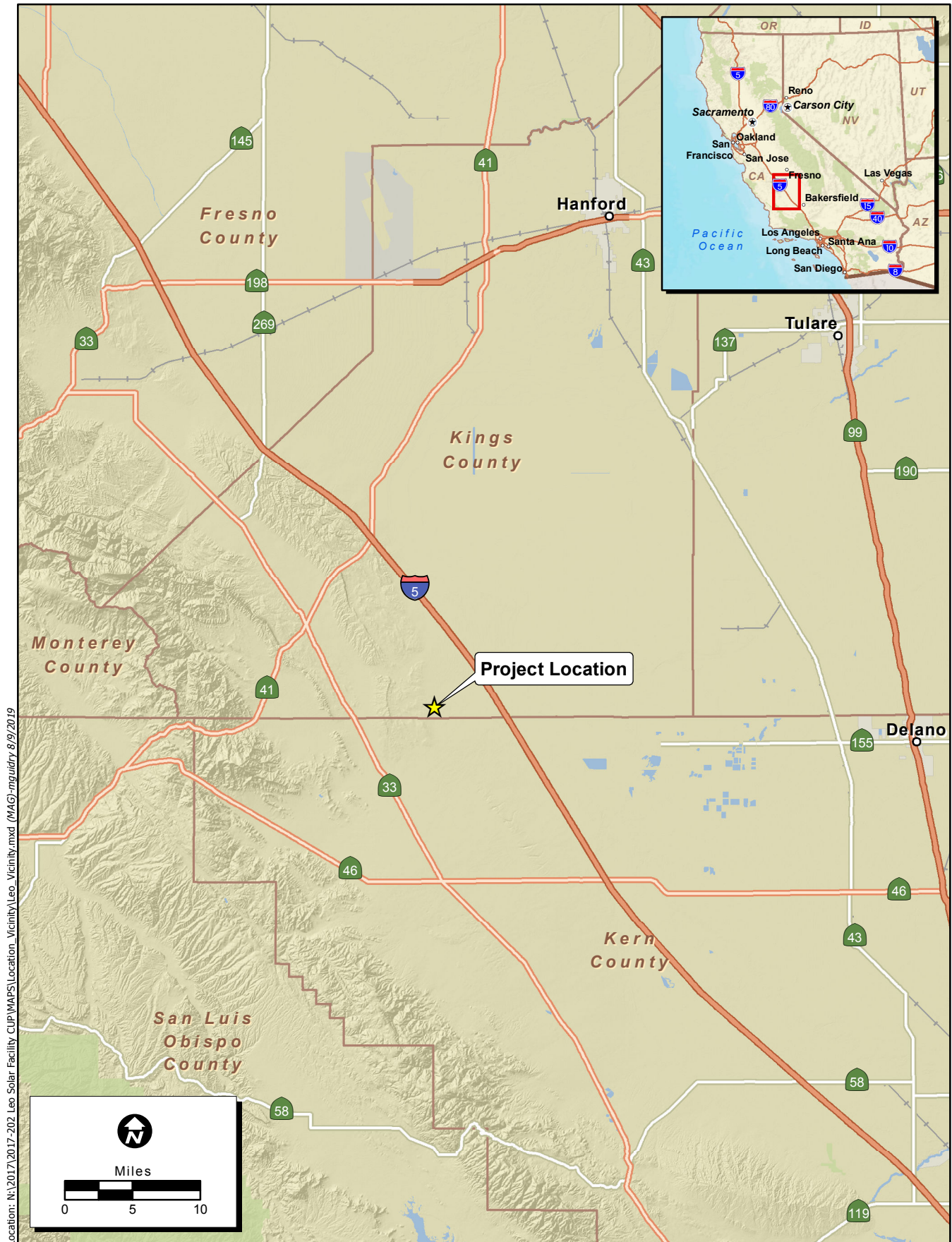


Figure 1. Project Vicinity



Figure 2. Project Location
2017-2022 Leo Solar Facility CUP



Photo 1. Southwest corner looking east along the south border of the project site



Photo 2. Southwest corner looking northeast into the project site.



Photo 3. Middle of the project site looking north.



Photo 4. Northwest corner looking south across the project site



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SECTION 2.0 PROJECT DESCRIPTION

2.1 Project Background

Several policies, regulations, and standards have been adopted by the State of California to address global climate change issues. Incorporating solar photovoltaic (PV) technology into local power grids supports energy reduction goals and achievement of Leadership in Energy and Environmental Design building certifications from the U.S. Green Building Council. Implementing solar PV also supports the Global Warming Solutions Act.

In an effort to reduce greenhouse gas (GHG) emissions and expand the availability of alternative energy resources locally and regionally, Apex Energy Solutions, LLC proposes construction of a 5-megawatt (MW) PV energy-generating and storage facility on ± 30 acres of an undeveloped 40-acre parcel. Electricity generated by the site would be sold to an electric utility purchaser or another power purchaser under a long-term contract or power purchase agreement (PPA). The generated power would be transmitted through PG&E-owned distribution circuits, a part of which would be comprised of a distribution line extension the Project proponent is asking PG&E to build as part of the Project interconnection upgrades and improvements. The power would travel downstream (away from PG&E's Twisselman Substation) and upstream (toward PG&E's Twisselman Substation), satisfying local agricultural residences, agricultural, commercial, and industrial electrical needs.

2.2 Project Objectives

The applicant's primary objective for the proposed solar Project is to generate clean, renewable, electrical power using field-proven solar PV technology and to integrate the electrical output of the Project into the electrical grid. The electricity produced by the proposed Project would be sold to an electric utility purchaser or another power purchaser under a long-term contract or PPA that will provide a set and secure rate of financial return for the Project.

According to the Project Operational Statement (Z Global 2018), the following additional objectives have been identified to complement the primary purpose of the proposed Project:

- Develop a utility-scale solar and battery storage Project that improves local electrical reliability for the Kings County region by providing a source of local generation near existing electrical distribution infrastructure and customer loads.
- Assist California in meeting its current and future Renewable Portfolio Standard goals.
- Support the GHG reduction goals of Assembly Bill (AB) 32 (California Global Warming Solutions Act of 2006).
- Provide a new source of energy storage that assists the State in achieving or exceeding the energy storage target of 1.3 gigawatts by 2020, consistent with the terms of AB 2514.
- Site the Project in an area with excellent solar energy resources in order to maximize productivity from the PV panels.

- Use a proven and available solar PV technology to reliably and economically produce electricity during daylight hours.
- Minimize environmental impacts by:
 1. Constructing and operating the solar power facility in proximity to existing and approved solar facilities and supporting infrastructure (transmission lines and roads).
 2. Using existing electrical distribution facilities, rights-of-way (ROWs), roads, and other existing infrastructure where practicable.
 3. Minimizing or mitigating impacts on threatened and/or endangered species.
 4. Minimizing water use.
 5. Reducing GHG emissions by providing an alternate source of renewable energy.
- Create additional employment and Project-related expenditures for local businesses.

Energy produced by the Project would be available to Kings County, Kern County, as well as the balance of the state in meeting the overall Renewable Portfolio Standard for the State of California. Energy produced by the Project would be fed into the PG&E system, and at times may flow back to the transmission system, effectively serving electric demand throughout the Central Valley.

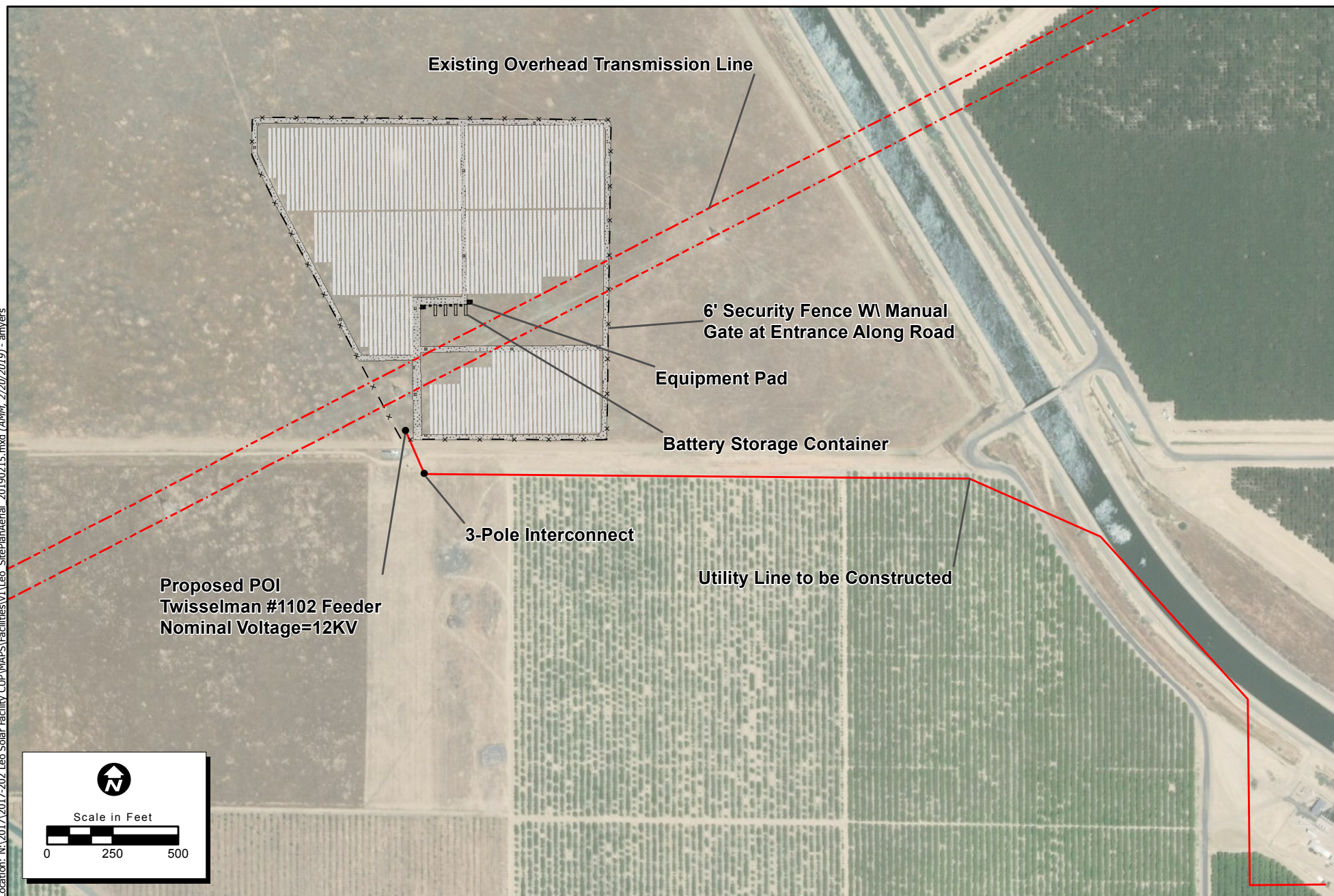
2.3 Project Characteristics

The proposed Project is the construction of a 5-MW solar PV energy-generating facility and battery storage system (BESS) facility on ± 30 -acres of 40 undeveloped acres. The site corresponds to a portion of Section 36, Township 24 South, and Range 19 East of the MDBM of the "Avenal Gap" topographic quadrangles 7.5-minute quadrangle (USGS 2015). The proposed Project consists of solar modules mounted on single-axis trackers that follow the east-west movement of the sun. The solar cells are covered by anti-reflective glass. At peak production, the 5-MW solar energy facility would supply enough clean energy to power up to 1,250 residential homes per year.

Major components of this commercial solar Project include: 1) PV modules mounted on stationary fixed-tilt, ground-mounted racking (Figure 5) or single-axis trackers (Figure 6), 2) inverters and transformers, 3) battery storage (Figure 7), 4) an electrical collection and distribution system, 5) internal access roads, 6) perimeter fencing, 7) data monitoring equipment, and 8) PG&E facility upgrades (Figure 4. *Project Site Plan*).

Construction of the Project would require placement of temporary containers with equipment in designated areas. Hazardous liquids storage (i.e., exceeding 55-gallon threshold) will not occur onsite (Z Global 2018). The areas would be prepared with a compacted road base that would allow trucks to enter the site and deliver materials. During construction, the foundations for the racking system(s) may require the use of a pile driver. It is anticipated that the workforce during the construction period would peak at 30.

Location: N:\2017\2017-202 Leo Solar Facility CUP\MAPS\Facilities\1\Leo_SitePlanAerial_20190215.mxd (AMM, 2/20/2019) - amvers



Map Date: 2/20/2019
Photo Source: ESRI World Imagery
Site Plan Source: ZGlobal

Figure 4. Project Site Plan

2017-202 Leo Solar Facility CUP



Representative Fixed Tilt Installation (Front View of Modules)



Representative Fixed Tilt Installation (Side View of Racking and Modules)



Representative Fixed Tilt Installation (Back View of Modules)

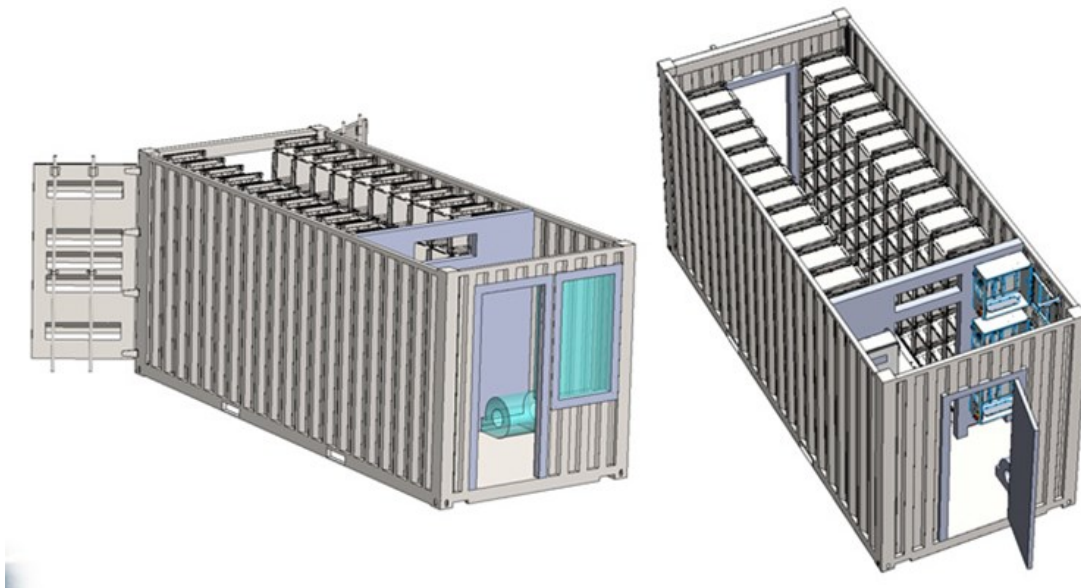




Representative Single Axis Tracker Installation (Front View of Racking and Modules)



Representative Single Axis Tracker Installation (Back and Side View of Racking and Modules)



Representative Battery Storage System Enclosure (3D Simulation)



Representative Battery Storage System Enclosure (Exterior View)

During Project operations, two or three offsite employees would be reserved for maintenance and would be dispatched to the site for routine scheduled maintenance and on an as-needed basis for unscheduled maintenance. Vehicles for operation and maintenance would typically include trucks such as pickups or flatbeds, as well as water trucks for solar panel washing. Large heavy-haul transport equipment may be brought to the site infrequently for equipment repair or replacement. Major freeways and highways that could be used to access the Project site include I-5, SR-33, SR-41, and SR-46, with direct access to the site proposed via a local road along the Kings/Kern County boundary, which is accessed from 25th Avenue or King Road. The local road along the boundary provides access to multiple parcels but is not maintained by Kings County. Prior to issuance of permits, the applicant shall demonstrate appropriate access to the Project site via easement or other mechanism, to the satisfaction of Kings County.

To provide access for construction and operation of the facility, the proposed Project would include the development of up to a 20-foot-wide, all-weather access road for ingress and egress. The access point will be gated and keyed to prevent unauthorized access to the Project site. An all-weather access road up to +20 feet wide capable of supporting County fire protection vehicles would run the perimeter of the Project footprint and between the arrays as needed. Interior access roads in compliance with Kings County Fire Department requirements would cross through the solar array field in between the rows as needed to facilitate installation, maintenance, and periodic cleaning of the solar modules. Turnaround areas would run around each of the inverters and/or equipment pads. In addition, unpaved perimeter roads capable of supporting emergency vehicles would surround the facility.

Battery Storage

A BESS would be constructed adjacent to the solar facility within the site footprint to provide energy storage and discharge capabilities under various operating conditions. The ability to store energy would improve the Project's operability and enhance the integration of as-available, solar-generated energy resources into the transmission and distribution network by offering additional ramp rate control and more consistent energy flows. The proposed BESS would provide a maximum capacity of 5 MW over a four-hour period for a total energy reservoir of 20 MW hours. The energy storage system would consist of up to five modular battery storage system structures, each situated in an enclosure measuring approximately up to 53 feet long, eight feet wide, and 10 feet high. Each enclosure would house arrays of lithium ion (Li-ion) batteries in an open-air style racking (similar to computer racking) seven to nine feet high with associated wiring and controls. Each enclosure will also have a fire rating in conformance with County standards and have specialized fire suppression systems installed for the battery compartments. All non-battery compartments would have County-approved standard sprinkler systems. The structure would also have heating, ventilation, and air conditioning (HVAC) cooling in areas with batteries to maintain energy efficiency as required. Power to the HVAC, lighting, and other utilities would be provided via a connection to the onsite station service transformer with connection lines installed above and/or below ground. The BESS would be unstaffed and would have remote operational control and periodic inspections/maintenance performed as necessary.

Individual Li-ion cells form the core of the battery storage system. Cells are assembled either in series or parallel connection in sealed battery modules. The cells would have an operating direct current (DC) voltage ranging from two to six volts, while the battery modules would have a DC voltage range between

40 to 120 volts. The battery modules would be installed in self-supporting racks electrically connected either in a series or parallel to each other. The individual battery racks are connected in series or parallel configuration to deliver the battery storage system energy and power rating.

The BESS enclosure would house the batteries described above, as well as the BESS controller. The BESS controller is a multi-level control system designed to provide a hierarchical system of controls for the battery modules, power conversion system, medium voltage system, and up to the point of connection with the electrical grid. The controllers ensure that the BESS effectively responds to grid conditions. The BESS enclosure would also house HVAC as required, and fire protection systems.

Electrical Collection and Distribution System. The DC output of multiple PV modules would be collected through combiner boxes and associated electrical wiring. The DC power would be delivered through an underground trench system measuring 3.5 feet deep and one foot wide, including trench and disturbed area, that would extend to the inverters and transformers located in the electrical enclosures. The inverters within the electrical enclosures would convert the DC power to AC power, and the medium-voltage transformer would step up the voltage to collection-level voltage (12.47 kV).

The medium-voltage power would be conveyed underground, or aboveground where necessary to cross over any sensitive site features, to an aboveground three-pole interconnection. The three-pole interconnection would connect to the existing PG&E-approved point of interconnection (POI) utility pole on the Twisselman 1102 12 kV distribution line at the southeast corner of the Project site. The poles would be located in a line between the underground connection point on the site and the PG&E POI. The pole closest to the POI would support a 12-kV utility-approved air switch along with utility-grade metering and a 12-kV gen-tie from an overhead line that would run from this pole to the PG&E POI, allowing the Project to use the existing PG&E distribution infrastructure to deliver the power generated. The second pole would house a 12-kV recloser (circuit breaker), and the third pole would consist of a 12-kV riser, switch, and full dead end. The poles would be spaced between the onsite inverter, transformer, and the PG&E utility pole.

Each pole would be approximately 40 feet high. All required electrical breaker systems and protective relay systems would be installed as part of the Project. Surge arrestors would be used to protect the facility and auxiliary equipment from lightning strikes or other disturbances.

The Project would operate year-round and generate electricity during daylight hours. The generated power produced by the Project would be transmitted off site through existing PG&E distribution lines located along 25th Avenue and King Road. The energy produced will feed into PG&E's system and at times may flow back into the transmission system, not only serving King County's electric demand but also the demands of the Central Valley. The power would travel downstream (away from PG&E's Twisselman Substation) and upstream (toward PG&E's Twisselman Substation), satisfying local agricultural residences, agricultural, commercial, and industrial electrical needs. When all electrical demands downstream are satisfied, power would then be pushed back upstream and delivered to the Twisselman Substation, which is approximately 4.25 miles east southeast of the Project site on Twisselman Road, just east of King Road. This excess power would be distributed from the Twisselman Substation to local distribution lines, sending

the power downstream and satisfying additional local residential, agricultural, commercial, and industrial electrical demands.

2.4 Project Timing

The proposed solar generation facility will be constructed in one continuous build cycle over a period of up to eight months. Construction is estimated to begin in 2020. However, the actual start of construction will be determined based on the receipt of all pre-construction permits and approvals and securing financing for the Project. Generally, the construction process will include the following steps:

- Conduct required pre-construction surveys and mitigation measures.
- Development of construction staging and parking areas to facilitate the arrival of workers and equipment onsite.
- Fencing of Project site.
- Site preparation including installation of stormwater management features, grading, and compaction.
- Installation of posts for the PV racks and equipment pads.
- Installation of gen-tie and collection system structures and wiring.
- Installation of PV racks, trenching for wiring.
- Installation of PV panels and wiring.
- Installation of battery storage enclosures.
- Completion of connections.
- Commissioning and testing.
- Site clean-up and demobilization.

Construction would generally occur between 7 a.m. and 6 p.m. on a five-day-per-week, eight-hour-per-day basis. Additional work hours and days may be necessary to make up for unanticipated schedule delays or to perform certain testing and checkout activities. All construction work performed outside of the normal work schedule would be coordinated with the appropriate agencies and conform to King County's Noise Ordinance. Table 2 lists Project construction activities and corresponding equipment and numbers of workers for each activity.

Table 2. Project Construction Activities		
Activity	Typical Equipment could include:	Number of Workers
Site Work	One tracked dozer Two motor graders Two sheep's-foot compactors Two smooth-drum compactors Two backhoes/excavators Two water trucks One-wheel loader Two rear/belly dump trucks	15 (Average)
Mechanical and electrical work	One bobcat loader One backhoe excavator One forklift Two pile driving machines Two vibratory hammers One backhoe/front-end loader One Gradall One trencher Two pickup trucks (1 ton)	30 (average)
Commissioning	Two pickup trucks (1 ton)	5 (average)
Closeout/restoration	One motor grader Two pickup trucks (1 ton)	8 (average)

Note: Some activities would occur concurrently.

Decommissioning and Reclamation

At the end of the Project's operational term, estimated at 30 years, the Project proponent may determine that the Project will be decommissioned and deconstructed, or may seek an extension of the Conditional Use Permit (CUP) (Z Global 2018). Because most of the PV solar system supporting equipment would sit on the site surface, after the Project's lifetime and following equipment removal, site disturbance would be minimal.

Decommissioning and reclamation may include: 1) packaging PV modules and batteries for removal and recycling, or otherwise ensuring removal; 2) removing ancillary facilities; and 3) reclamation, revegetation, restoration, and soil stabilization to return the site to its native conditions; or 4) return to agricultural production as dictated by any agreements that may be put into place between the applicant and property owner(s), and subject to assurances acceptable to Kings County. The PV modules are expected to still have useful life and would still be capable of producing electricity; these would be marketed for resale. Material and equipment such as the racking structures and mechanical assemblies will be recycled. The inverters and transformer(s) will also be reused or recycled. The equipment pads made of concrete will be crushed and recycled. Any underground conduit and wire will be removed by uncovering the trenches and backfilling when done. The remaining balance of material and/or waste generated from the Project would either be recycled as appropriate for the type of material or disposed of at the local transfer station and/or landfill facility. The estimated decommissioning and reclamation time frame assuming the site is returned to its native condition is two months (Z Global 2019).

2.5 Regulatory Requirements, Permits, and Approvals

The following approvals and regulatory permits would be required for implementation of the proposed Project. Additional permits and approvals may be required.

- Kings County, Conditional Use Permit (CUP).
- Kings County, Building/Construction Permit.
- Central Valley Regional Water Quality Control Board (RWQCB), National Pollutant Discharge Elimination System (NPDES) Permit, including Storm Water Pollution Prevention Plan (SWPPP).
- San Joaquin Valley Air Pollution Control District, Dust Control Plan. (An Air Impact Assessment has been prepared for the Project.).

2.6 Consultation with California Native American Tribe(s)

The following California Native American tribe(s) traditionally and culturally affiliated with the Project area have been notified of the Project: Santa Rosa Rancheria Tachi Yokut Tribe. Notice was provided with Kings County Community Development Agency's (CDA) Project Review-Consultation Notice (8/23/2017). No tribes have requested consultation pursuant to Public Resources Code (PRC) section 21080.3.1. A copy of the notification is on file with the Kings County CDA Planning Division.

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SECTION 3.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED AND DETERMINATION

3.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- | | | |
|---|---|--|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Public Services |
| <input type="checkbox"/> Agriculture and Forestry Resources | <input checked="" type="checkbox"/> Hazards/Hazardous Materials | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Air Quality | <input checked="" type="checkbox"/> Hydrology/Water Quality | <input type="checkbox"/> Transportation/Traffic |
| <input checked="" type="checkbox"/> Biological Resources | <input type="checkbox"/> Land Use and Planning | <input checked="" type="checkbox"/> Tribal Cultural Resources |
| <input checked="" type="checkbox"/> Cultural Resources | <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Utilities and Service Systems |
| <input type="checkbox"/> Energy | <input type="checkbox"/> Noise | <input type="checkbox"/> Wildfire |
| <input type="checkbox"/> Geology and Soils | <input type="checkbox"/> Population and Housing | <input checked="" type="checkbox"/> Mandatory Findings of Significance |

Determination

On the basis of this initial evaluation:

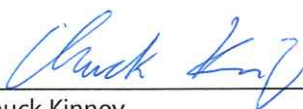
I find that the Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared. ☐

I find that although the 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 Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. ☐

I find that the Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment but at least one effect 1) 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 Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Project, nothing further is required. ☐



Chuck Kinney
Deputy Director

11-6-19
Date

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SECTION 4.0 ENVIRONMENTAL CHECKLIST AND DISCUSSION

4.1 Aesthetics

4.1.1 Aesthetics (I.) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c)	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d)	Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4.1.2 Environmental Setting

The proposed Project occupies a ±30-acre portion of a 40-acre parcel located near 25th Avenue approximately 15 miles south of unincorporated Kettleman City, California (APN 048-350-016-000). The subject property site is situated along the Kings County/Kern County border, between California SR-33 and I-5, approximately 0.5 mile east of 25th Avenue. Regional access to the Project site would be provided via I-5, SR-33, SR-41, and SR- 46, with direct access to the site proposed via a local road accessed from 25th Avenue or King Road. The California Aqueduct is located approximately 900 feet east of the Project site. The flat Project site has low visibility from surrounding roadways.

4.1.3 Visual Setting

Visual Character of the Project Site

The Project site is located on an undeveloped, fallowed field at an elevation of approximately 315 feet above msl. An overhead PG&E transmission line (230 kV) corridor runs diagonally through the site within a 150-foot-wide easement in the southerly portion of the site. The property is generally bound on the south by a dirt access road that runs east-west along the Kings County/Kern County border, and on the

north, east, and west by undeveloped land. The surrounding land uses are generally irrigated agricultural fields with flat topography to the east and south with undeveloped rolling hills in the background to the west and northwest. Surrounding lands to the south and east are characterized as level agricultural land primarily used for irrigated agriculture, including irrigation/drainage ditches and canals. The levee embankment of the California Aqueduct is visible as a linear feature on the horizon east of the site.

4.1.4 Regulatory Setting

State Scenic Highways

The California Scenic Highway Program protects and enhances the scenic beauty of California's highways and adjacent corridors. A highway can be designated as scenic based on how much natural beauty can be seen by users of the highway, the quality of the scenic landscape, and if development impacts the enjoyment of the view (California Department of Transportation [Caltrans] 2017). There are no officially designated State or County scenic highways in Kings County.

Regional and Local

Scenic vistas, public views, and significant features are visually important aesthetic qualities of value to a community. These may include beaches, waterways, rolling hills, fields, or mountains that constitute the overall visual essence of a region. The Kings County General Plan (2010) does not identify any areas considered to be scenic vistas that need to be protected and preserved within the county. Although the General Plan Open Space Element describes the Coast Ranges on the county's southwest edges as a distinctive visual backdrop, the Project site is more than 10 miles west of this feature. The Project site is not considered to be in an area of significant visual qualities, nor does it have any significant visual features.

4.1.5 Environmental Impacts and Mitigation Measures

a) *Would the Project have a substantial adverse effect on a scenic vista?*

Less than Significant Impact. A scenic vista is a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. With the vast majority of the county existing along the San Joaquin Valley floor, the Kettleman Hills are the first elevated foothills that are seen by travelers along the western edge of the county. The overhead transmission line towers on the Project site are visible as a distant feature from surrounding farm roads in the Project vicinity, including 25th Avenue and King Road. However, the flat Project site itself is not readily distinguishable from the surrounding level agricultural plain when viewed from the north, west, south, and east.

The installation of solar PV modules mounted on stationary fixed-tilt, ground-mounted racking or single-axis trackers is necessary for the proposed Project. The PV modules, at their highest point, would be 14 feet above the ground surface, shorter than most single-story commercial buildings. The facility's perimeter would be secured with a six-foot-tall (minimum) chain link fence with barbed wire added on top for a total height of eight feet. At a minimum, the height of the fence would be compliant with CCR Title 8, § 2945, Access and Workspace Requirements. Due to the Project site's low elevation of 315 feet above msl, relatively low profile and distance from scenic county resources, the Project would not substantially affect a scenic vista. No mitigation is required.

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

No Impact. According to the California Scenic Highway Mapping System, there are no officially designated highways in Kings County. A portion of SR-41, commencing at the intersection of SR-33 and proceeding south to the county line, where it continues into San Luis Obispo County, is eligible for designation as a Scenic Highway. SR-41 is located more than 12 miles east of the proposed Project site and is screened by intervening terrain. As such, the proposed Project is not located adjacent to a state scenic highway. No impact would occur.

c) *Would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings?*

Less than Significant Impact. The Project site consists of a ± 30 -acre portion of a 40-acre parcel, located on an undeveloped, fallowed field. A major power transmission line traverses the site. The site is generally bound on the south by a dirt access road that runs east-west along the Kings County/Kern County border, and on the north, east, and west by undeveloped land. No residential housing is in the vicinity, nor are any identified public viewing areas near the Project site. Furthermore, defining visual elements of the surrounding areas, such as views of the Kettleman Hills and Coast Range, would not be affected. The Project would not substantially degrade the existing visual character or quality of the site and its surroundings. As such, a less than significant impact would occur. No mitigation is required.

d) *Would the Project create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?*

Less than Significant Impact. The reflection of sunlight is the primary potential producer of glare from glass and metallic surfaces of the proposed solar panels. The reflection of light is an optical phenomenon governed by the law of reflection. This law states that the direction of incoming light (incident ray) and the direction of the outgoing light reflected (reflected ray) make the same angle with respect to the surface normal, thus the angle of incidence equals the angle of reflection. The law of reflection shows how light responds when it contacts a truly spectral surface, like a mirror.

A solar panel differs from a truly spectral surface in that it has a microscopically irregular surface designed to trap the incident rays of sunlight with the intention of generating additional photon collision and energy production. Any incidental radiation, if not absorbed or transmitted, will be reflected. With the current advancements in PV technology, a typical untreated silicon solar cell absorbs 2/3 of the sunlight reaching the panel's surface, meaning only 1/3 of the sunlight reaching the surface of the solar panel will be reflected. Recent improvements in PV technology have led to even greater light absorption efficiency through the use of nano-engineered anti-reflective materials applied directly to the solar cells that allow the cells to absorb light from virtually the entire solar spectrum. The intent of solar technology is to increase efficiency by absorbing as much light as possible (which further reduces reflection and glare). Most solar glass sheets (the glass layer that covers the PV panels) are typically tempered glass that is treated with an anti-reflective or diffusion coating that further diffuses (scatters) the intensity of glare produced. This type of diffused glare loses intensity as the distance from the reflection source increases.

The proposed Project includes the use of trackers. Trackers are devices that orient the solar array perpendicular (surface normal) to the incident solar radiation, thereby maximizing solar cell efficiency and

potential energy output. Tracking devices are capable of positioning the array so that the incident rays would be at or very near a surface normal (perpendicular angle). In these optimal conditions, when the sun is high in the sky, the law of reflection indicates that the reflected ray would be at an equally low angle and reflected in a direction toward the light source or back into the atmosphere away from terrestrial-based receptors. This also means that the potential for glare is further reduced. However, when the sun is low on the horizon (near dawn or dusk), the sun's angle in the sky is low; because the trackers are tilted toward the light source, the potential for fugitive glare on terrestrial-based receptors increases.

Project lighting, triggered by motion sensors, may be installed at entry and egress gates and at strategic locations around the facility. All Project lighting would be shielded and directed downward to minimize the possibility of glare or spillover onto adjacent ownerships and would only be activated when maintenance crews access the site. Project lighting would conform to National Electric Safety Code requirements and applicable outdoor lighting codes per the local ordinance.

As previously mentioned, the Project site is surrounded by open space/grazing land and fallowed agricultural fields and there are no sensitive visual receptors in the vicinity. Therefore, there are no sensitive receptors that could be affected by the fugitive glare from the spectral surfaces of the solar panels, or from nighttime lighting sources. Glare or light impacts would be less than significant. No mitigation is required.

4.2 Agriculture and Forestry Resources

4.2.1 Agriculture and Forestry Resources (II.) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Would the Project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.2.2 Regulatory Setting

General Plan and Development Code

According to the Kings County 2035 General Plan, the subject property lies within a designated AG-40 – General Agricultural area in unincorporated Kings County, approximately 0.5 mile east of 25th Avenue. The AG-40 – General Agricultural designation is applied to rural areas of the county south of Kansas Avenue, excluding the Urban Fringe areas of Corcoran, the communities of Kettleman City and Stratford, and high slope areas of the Coast Ranges. Included within this designation are large corporate farming areas of the Tulare Lake Basin, and areas of the valley floor generally characterized by extensive and intensive agricultural uses. Extensive irrigation channels and levees divert surface water to support field crops along the valley floor and orchards along the Kettleman Hills. This designation allows intensive agricultural uses that by their nature may be incompatible with urban uses. Much of the land within this designation is also subject to flood hazard risk and should remain devoted to agriculture use to reduce the potential for future conflicts.

The Project parcel is zoned AG-40, which requires a minimum parcel size of 40 acres and a minimum width of 660 feet.

According to the Kings County Development Code, *Article 4. Agricultural Zoning Districts*, Table 4-1, *Agricultural Zoning Districts Land Use Regulations*, commercial solar PV electrical generating facilities or wind and solar photovoltaic electrical generating facilities that commercially produce power for sale and comply with all local, regional, State, and federal regulations must meet the Alternative Energy Systems standards shown in Article 11, Section 1112 of the Kings County Development Code. The standards are as follows:

- a. 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.
- b. 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 3 MW) may be located more than 1 mile from a 60 kV or higher transmission line subject to the following findings:
 1. The project site is located on low or very low priority farmland.

2. The project site is not restricted by a Williamson Act or Farmland Security Zone contract.
 3. The project will connect to existing utility infrastructure without building new power lines.
 4. The project will not result in any additional easements on agricultural land, other than access easements or easements within the public Right-of-Way.
- c. 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.
- d. 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.
- e. The project shall include a pest management plan and weed abatement plan to protect adjacent farmland from nuisances and disruption.
- f. The project shall establish internal access driveways per Kings County Fire Department standards.
- g. The project shall include a solid waste management plan for site maintenance and disposal of trash and debris.
- h. The project site shall not be located on Williamson Act or Farmland Security Zone contracted land, unless it meets the principles of compatibility under Government Code Section 51238.1.(a). Otherwise, the contract shall be proposed for cancellation or is eligible to be cancelled and shall convert to a solar easement.

Agricultural Setting—Soils and Water

According to the U.S. Department of Agriculture (USDA) (2016), soils on the Project site consist of Cantua coarse sandy loam, 5 to 15 percent slopes (19 acres-47 percent), and Kimberlina fine sandy loam, sandy substrate (21 acres-53 percent) (Figure 8. *Natural Resources Conservation Service Soil Types*). The Cantua coarse sandy loam soils have a Storie Index rating of 73, while the Kimberlina fine sandy loam soils have a Storie Index rating of 95. The USDA Storie Index Rating System classifies soils with an index rating of 80 or greater to be prime for high quality agricultural production. Although these soils may have the potential to perform well if irrigated, considering the property's long-term condition as fallow grazing land, its lack of any surface water entitlements, and the limited availability of groundwater in the Project area, these soils are considered to have severe limitations for productive agricultural use.



Location: N:\2017\2017-2022 Leo Solar Facility CUP\WAPs\Soils_and_Geology\Soils\LS_Soils_20190214.mxd (AMM)-amymers 2/14/2019

Map Date: 2/14/2019
Photo Source: NAIP 2016

**Figure 8. Natural Resources Conservation
Service Soil Types**

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4.2.3 Environmental Impacts and Mitigation Measures

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

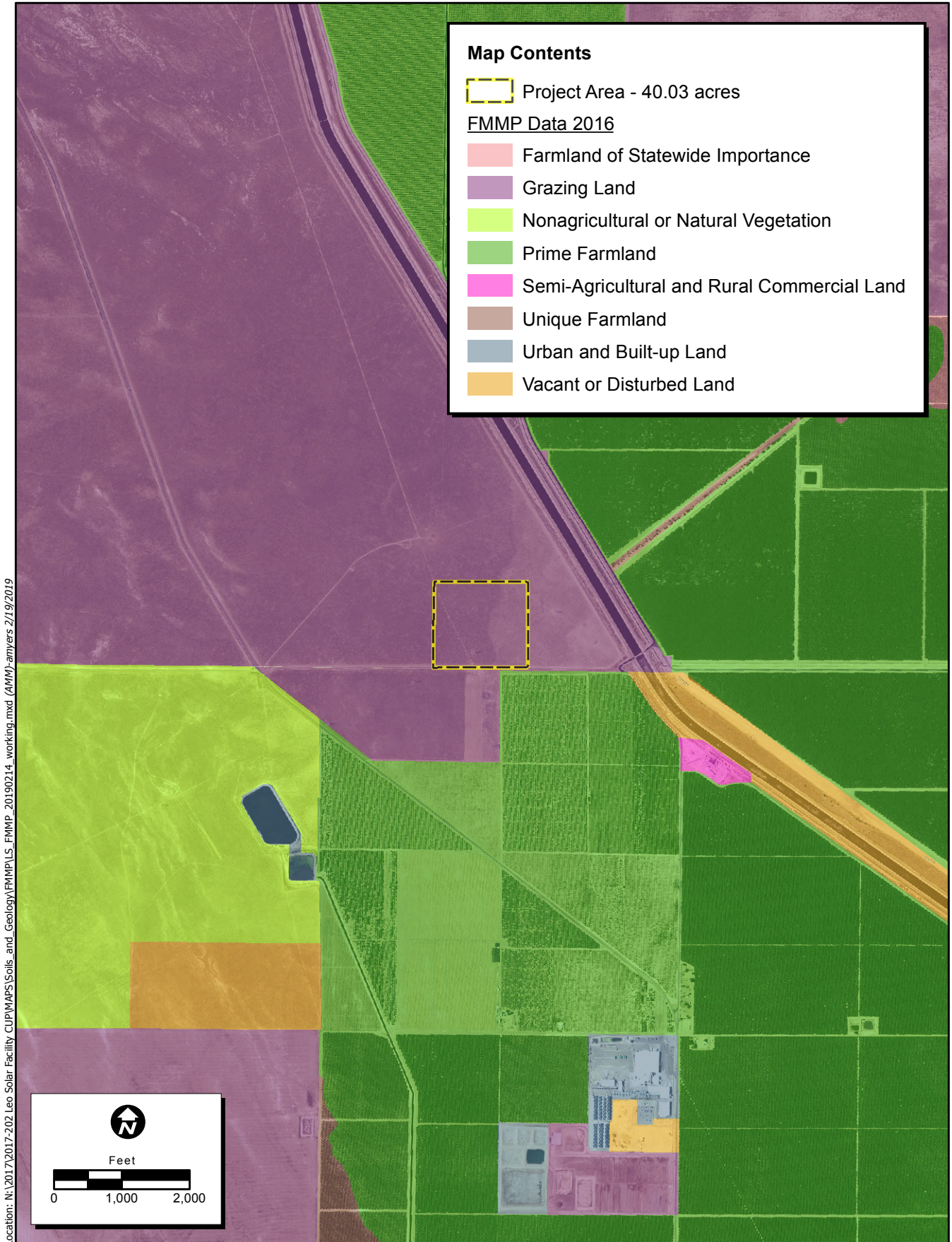
No Impact. The California Department of Conservation (DOC) Kings County Important Farmland Map designates the Project site as “Grazing Land” (DOC 2016) (Figure 9. *Farmland Mapping Designations*). The Project site is not located on Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, the proposed Project would not convert such farmland to non-agricultural use. No impact would occur. No mitigation is required.

b) *Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?*

No Impact. The Project site is zoned for General Agricultural use by Kings County and is not under a Williamson Act contract (Kings County 2010; DOC 2016). Pursuant to Section 1112.B.2 of the Kings County Development Code the Project site complies with the zoning for agricultural uses since it is identified as “Very Low Priority” land according to Figure RC-13 Priority Agricultural Land (Kings County General Plan, Resource Conservation Element) and is designated as grazing lands according to the DOC 2016 Important Farmland Map. The Project will include a pest management plan and weed abatement plan to protect adjacent farmland from nuisances and disruption, and the project shall space internal access driveways per Kings County Fire Department Standards. The Project will include a solid waste management plan for site maintenance and disposal of trash and debris, and is located within one mile of an existing 60 kV or higher utility electrical line. As described in Section 2.4, the Project will 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. Therefore, the Project would not result in a conflict with an agricultural zoning designation or a Williamson Act contract. The Project is a non-intrusive solar project that does not propose development that would conflict with a Williamson Act contract. No impact would occur. No mitigation is required.

c) *Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?*

No Impact. The Project site is not zoned for forest land, timberland, or timberland production (Kings County 2010). The Project site is currently undeveloped and does not contain forest or timber resources. No impact would occur. No mitigation is required.



Location: N:\2017\2017-202 Leo Solar Facility CUP\WAPS\Soils_and_Geology\FMMP\LS_FMMP_20190214_working.mxd (AMM)-amyers 2/19/2019

Map Date: 2/19/2019
 Photo Source: NAIP 2016
 Base Source: Farmland Mapping and Monitoring Program (FMMP) 2016

Figure 9. Farmland Mapping Designations

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d) Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. No forest or timber land exists in the area. The proposed Project is located on an undeveloped site devoid of trees in Kings County and would not convert forest land to non-forest use; no impact would occur. No mitigation is required.

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

No Impact. The proposed Project would change the use of undeveloped land to a renewable energy-producing facility. Electricity generated by the site would be sold to an electric utility purchaser or another power purchaser under a long-term contract or PPA. The Project site is currently used as grazing land and is not currently, nor within the last 20 years, has it been used for intensive agricultural cultivation. At the end of its operations as a solar facility, estimated at 25 years, the Project will comply with the decommissioning and site restoration requirements of Kings County. While there is existing farmland in the area, the development of a solar project would not affect the ability to continue agricultural production in the area. Therefore, no impact would occur. No mitigation is required.

4.3 Air Quality

4.3.1 Air Quality (III.) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b)	Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c)	Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d)	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4.3.2 Environmental Setting

An Air Quality and Greenhouse Gas Assessment was prepared by ECORP Consulting, Inc. in February 2019. The complete report can be found in Appendix A of this report (ECORP 2019).

The Project area is located within Kings County. The California Air Resources Board (CARB) has divided California into regional air basins according to topographic features. Kings County and the Project area are located in a region identified as the San Joaquin Valley Air Basin (SJVAB). The SJVAB occupies the southern 2/3 of the Central Valley and includes Kings County. The SJVAB is mostly flat, less than 1,000 feet in elevation, and is surrounded on three sides by the Sierra Nevada, Tehachapi, and Coast Range mountains. This bowl-shaped feature forms a natural barrier to the dispersion (spreading over an area) of air pollutants. As a result, the SJVAB is highly susceptible to criteria air pollutant accumulation over time.

Both the U.S. Environmental Protection Agency (USEPA) and the CARB have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants representing safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called “criteria” pollutants because the health and other effects of each pollutant are described in criteria documents. The six criteria pollutants are ozone (O₃) (precursor emissions include nitrogen oxide [NO_x] and reactive organic gases [ROG]), carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and lead. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. The SJVAB is designated as a nonattainment area for the federal O₃ and PM_{2.5} standards and is also a nonattainment area for the State standards for O₃, PM₁₀, and PM_{2.5} standards.

4.3.3 Regulatory Setting

The local air quality agency affecting the SJVAB is the San Joaquin Valley Air Pollution Control District (SJVAPCD), which is charged with the responsibility of implementing air quality programs and ensuring that national and State ambient air quality standards are not exceeded and that air quality conditions are maintained in the SJVAB. In an attempt to achieve national and State ambient air quality standards and maintain air quality, the air district has completed the several air quality attainment plans and reports, which together constitute the State Implementation Plan (SIP) for the portion of the SJVAB encompassing the Project.

The SJVAPCD has also adopted various rules and regulations for the control of stationary and area sources of emissions. Provisions applicable to the proposed Project are summarized as follows:

- **Regulation II (Permits), Rule 2201, New and Modified Stationary Source Review Rule.** This rule provides for review of new and modified stationary sources of air pollution, with the aim of complying with State and federal ambient air quality standards.
- **Regulation IV (Prohibitions), Rule 4001, New Source Performance Standards.** This rule establishes standards, criteria, and operational/reporting requirements for all new sources of air pollution, as well as modifications of existing sources of air pollution.
- **Regulation IV (Visible Emissions), Rule 4101, Nuisance.** The purpose of this rule is to protect the health and safety of the public from source operations that emit or may emit air contaminants or other materials. It prohibits emissions of air contaminants or other materials “which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public.”

- **Regulation IV (Visible Emissions), Rule 4641, Cutback, Slow Curve and Emulsified Asphalt, Paving and Maintenance Operations.** The purpose of this rule is to limit volatile organic compound (VOC) emissions by restricting the application and manufacturing of certain types of asphalt and maintenance operations and applies to the use of these materials. Specifically, certain types of asphalt cannot be used for penetrating prime coat, dust palliative, or other paving: rapid cure and medium cure cutback asphalt, slow cure asphalt that contains more than 0.5 percent of organic compound that evaporates at 500 degrees Fahrenheit (°F) or lower, and emulsified asphalt containing VOC in excess of three percent that evaporates at 500°F or lower.
- **Regulation VIII (Fugitive PM₁₀ Prohibitions), Rules 8021–8071, Fugitive PM₁₀ Prohibitions.** The purpose of these rules is to limit airborne particulate emissions associated with construction, demolition, excavation, extraction, and other earthmoving activities, as well as with open disturbed land and emissions associated with paved and unpaved roads. Accordingly, these rules include specific measures to be employed to prevent and reduce fugitive dust emissions from anthropogenic sources.
- **Regulation IX (Mobile and Indirect Sources), Rule 9510, Indirect Source Review.** This rule is the result of State requirements outlined in California Health and Safety Code Section 40604 and the SIP. The air district's SIP commitments were originally contained in the SJVAPCD's 2003 PM₁₀ Plan and Extreme Ozone Attainment Demonstration Plans, which presented the SJVAPCD's strategy to reduce PM₁₀ and NO_x in order to reach the ambient air pollution standards on schedule, which had been 2010. The plans quantify the reduction from current SJVAPCD rules and proposed rules, as well as State and federal regulations, and then model future emissions to determine whether the SJVAPCD may reach attainment for applicable pollutants.

This rule will reduce emissions of NO_x and PM₁₀ from new development Projects that attract or generate motor vehicle trips. In general, new development contributes to the air pollution problem in the SJVAB by increasing the number of vehicles and vehicle miles traveled. Although newer, cleaner technology is reducing per-vehicle pollution, the emissions increase from new development partially offsets emission reductions gained from technology advances. Indirect Source Review applies to larger development projects that have not yet gained discretionary approval. A discretionary permit is a permit from a public agency, which requires some amount of deliberation by that agency, including the potential to require modifications or conditions on the Project. In accordance with this rule, developers of larger residential, commercial, and industrial projects are required to reduce smog-forming NO_x and PM₁₀ emissions from their projects' baselines as follows (SJVAPCD 2005):

- 20 percent of construction NO_x exhaust.
- 45 percent of construction PM₁₀ exhaust.
- 33 percent of operational NO_x over 10 years.
- 50 percent of operational PM₁₀ over 10 years.

4.3.4 Environmental Impacts and Mitigation Measures

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?

No Impact. As part of its enforcement responsibilities, the USEPA requires each state with nonattainment areas to prepare and submit a SIP that demonstrates the means to attain the federal standards. The SIP must integrate federal, State, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under State law, the California Clean Air Act requires an air quality attainment plan to be prepared for areas designated as nonattainment with regard to the federal and State ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

As previously stated, the SJVAPCD prepared the 2004 Extreme Ozone Attainment Demonstration Plan and 2013 Plan for the Revoked 1-Hour Ozone Standard, 2007 Ozone Plan, 2009 Reasonably Available Control Technology Demonstration for Ozone State Implementation Plan, 2016 Plan for the 2008 8-Hour Ozone Standard, 2016 Moderate Area Plan for the 2012 PM_{2.5} Standard, and 2007 PM₁₀ Maintenance Plan and Request for Redesignation. These plans collectively address the air basin's nonattainment status with the national and State ozone standards as well as particulate matter by establishing a program of rules and regulations directed at reducing air pollutant emissions and achieving State (California) and national air quality standards. Pollutant control strategies are based on the latest scientific and technical information and planning assumptions, updated emission inventory methodologies for various source categories, and the latest population growth projections and associated vehicle miles traveled projections for the region. SJVAPCD's latest population growth forecasts were defined in consultation with local governments and with reference to local general plans.

The proposed Project is consistent with the Kings County land use designation for the Project site. In addition, there will be no increase in population as a result of the Project. Therefore, the Project would not exceed the population or job-growth projections used by the SJVAPCD to develop its air quality attainment plans.

Furthermore, the operation of the Project would create renewable energy over its planned lifetime and decrease the need for energy from fossil fuel-based power plants in the state, which is considered a beneficial impact to statewide air quality. The energy produced by the Project would displace the criteria pollutant emissions that would otherwise be produced by existing business-as-usual (BAU) power generation resources (including natural gas and coal). Additionally, the Project would generate enough clean energy to power up to 1,250 residential homes per year.

Table 3 shows the emissions that would be displaced by the proposed Project. Note that this estimate only includes that associated with the combustion of fossil fuels; it does not include the vehicle trips associated with the Project's operations, and it similarly does not include operational employee trips associated with natural gas or coal combustion nor the emissions associated with extracting and transporting those power sources. In addition, this estimate only includes the displacement of that portion of the California market that comes from fossil fuels and does not include the approximately 45 percent of the California electricity generated by non-combustion sources (wind, solar, nuclear, hydro-electric)

(California Energy Commission [CEC] 2017). Displacement of fossil fuel emissions has a direct beneficial effect on human health for those receptors downwind of the location of the fossil fuel power plants.

Table 3. Proposed Project Displaced Criteria Pollutant Emissions (Tons)						
	Emissions (Tons)					
	ROG	NO _x	CO	SO ₂	PM ₁₀	PM _{2.5}
Emissions Displaced Annually (tons)						
Displaced Natural Gas-Source Emissions	0.0	0.22	0.07	0.15	0.21	0.09
Displaced Coal-Source Emissions	0.0	2.31	0.10	0.11	0.02	0.01
Total	0.0	2.53	0.17	0.26	0.23	0.10
Emissions Displaced over 30 Years (tons)						
Displaced Natural Gas-Source Emissions	0.0	6.60	2.10	4.50	6.30	2.70
Displaced Coal-Source Emissions	0.0	69.30	3.00	3.30	0.60	0.30
Total	0.0	75.90	5.10	7.80	6.90	3.00

Source: Displaced emissions calculated by ECORP using USEPA's AP-42 Fifth Edition Compilation of Air Emissions Factors 1995; 2015.

Notes: In order to provide a conservative analysis, the proposed Project is assumed to generate electricity 25 percent of the time available (2,015 hours annually). A heat rate of 10,000 British Thermal Units (BTU) per kilowatt hour is assumed. The heat content of coal is assumed at 24 million BTU per ton of coal burned. [5 MW (10,075,000 annual kilowatt hours) x 10,000 heat rate = 100,750 million BTU displaced from fossil fuel production. Fossil fuel-based energy consumption in California is predominately derived from natural gas (89.49 percent). Coal constitutes 10.13 percent of all fossil fuel-based energy. Therefore, 90,161 million of the displaced BTU is displaced natural gas consumption and 10,205 million of the displaced BTU is displaced coal. At a rate of 24 million BTU per ton of coal burned, the Project would displace 425.25 tons of burned coal annually.

As shown, the Project would potentially displace just under 80 tons of NO_x, five tons of CO, nearly eight tons of SO₂, just under seven tons of PM₁₀, and three tons of PM_{2.5} over the course of 30 years.

Furthermore, as demonstrated in Item b), the Project would not exceed the applicable SJVAPCD significance thresholds for construction or operational-source emissions.

The Project would be consistent with the emission-reduction goals of the SJVAPCD Attainment Plans. No impact would occur. No mitigation is required.

b) *Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard?*

Less than Significant Impact. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's individual emissions exceed its identified significance thresholds, the project would be cumulatively considerable. Projects that do not exceed significance thresholds would not be considered cumulative considerable.

The proposed Project's air quality impacts are mainly attributable to short-term construction activities. The long-term impacts of operating solar electricity panels are expected to be minor. For purposes of impact assessment, air quality impacts have been separated into construction impacts and operational impacts.

Construction Impacts

Construction of the proposed Project is anticipated to commence in the third quarter of 2019 and be completed within 14 months. Construction associated with the Project would generate short-term emissions of criteria air pollutants, including ROG, CO, NO_x, PM₁₀, and PM_{2.5}. The largest amount of ROG, CO, and NO_x emissions would occur during the earthwork phase. PM₁₀ and PM_{2.5} emissions would occur from fugitive dust (due to earthwork and excavation) and from construction equipment exhaust. Exhaust emissions from construction activities include emissions associated with the transport of machinery and supplies to and from the Project site, emissions produced onsite as the equipment is used, and emissions from trucks transporting materials to and from the site. Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but have the potential to represent a significant air quality impact.

During construction activities, the Project would also be required to comply with SJVAPCD Regulation VIII (Fugitive PM₁₀ Prohibitions). The purpose of this rule is to limit airborne particulate emissions associated with construction, demolition, excavation, extraction, and other earthmoving activities, as well as with open disturbed land and emissions associated with paved and unpaved roads. Accordingly, these rules include specific measures to be employed to prevent and reduce fugitive dust emissions from anthropogenic sources. For instance, the Project applicant would be required to prepare a dust control plan. Construction activities anywhere within the regulatory jurisdiction of the SJVAPCD, including the Project site, may not commence until the SJVAPCD has approved or conditionally approved the dust control plan, which must describe all fugitive dust control measures that are to be implemented before, during, and after any dust-generating activity. Regulation VIII specifies the following measures to control fugitive dust:

- Apply water to unpaved surfaces and areas.
- Use nontoxic chemical or organic dust suppressants on unpaved roads and traffic areas.
- Limit or reduce vehicle speed on unpaved roads and traffic areas to a maximum 15 miles per hour (mph).
- Maintain areas in a stabilized condition by restricting vehicle access.
- Install wind barriers.
- During high winds, cease outdoor activities that disturb the soil.
- Keep bulk materials sufficiently wet when handling.
- Store and handle materials in a three-sided structure.
- When storing bulk materials, apply water to the surface or cover the storage pile with a tarp.
- Do not overload haul trucks. Overloaded trucks are likely to spill bulk materials.
- Cover haul trucks with a tarp or other suitable cover. Or, wet the top of the load enough to limit visible dust emissions.
- Clean the interior of cargo compartments on emptied haul trucks prior to leaving a site.

- Prevent track out by installing a track-out control device.
- Clean up track out at least once a day. If along a busy road or highway, clean up track out immediately.
- Monitor dust-generating activities and implement appropriate measures for maximum dust control.

The SJVAPCD's (2015) Guidance for Assessing and Mitigating Air Quality Impacts identifies significance thresholds for ROG, CO, NO_x, SO₂, PM₁₀, and PM_{2.5}. Construction-generated ozone precursor emissions associated with the Project were calculated using CalEEMod. Predicted maximum annual construction-generated emissions of criteria air pollutants for the Project are summarized in Table 4.

Table 4. Construction-Related Criteria Pollutant Emissions (Maximum Tons per Year)						
Construction Activities	ROG	NO_x	CO	SO₂	PM₁₀	PM_{2.5}
Year 2020	0.40	4.33	2.58	0.00	0.80	0.50
Year 2021	0.63	6.27	5.10	0.00	0.42	0.33
<i>SJVAPCD Potentially Significant Impact Threshold</i>	<i>10</i>	<i>10</i>	<i>100</i>	<i>27</i>	<i>15</i>	<i>15</i>
Exceed SJVAPCD Threshold?	No	No	No	No	No	No

Source: CalEEMod version 2016.3.2. Refer to Appendix A for Model Data Outputs.

Notes: Emission reduction/credits for construction emissions are applied based on the required implementation of SJVAPCD Regulation VIII. The specific regulation applied in CalEEMod was reducing vehicle speeds on unpaved roads to under 15 mph.

Emissions account for 2,120-square-foot energy storage system enclosures, the grading of one acre, and a total of 58 average workers traveling a distance of 25 miles to the Project site over the course of construction.

As shown in Table 4, construction-generated emissions would not exceed SJVAPCD significance thresholds. Decommissioning of the Project is expected to involve a similar level of activity and duration as construction. As indicated above, construction emissions are calculated to be well below the SJVAPCD thresholds for each pollutant, which would also be expected to be the case for decommissioning emissions. Therefore, Project decommissioning would not violate any air quality standard or contribute substantially to an existing or projected air quality violation, and the Project's air quality impact from decommissioning emissions would be less than significant.

In addition to the SJVAPCD criteria air pollutant thresholds, SJVAPCD Rule 9510, Indirect Source Review, aims to fulfill the SJVAPCD's emission reduction commitments in the PM₁₀ and Ozone Attainment Plans. This rule applies to the following construction projects within the jurisdiction of the SJVAPCD:

- 50 residential units,
- 2,000 square feet of commercial space,
- 25,000 square feet of light industrial space,
- 100,000 square feet of heavy industrial space,
- 20,000 square feet of medical office space,
- 39,000 square feet of general office space,
- 9,000 square feet of educational space,

- 10,000 square feet of government space,
- 20,000 square feet of recreational space; or
- 9,000 square feet of space not identified above.

This rule also applies to any transportation or transit project where construction exhaust emissions equal or exceed two tons of NO_x or two tons of PM₁₀.

Since the Project does not include the construction of a permanent building and is not a transportation project, the Project would not be required to comply with this rule. Additionally, the Project is proposing a 5-MW solar energy generation facility. One of the obvious benefits of solar energy is that the production of electricity from these sources involves almost no direct emissions of criteria air pollutant emissions. In contrast, fossil fuel-fired electric generation from coal, oil, or natural gas results in substantial direct emissions that contribute to adverse impacts on the environment. For instance, electric generation from fossil fuel-fired power plants contributes 22 percent of all NO_x emissions in the U.S. according to the Department of Energy (2008). Renewable energy-generating facilities reduce emissions by decreasing the need for energy from fossil fuel-based power plants in the state, which is considered a beneficial impact statewide.

A less than significant impact would occur as a result of construction of the Project. No mitigation is required.

Operational Impacts

Although limited, implementation of the Project would result in long-term operational emissions of criteria air pollutants such as PM₁₀, PM_{2.5}, CO, and SO₂ as well as ozone precursors such as ROG and NO_x. Project-generated increases in emissions would be predominantly associated with motor vehicle use for routine maintenance work.

The SJVAPCD's (2015) Guidance for Assessing and Mitigation Air Quality Impacts identifies significance thresholds for ROG, CO, and NO_x, SO₂, PM₁₀, and PM_{2.5}. Operational-generated ozone precursor emissions associated with the Project were calculated using CalEEMod. Predicted maximum annual operational-generated emissions of criteria air pollutants for the Project are summarized in Table 5.

Table 5. Operations-Related Criteria Pollutant Emissions (Maximum Tons per Year)						
Source	ROG	NOX	CO	SO ₂	PM ₁₀	PM _{2.5}
Area Source	0.12	0.00	0.12	0.00	0.00	0.00
Energy Use	0.00	0.00	0.00	0.00	0.00	0.00
Mobile Source	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.12	0.00	0.12	0.00	0.00	0.00
<i>SJVAPCD Potentially Significant Impact Threshold</i>	10	10	15	15	100	27
Exceed SJVAPCD Threshold?	No	No	No	No	No	No

Source: CalEEMod version 2016.3.2. Refer to Appendix A for Model Data Outputs.

Notes: Emissions projections account for one employee vehicle trip per day and the operation of a 2,120 square foot energy storage system enclosures.

As indicated in Table 5, operational-generated emissions would not exceed SJVAPCD significance thresholds. A less than significant impact would occur as a result of operation of the proposed Project. No mitigation is required.

c) *Would the Project expose sensitive receptors to substantial pollutant concentrations?*

Less than Significant Impact. Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. There are no sensitive receptors in the immediate vicinity to the Project site.

Construction-Generated Air Contaminants

Construction-related activities would result in temporary, short-term Project-generated emissions of diesel particulate matter (DPM) from the exhaust of off-road, heavy-duty diesel equipment for site preparation (e.g., clearing, grading); soil hauling truck traffic; paving; and other miscellaneous activities. For construction activity, DPM is the primary Toxic Air Contaminant (TAC) of concern. Particulate exhaust emissions from diesel-fueled engines (i.e., DPM) were identified as a TAC by the CARB in 1998. The potential cancer risk from the inhalation of DPM, as discussed below, outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs. Accordingly, DPM is the focus of this discussion.

Based on the emission modeling conducted, the maximum construction-related emissions of exhaust $PM_{2.5}$, considered a surrogate for DPM, would be 3.13 pounds per day (see Attachment A of Appendix A) during construction activity ($PM_{2.5}$ is considered a surrogate for DPM because more than 90 percent of DPM is less than one microgram in diameter and therefore is a subset of particulate matter under 2.5 microns in diameter [i.e., $PM_{2.5}$], according to CARB. Most $PM_{2.5}$ derives from combustion, such as use of gasoline and diesel fuels by motor vehicles.) Furthermore, even during the most intense month of construction, emissions of DPM would be generated from different locations on the Project site, rather than a single location, because different types of construction activities (e.g., site preparation, grading, paving) would not occur at the same place at the same time.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for any exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-, 30-, or nine-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the Project. Consequently, an important consideration is the fact that construction of the Project is anticipated to last 14 months. Therefore, considering the relatively low mass of DPM emissions that would be generated during even the

most intense season of construction, the relatively short duration of construction activities required to develop the site, the highly dispersive properties of DPM, and the lack of nearby sensitive receptors, construction-related TAC emissions would not expose sensitive receptors to substantial amounts of air toxics.

Naturally Occurring Asbestos

Another potential air quality issue associated with construction-related activities is the airborne entrainment of asbestos due to the disturbance of naturally occurring asbestos-containing soils. The Project is not located within an area designated by the State of California as likely to contain naturally occurring asbestos (DOC 2000). As a result, construction-related activities would not be anticipated to result in increased exposure of sensitive land uses to asbestos.

Valley Fever

Coccidioidomycosis (CM), often referred to as San Joaquin Valley Fever or Valley Fever, is one of the most studied and oldest known fungal infections. Valley Fever most commonly affects people who live in hot dry areas with alkaline soil and varies with the season. This disease, which affects both humans and animals, is caused by inhalation of arthroconidia (spores) of the fungus *Coccidioides immitis* (CI). CI spores are found in the top few inches of soil and the existence of the fungus in most soil areas is temporary. The cocci fungus lives as a saprophyte in dry, alkaline soil. When weather and moisture conditions are favorable, the fungus "blooms" and forms many tiny spores that lie dormant in the soil until they are stirred up by wind, vehicles, excavation, or other ground-moving activities and become airborne. Agricultural workers, construction workers, and other people who work outdoors and who are exposed to wind and dust are more likely to contract Valley Fever. Children and adults whose hobbies or sports activities expose them to wind and dust are also more likely to contract Valley Fever. After the fungal spores have settled in the lungs, they change into a multicellular structure called a spherule. Fungal growth in the lungs occurs as the spherule grows and bursts, releasing endospores, which then develop into more spherules.

Valley Fever (CM) is found in California, including Kings County. In about 50 - 75 percent of people, Valley Fever causes either no symptoms or mild symptoms and those infected never seek medical care; when symptoms are more pronounced, they usually present as lung problems (cough, shortness of breath, sputum production, fever, and chest pains). The disease can progress to chronic or progressive lung disease and may even become disseminated to the skin, lining tissue of the brain (meninges), skeleton, and other body areas.

The California Department of Public Health (2016) considers Kings County a highly endemic area for Valley Fever. When soil containing this fungus is disturbed by ground-disturbing activities such as digging or grading, by vehicles raising dust, or by the wind, the fungal spores get into the air. When people breathe the spores into their lungs, they may get Valley Fever. Fungal spores are small particles that can grow and reproduce in the body. The highest infection period for Valley Fever occurs during the driest months in California, between June and November. Infection from Valley Fever during ground-disturbing activities can be partially mitigated through the control of Project-generated dust. As noted, Project-generated dust would be controlled by adhering to SJVAPCD dust-reducing measures (Regulation VIII),

which includes the preparation of a SJVAPCD-approved dust control plan describing all fugitive dust control measures that are to be implemented before, during, and after any dust-generating activity.

With minimal site grading and conformance with SJAPCD Regulation VIII, dust from the construction of the Project would not add significantly to the existing exposure level of people to this fungus, including construction workers.

Operational Air Contaminants

The Project involves the construction of a solar energy generation facility. The Project will not include the provision of new permanent stationary or mobile sources of emissions, and therefore, by its very nature, would not generate quantifiable air toxic emissions from Project operations.

Carbon Monoxide Hot Spots

It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections. Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Under certain meteorological conditions, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Given the high traffic volume potential, areas of high CO concentrations, or "hot spots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours. However, transport of this criteria pollutant is extremely limited, and CO disperses rapidly with distance from the source under normal meteorological conditions. Furthermore, vehicle emissions standards have become increasingly more stringent in the last 20 years. Currently, the CO standard in California is a maximum of 3.4 grams per mile for passenger cars (requirements for certain vehicles are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations across the state have steadily declined.

As described in Section 4.16 Transportation/Traffic, Project traffic volumes would be very low. The Project would not increase traffic volumes at any intersection to more than 100,000 vehicles per day, there is no likelihood of the Project traffic exceeding CO values.

The Project would result in less than significant impacts concerning the exposure of people to substantial concentrations of air toxics. No mitigation is required.

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

Less than Significant Impact. Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Construction

During construction, the Project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site. However, these emissions are short term in nature and will rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Additionally, odors would be localized and generally confined to the construction area. Therefore, under CEQA, construction odors would result in a less than significant impact related to odor emissions. No mitigation is required.

Operations

The CARB's *Air Quality and Land Use Handbook* (2005) identifies the sources of the most common operational odor complaints received by local air districts. Typical sources include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. The Project does not contain any of the land uses identified as typically associated with emissions of objectionable odors

The SJVAPCD 2015 Guidance for Assessing and Mitigating Air Quality Impacts includes a table to serve as a screening tool of assessing potential odor sources (Table 6, page 103). The construction of a commercial grade PV solar facility is not listed within SJVAPCD's table. While the Project solar facility would not be a source of any odor once in operation, the combustion of fuel by construction vehicles would emit odors during the approximate eight-month construction period. However, there are no sensitive receptors or significant numbers of people in the vicinity of the Project site. There are no other types of emissions associated with project construction or operation that would adversely affect a substantial number of people. As such, a less than significant impact would occur. No mitigation is required.

Decommissioning

Decommissioning of the Project is expected to involve a similar level of activity as construction, but of shorter duration (i.e., two months). As indicated above, construction emissions are calculated to be well below the SJVAPCD thresholds for each pollutant, which would also be expected to be the case for decommissioning emissions. Therefore, Project decommissioning would not violate any air quality standard or contribute substantially to an existing or projected air quality violation, and the Project's air quality impact from decommissioning emissions would be less than significant.

4.4 Biological Resources

4.4.1 Biological Resources (IV.) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	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 U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.4.2 Environmental Setting

Data Sources

ECORP prepared a Biological Technical Report for the Project on September 22, 2017 (ECORP 2017a). Included in this report are findings from a literature review and biological reconnaissance survey. The Biological Technical Report can be found in Appendix B, and results are summarized throughout this section.

Prior to conducting the biological reconnaissance survey, a literature review was performed using the CDFW's California Natural Diversity Database (CNDDDB; CDFW 2017a) and the California Native Plant Society's (CNPS') Electronic Inventory (CNPSEI; CNPS 2017) to determine the special-status species that have been documented in the vicinity of the Project site. The CNDDDB and CNPSEI database searches were conducted on August 28, 2017 (CDFW 2017a; CNPS 2017). ECORP searched CNDDDB and CNPSEI records within the Project boundaries as depicted on USGS 7.5-minute Avenal Gap topographic quadrangle, plus the surrounding eight topographic quadrangles, including Antelope Plain, Dudley Ridge, Emigrant Hill,

Kettleman Plain, Los Viejos, Pyramid Hills, Sawtooth Ridge, and West Camp. The CNDDDB and CNPSEI contain records of reported occurrences of federal and/or State-listed endangered, threatened, proposed endangered, or threatened species, California Species of Special Concern, and/or other special-status species or habitats that may occur on or in the vicinity of the Project. Additional information was gathered from the following sources and includes but is not limited to: NRCS Web Soil Survey (NRCS 2017); State and Federally Listed Endangered and Threatened Animals of California (California Department of Fish and Game [CDFG] 2019); Special Animals List (CDFW 2017b); The Jepson Manual (Hickman 1993); various online websites (e.g., Calflora 2017); and The Manual of California Vegetation, 2nd Edition (Sawyer et al. 2009).

Field Survey

The biological reconnaissance survey was conducted for the purposes of determining the baseline biological conditions and to identify any biological constraints that could affect the site plan for the Project. This included characterizing the vegetation communities present on the Project site, identifying suitable habitat for special-status species, and assessing the potential for special-status species and habitats to occur. The Project site consists of undeveloped land in an unincorporated area near Kettleman City, Kings County, California. The Project site consists of one parcel totaling 40 acres. The APN for the Project site is 048-350-016-000. The Project will be subject to county, State, and federal regulations regarding compliance with the federal Endangered Species Act (ESA), California ESA, Migratory Bird Treaty Act (MBTA), and California Fish and Game Code.

General Site Characteristics

The property consists of nonnative grassland that is currently being grazed by cattle. Overall, plants observed on the project site during the survey consist of mostly nonnative grasses and forbs, including foxtail brome (*Bromus madritensis*), wild oat (*Avena fatua*), red-stemmed filaree (*Erodium cicutarium*), and Russian thistle (*Salsola tragus*). The nonnative grassland on the Project site is dominated by foxtail brome and wild oat. Cattle trails and manure are prevalent throughout the Project site, but otherwise the Project site is largely undisturbed. A review of historical aerial images confirmed that the Project site has largely remained unchanged dating back at least 20 years. The substrate on the Project site is generally sandy loam and the soil onsite consists of Cantua coarse sandy loam and Kimberlina fine sandy loam (NRCS 2017). Surrounding land uses consist of agriculture, cattle grazing, agriculture processing plants, open land, and solar energy development.

Special-Status Species

Wildlife

No special-status species were observed during the site visit; however, the Project site provides suitable habitat for five special-status wildlife species that have high or moderate potential to occur based on the presence of suitable habitat and documented observations of the species in the vicinity of the Project site.

Species with high potential to occur are:

- Burrowing owl (*Athene cunicularia*),
- American badger (*Taxidea taxus*), and

- San Joaquin kit fox (*Vulpes macrotis mutica*).

Species with moderate potential to occur are:

- San Joaquin (Nelson's) antelope squirrel (*Ammospermophilus nelson*), and
- San Joaquin whipsnake (*Masticophis flagellum ruddocki*).

The following species have a low potential to occur on the Project site because limited habitat for the species occurs onsite and a known occurrence has been reported in the database, but not within five miles of the site, or suitable habitat strongly associated with the species occurs on site, but no records were found in the database search.

Species with low potential to occur are:

- Tricolored blackbird (*Agelaius tricolor*),
- Swainson's hawk (*Buteo swainsoni*), and
- Giant kangaroo rat (*Dipodomys ingens*).

Migratory birds may occur during nesting season.

Plants

No special-status plants were observed during the field surveys; however, suitable habitat for special-status plant species was present on the Project site. Three special-status plant species were determined to have a high to moderate potential to occur on the Project site based on the presence of suitable habitat and documented observations of the species in the vicinity of the Project site. These include the federally listed San Joaquin woollythreads (*Monolopia congdonii*) with a high potential to occur, the Lost Hills crownscale (*Atriplex coronata* var. *vallicola*) with a moderate potential to occur, and Recurved larkspur (*Delphinium recurvatum*) with a moderate potential to occur.

4.4.3 Regulatory Setting

Federal Regulations and State or Local Regulatory Requirements

This literature review and biological reconnaissance survey were conducted to identify potential issues and ensure compliance with State and federal regulations regarding listed, protected, and sensitive species. The regulations are detailed below:

- The federal ESA of 1973 (16 U.S. Code [USC]. section 1531 et seq.) provides for the conservation of endangered and threatened species listed pursuant to Section 4 of the federal ESA (16 USC § 1533) and the ecosystems upon which they depend. Two sections of this law mandate protection for species in this category: ESA § 9: It is unlawful for anyone to "take" a listed animal. Take may be direct, e.g., harming or killing species, and indirect, e.g., by significantly modifying its habitat in such a way that it causes harm to the species (USFWS 1973). The second part, Section 7 of the federal ESA (16 USC § 1536) requires federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of Critical Habitat for these species. The USFWS administers this federal program (USFWS 1973).

- The California ESA (California Fish and Game Code § 2050 et seq.) requires the CDFW to establish a list of endangered and threatened species (§ 2070) and to prohibit the incidental taking of any such listed species except as allowed by the ESA (§§ 2080-2089). In addition, the California ESA prohibits take of candidate species (under consideration for listing). The definition of “take” includes harass, harm, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.
- The California ESA also requires the CDFW to comply with CEQA (PRC § 21000 et seq.) when evaluating incidental take permit applications [California Fish and Game Code § 2081(b) and CCR, Title 14, § 783.0 et seq.], and the potential impacts the project or activity for which the application was submitted may have on the environment. The CDFW’s CEQA obligations include consultation with other public agencies that have jurisdiction over the project or activity [CCR, Title 14, § 783.5(d)(3)], but in no event may the CDFW issue an incidental take permit if issuance would jeopardize the continued existence of the species [California Fish and Game Code § 2081(c); CCR, Title 14, section 783.4(b)] (CDFG 1984).
- The MBTA of 1918 (16 USC § 703-712) is a federal law that implements international treaties and conventions held to protect migratory birds (USFWS 1918). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 Code of Federal Regulations (CFR) Part 10. This includes feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The MBTA requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (February 1 to August 31, annually) to avoid nest abandonment and/or loss of eggs or young. The loss of habitat upon which the birds depend could constitute a violation of the MBTA. In addition to MBTA, CDFW also enforces the protection of non-game native birds. Sections 3503, and 3503.5 of the California Fish and Game Code mandate the protection of California non-game native birds’ nests, and California Fish and Game Code § 3800 makes it unlawful to take California-native non-game birds (CDFG 1984).
- The Bald and Golden Eagle Protection Act (The Eagle Act) of 1940 and amended in 1962 was first employed for the protection of bald eagles (*Haliaeetus leucocephalus*). In 1962 the Eagle Act was amended to include golden eagles (*Aquila chrysaetos*) as well. This addition was made to help strengthen the protection of bald eagles who were often times killed by people confusing them with golden eagles. This act has made it illegal to import, export, take, sell, purchase, or barter bald or golden eagles (USFWS 1940).
- The Native Plant Protection Act (NPPA) of 1977 (California Fish and Game Code §§ 1900-1913) is a State act that was created to help “preserve, protect, and enhance rare and endangered plants in this state.” The NPPA is regulated by the CDFW who has the authority to classify native plants as endangered or rare to help prevent these species from take. Endangered and rare plants species would also be provided additional protection under the California ESA.

4.4.4 Environmental Impacts and Mitigation Measures

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

Less than Significant with Mitigation Incorporated. The proposed Project site consists of nonnative grassland that is currently being grazed by cattle. The nonnative grassland on the Project site is varied, as there are some areas of the Project site that consist of sparse low growing grasses and forbs, while the majority of the Project site consists of tall dense nonnative grasses. The nonnative grassland on the Project site is dominated by foxtail brome and wild oat. Cattle trails and manure are prevalent throughout the Project site, but the Project site is otherwise largely undisturbed. A review of historical aerial images confirmed that the Project site has largely remained unchanged dating back at least 20 years.

No special-status wildlife species were observed during the field surveys; however, there is a high to moderate potential for the Project to cause adverse impacts to five special-status wildlife species: burrowing owl, American badger, San Joaquin kit fox, San Joaquin (Nelson's) antelope squirrel, and, San Joaquin whipsnake, as well as numerous species of migratory birds. Impacts to these species would be less than significant with the incorporation of Mitigation Measures BIO-1 through BIO-4.

No special-status plants were observed during the field surveys; however, suitable habitat for special-status plant species was present on the Project site. Three special-status plant species were determined to have a high to moderate potential to occur on the Project site based on the presence of suitable habitat and documented observations of the species in the vicinity of the Project site. These include the federally listed San Joaquin woollythreads with a high potential to occur, the Lost Hills crowscale with a moderate potential to occur, and Recurved larkspur with a moderate potential to occur. Impacts to these species would be less than significant with incorporation of Mitigation Measure BIO-5.

Mitigation Measures

BIO-1 Preconstruction Surveys for Burrowing Owl: Preconstruction surveys for burrowing owl shall be conducted by a qualified biologist. The surveys shall follow the methods described in the CDFW's Staff Report on Burrowing Owl Mitigation (CDFG 2012). Two surveys shall be conducted, with the first survey being scheduled between 30 and 14 days before initial ground disturbance (grading, grubbing, and construction), and the second survey being conducted no more than 24 hours prior to initial ground disturbance. If burrowing owls and/or suitable burrowing owl burrows are identified on the project site during the survey, consultation with CDFW and the Kings County CDA shall take place and methods listed in the CDFW's Staff Report on Burrowing Owl Mitigation (CDFG 2012) for avoidance and/or passive relocation shall be followed.

Timing/Implementation: *Prior to Construction*

Monitoring/Enforcement: *Kings County*

BIO-2 Preconstruction Survey for San Joaquin Kit Fox and American Badger: A preconstruction survey for San Joaquin kit fox and American badger shall be conducted between 30 and 14 days prior to the beginning of ground disturbance and/or construction activities or any Project activity

likely to impact San Joaquin kit fox. The survey shall be conducted according to the guidelines listed in the USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 2011). If San Joaquin kit fox or American badger and/or suitable San Joaquin kit fox or American Badger dens are identified on the Project site during the preconstruction survey, consultation with CDFW, USFWS, and the Kings County CDA shall take place before proceeding and should follow the USFWS guidelines for avoidance, exclusion, and/or passive relocation.

Timing/Implementation: *Prior to Construction*

Monitoring/Enforcement: *Kings County*

BIO-3 Preconstruction Burrow Survey for Special-Status Small Mammal Species and Blunt-Nosed Leopard Lizard: Special-status small mammal and blunt-nosed leopard lizard are dependent on burrows to survive. Therefore, a preconstruction burrow survey for San Joaquin antelope squirrel, giant kangaroo rat, Tipton kangaroo rat, and blunt-nosed leopard lizard should be conducted to determine if there are suitable burrows for these species on the Project site. The survey should be conducted by a biologist experienced in identifying small mammal burrows. The survey should consist of walking the entire project site and identifying all burrows suitable for special-status small mammals and blunt-nosed leopard lizard. All small mammal burrows shall be marked with a Global Positioning System unit and avoided by construction. A 50-foot disturbance limit buffer will be placed around all identified small mammal burrows. The burrow and associated buffer must be avoided by construction, if avoidance of suitable small mammal burrows is not possible, the Project shall conduct focused surveys for special-status small mammal species and blunt-nosed leopard lizard according to the accepted USFWS and/or CDFW protocols. If special-status small mammal species or blunt-nosed leopard lizard are identified on the Project site during the focused surveys, the Project shall initiate consultation with USFWS, CDFW, and the Kings County CDA to obtain the necessary incidental take permit authorizations or provided evidence that such a permit is not required before proceeding.

Timing/Implementation: *Prior to Construction*

Monitoring/Enforcement: *Kings County*

BIO-4 Preconstruction Nesting Bird and Raptor Survey: If construction or other Project activities are scheduled to occur during the bird breeding season (February through August for raptors and March through August for most other birds), a pre-construction nesting-bird survey shall be conducted by a qualified biologist. The survey shall be completed no more than 14 days prior to initial ground disturbance. The nesting-bird survey shall include the Project site and adjacent areas where Project activities have the potential to cause nest failure. If any active nests are identified, a qualified biologist shall establish an appropriate disturbance limit buffer around the nest using flagging or staking. Construction activities will need to be avoided within any disturbance limit buffer zones until the nest is deemed no longer active by the biologist.

Timing/Implementation: *Prior to Construction*

Monitoring/Enforcement: *Kings County*

BIO-5 Rare Plant Survey: Focused surveys for special-status plants, including the federally listed endangered San Joaquin woollythreads, should be conducted on the Project site. The survey shall be conducted according to the CNPS Botanical Survey Guidelines (CNPS 2001). The survey shall be conducted during the appropriate time of year required for identification of the species (February-May for most San Joaquin valley species). If the surveys are conducted outside of the appropriate blooming periods for the target species the results may be rejected by CDFW. If special-status plants are found on the project site, CDFW and/or USFWS and the Kings County CDA shall be consulted to discuss appropriate mitigation measures. Mitigation measures could include, but are not limited to, seed collection and/or transplanting.

Timing/Implementation: *Prior to Construction*

Monitoring/Enforcement: *Kings County*

b) *Would the Project 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 U.S. Fish and Wildlife Service?*

No Impact. During the literature review, a desktop review of the NRCS Web Soil Survey was conducted to determine if there were any blue line streams or drainages that may potentially fall under the jurisdiction of either federal or State agencies. No blue line streams or hydric soils were identified on the Project site (NRCS 2017). During the biological reconnaissance survey, no hydric soils, jurisdictional drainages, stream courses, wetlands, and/or other water features were identified on the Project site. No sensitive natural communities or riparian habitat were identified on the Project site. The California Aqueduct is located approximately 900 feet east of the Project site; however, no impacts to the California Aqueduct are anticipated. No impact would occur. No mitigation is required.

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

No Impact. As previously stated, based on a literature review and site conditions observed on August 31, 2017, no hydric soils, jurisdictional drainages, stream courses, wetlands, and/or other water features were identified. The California Aqueduct is located approximately 900 feet east of the Project site; however, no impacts to the California Aqueduct are anticipated. No impact would occur. No mitigation is required.

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

Less than Significant with Mitigation Incorporated. The Project site does not support a major wildlife movement corridor, and wildlife movement is not expected to be impacted by the Project. All native birds, including raptors, are protected under California Fish and Game Code and the MBTA. As previously stated in the discussion of item a), prior to commencing ground disturbance activities, Mitigation Measures BIO-1 through BIO-4 shall be implemented to ensure that there are no impacts to protected active nests and these other special-status wildlife species and therefore would not impede the use of native wildlife nursery sites. Impacts to nesting birds and special-status wildlife species would be less than significant with the incorporation of Mitigation Measures BIO-1 through BIO-4.

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

No Impact. The Project is located within an agriculturally zoned area within unincorporated Kings County. Additionally, the Project site is located within an area designated by the DOC as Grazing Land, on which the existing vegetation is suited to the grazing of livestock. According to Figure RC-13 Priority Agricultural Land (Kings County General Plan 2010, Page RC-20), the subject parcel is classified as "Very Low Priority". There are no trees on the site. The Project would not conflict with any local policies or ordinances protecting biological resources. No impact would occur. No mitigation is required.

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

No Impact. According to the Kings County 2035 General Plan, the subject property lies within a designated agricultural area located in unincorporated Kings County. The Project site is located within an area designated by the DOC as Grazing Land, on which the existing vegetation is suited to the grazing of livestock. According to Figure RC-13 Priority Agricultural Land (2035 Kings County General Plan, Resource Conservation Element, Page RC-20), the subject parcel is classified as "Very Low Priority". It is not located within the boundaries of any approved habitat conservation plans. No impact would occur.

4.5 Cultural Resources

4.5.1 Cultural Resources (V.) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.5.2 Environmental Setting

Cultural Resources

A Cultural Resources Inventory Report was prepared by ECORP (ECORP 2017b, Appendix C) for the Project to determine if cultural resources were present in or adjacent to the Project area and assess the sensitivity of the Project area for undiscovered or buried cultural resources. The cultural context of the Project area including regional and local prehistory, ethnography, and regional and Project area histories can be found in the report in Appendix C.

The analysis of cultural resources was based on a records and literature search conducted at the Southern San Joaquin Valley Information Center on August 29, 2017, a literature review, and a field survey on September 29, 2017. The literature search included the results of previous surveys within a one-mile radius of the Project location.

A search of the Sacred Lands File by the NAHC showed no Native American cultural resources in the Project area.

Cultural Resources Records Search and Literature Review

The records search results indicate that six previous cultural resources surveys have been conducted within a one-mile radius of the Project area. Of these, one study occurred within portions of the Project area. The records search indicated that there were no previously recorded cultural resources located within the Project area, and one cultural resource has been documented within a one-mile radius of the Project area. The single resource recorded outside of Project boundaries, but within one mile of the Project area, consists of two segments of the same resource: the California Aqueduct, one segment of which was recorded in the County (P16-000266/CA-KIN-000108H) and another segment of which was recorded in Kern County (P15-015820/CA-KER-008698H). Portions of the California Aqueduct have been evaluated and recommended as eligible for listing on the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR). The results of the search of the Sacred Lands File by the NAHC did not indicate the presence of any Native American cultural resources within one mile of the Project area.

Cultural Resources Survey

Following a review of the records search results, an intensive field survey of the Project area was conducted. The field survey revealed the Project area to be disturbed by livestock grazing. One cultural resource was identified during the field survey. This consists of one historic-period isolated find consisting of a sun-colored amethyst bottle. This isolated find was evaluated using NRHP/CRHR eligibility criteria and found not eligible for listing on the NRHP/CRHR under any criteria.

Native American Consultation

The following California Native American tribe(s) traditionally and culturally affiliated with the Project area have been notified of the Project: Santa Rosa Rancheria Tachi Yokut Tribe. Notice was provided with the Kings County CDA's Project Review-Consultation Notice (8/23/2017). No tribes have requested consultation pursuant to PRC section 21080.3.1. A copy of the notification is on file with the Kings County CDA Planning Division.

4.5.3 Environmental Impacts and Mitigation Measures

a) *Would the Project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?*

Less than Significant with Mitigation Incorporated. As a result of the cultural resources study, one cultural resource, a historic-period isolated find consisting of a sun-colored amethyst bottle was identified within the Project area. This isolated find was evaluated using CRHR eligibility criteria and found not eligible for listing on the CRHR under any criteria. Therefore, the isolated find does not meet the definition

of a Historical Resource as defined by CEQA. No other archaeological resources or built environment resources were identified within the Project area. Because there known resources that meet the definition of a Historical Resource within the Project area, there will be no significant impacts to known Historical Resources as a result of the proposed Project.

The archaeological sensitivity of the Project area is believed to be low. However, the sediments within the Project area consist of Holocene alluvium that is concurrent with human occupation of the region. There always remains a possibility that unanticipated cultural resources are present beneath the ground surface, and that such resources could be exposed during Project construction. CEQA requires the lead agency to address any unanticipated cultural resource discoveries during Project construction.

Construction activity could result in the inadvertent exposure of Historical Resources that could be eligible for inclusion on the CRHR. This potentially significant project impact to historic resources would be reduced to a less than significant level through the implementation of Mitigation Measure CUL-1 below.

Mitigation Measure

CUL-1 Protection of Cultural Resources. In order to avoid the potential for impacts to historic and prehistoric archaeological resources, the following measures shall be implemented, as necessary, with the construction of each phase of the Project:

- a. Cultural Resources Alert on Project Plans: The Project proponent shall note on any plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources.
- b. Pre-Construction Briefing: The Project proponent shall retain Santa Rosa Rancheria Cultural Staff to provide a pre-construction Cultural Sensitivity Training to construction staff regarding the discovery of cultural resources and the potential for discovery during ground-disturbing activities, which will include information on potential cultural material finds and, on the procedures, to be enacted if resources are found.
- c. Stop Work Near Any Discovered Cultural Resources: The Project proponent shall retain a professional archaeologist on an "on-call" basis during ground-disturbing construction for the Project to review, identify, and evaluate cultural resources that may be inadvertently exposed during construction. Should previously unidentified cultural resources be discovered during construction of the Project, the Project proponent shall cease work within 100 feet of the resources, and Kings County CDA shall be notified immediately. The archaeologist shall review and evaluate any discoveries to determine if they are historical resource(s) and/or unique archaeological resources under CEQA.
- d. Mitigation for Discovered Cultural Resources: If the professional archaeologist determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource, he/she shall notify the Project proponent and other appropriate parties of the evaluation and recommended mitigation measures to mitigate the impact to a less than significant level. Mitigation measures may include avoidance, preservation in-place, recordation, and additional archaeological testing and data recovery,

- among other options. Treatment of any significant cultural resources shall be undertaken with the approval of the Kings County CDA. The archaeologist shall document the resources using DPR 523 forms and file said forms with the California Historical Resources Information System, Southern San Joaquin Valley Information Center. The resources shall be photo-documented and collected by the archaeologist for submittal to the Santa Rosa Rancheria's Cultural and Historical Preservation Department. The archaeologist shall be required to submit to the County for review and approval a report of the findings and method of curation or protection of the resources. Further grading or site work within the area of discovery shall not be allowed until the preceding steps have been taken.
- e. Native American Monitoring: Prior to any ground disturbance, the Project proponent shall offer the Santa Rosa Rancheria Tachi Yokut Tribe the opportunity to provide a Native American Monitor during ground-disturbing activities during both construction and decommissioning. Tribal participation would be dependent upon the availability and interest of the Tribe.
- f. Disposition of Cultural Resources: Upon coordination with the Kings County Community Development Agency, any pre-historic archaeological artifacts recovered shall be donated to an appropriate Tribal custodian or a qualified scientific institution where they would be afforded applicable cultural resources laws and guidelines.

Timing/Implementation: *During the construction period*

Monitoring/Enforcement: *County and Project Contractor*

b) *Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?*

Less than Significant with Mitigation Incorporated. One historic-period isolated find was identified as a result of the cultural resources study. This isolated find was evaluated for the CRHR and found not eligible for listing on the CRHR under any criteria. This isolated find is not considered a Historical Resource under CEQA. In addition, this resource is not considered a unique archaeological resource as defined by CEQA. Because no known Historical Resources or known unique archaeological resources have been identified within the Project area, there will be no significant impacts to known Historical Resources or known unique archaeological resources as a result of the Project.

A less than significant impact to unanticipated buried resources, if present, would occur with implementation of Mitigation Measure CUL-1 above.

c) *Would the Project disturb any human remains, including those interred outside of dedicated cemeteries?*

Less than Significant with Mitigation Incorporated. A search of the Sacred Lands File by the NAHC failed to indicate the presence of Native American cultural resources in the Project area (ECORP 2017c). While there is no reason to suspect the presence of human remains in the Project area, it is possible that currently unknown remains may occur. In the event that evidence of human remains is discovered the requirements of Mitigation Measure CUL-2 will be implemented. With implementation of mitigation measure CUL-2, this impact would be less than significant.

CUL-2 In the event that evidence of human remains is discovered, construction activities within 100 feet of the discovery will be halted or diverted and the requirements of Mitigation Measure #1 will be implemented. In addition, the provisions of Section 7050.5 of the California Health and Safety Code, § 5097.98 of the California PRC, and AB 2641 will be implemented. When human remains are discovered, State law requires that the discovery be reported to the County Coroner (§ 7050.5 of the Health and Safety Code) and that reasonable protection measures be taken during construction to protect the discovery from disturbance (AB 2641). If the Coroner determines the remains are Native American, the Coroner notifies the NAHC, which then designates a Native American Most Likely Descendant (MLD) for the Project (§ 5097.98 of the PRC). The designated MLD then has 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains (AB 2641). If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (§ 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§ 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a document with the county in which the property is located (AB 2641).

Timing/Implementation: During the construction period

Monitoring/Enforcement: Kings County and Project Contractor

4.6 Geology and Soils

4.6.1 Geology and Soils (VI.) Materials Checklist

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	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.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f)	Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4.6.2 Environmental Setting

Regional Seismicity and Fault Zones

An "active fault," according to DOC, Division of Mines and Geology, is a fault that has indicated surface displacement within the last 11,000 years. A fault that has not shown geologic evidence of surface displacement in the last 11,000 years is considered "inactive."

Over the past 200 years, Kings County has not experienced any damaging earthquake equal to or greater than a Mercalli Index (M) 6.0. However, several more significant earthquakes have occurred in close proximity of the Kings County boundary. The largest and most forceful earthquake was the 1857 Fort Tejon earthquake (M 7.9) with an epicenter that occurred in Monterey County approximately seven miles west of the Kings County boundary in the community of Parkfield. During this event the San Andreas Fault ruptured for a length of approximately 225 miles between Parkfield and San Bernardino. The largest earthquake in Southern California since the Fort Tejon earthquake was the 1952 Kern County earthquake (M 7.3), which occurred on the White Wolf fault. The epicenter for this quake occurred approximately 38 miles southeast of the Kings County boundary near Bakersfield and produced ground shaking felt over 200 miles away.

The most recent earthquakes to impact Kings County occurred during the 1980s. The 1982 New Idria earthquake (M 5.4) and the 1983 Coalinga (M 6.5) earthquake both occurred approximately 20 miles from the western border of Kings County. These two earthquakes were followed by the 1985 Kettleman Hills earthquake (M 6.1) with an epicenter located four miles west of the Kings County border just north of the

city of Avenal. All three of these earthquake incidents produced low-level ground shaking and low local magnitude in Kings County.

Soils

The NRCS Web Soil Survey website (NRCS 2017) indicates that two soil types are located within the Project site: Kimberlina fine sandy loam, sandy substratum, and Cantua coarse sandy loam, 5 to 15 percent slopes.

4.6.3 Geology and Soils (VI.) Environmental Checklist and Discussion

a) *Would the Project 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.*

Less than Significant Impact. The potential for extensive surface rupture is considered to be minimal, since Kings County has no known major fault systems within its territory. The greatest potential for geologic disaster in Kings County is posed by the San Andreas Fault, which is located approximately four miles west of the Kings County line boundary with Monterey County. The San Andreas Fault marks the divide between the North American and the Pacific Tectonic Plates.

Another large fault that may pose potential geologic hazards for Kings County is the White Wolf fault located south of the county near Arvin and Bakersfield. Due to the distance between the Project site and major fault systems, the potential for damage due to direct fault rupture is considered unlikely. Thus, impacts would be less than significant. No mitigation is required.

The primary hazard due to seismic activity in Kings County would come from ground shaking. The potential for ground shaking is discussed in terms of the percent probability of exceeding peak ground acceleration (% g) in the next 50 years. The potential for ground shaking in the Project area ranges from 40-50% g. Compliance with the structural standards contained in the California Building Code for solar projects would minimize risks to the public from strong seismic ground shaking and would ensure that impacts are less than significant. No mitigation is required.

ii) *Strong seismic ground shaking?*

Less than Significant Impact. Please see Question a) Section i). Impacts from strong seismic ground shaking are less than significant. No mitigation is required.

iii) *Seismic-related ground failure, including liquefaction?*

No Impact. Liquefaction is a phenomenon where water-saturated granular soil loses shear strength during strong ground shaking produced by earthquakes. The loss of soil strength occurs as a consequence of cyclic pore water pressure increases below the groundwater surface. Potential hazards due to liquefaction include loss of bearing strength beneath structures, possibly causing foundation failure and/or significant settlements and differential settlements. Liquefaction generally occurs in areas where the ground water table is less than 50 feet below the surface. The California Geological Survey (CGS)

identifies areas of California that are considered susceptible to liquefaction on their Information Warehouse: Regulatory Maps web-based mapping program (CGS 2015). According to this map, the Project site is not located in an area considered to be susceptible to liquefaction. Additionally, the Project is the installation of solar array facilities. No occupied structures would be constructed with implementation of the Project. For these reasons, the proposed Project will have no adverse effects that could result in risk of loss, injury, or death due to liquefaction that may occur during a seismic event. No impact would occur. No mitigation is required.

iv) Landslides?

No Impact. Landslides refer to a wide variety of processes that result in the perceptible downward and outward movement of soil, rock, and vegetation under gravitational influence. Common names for landslide types include slump, rockslide, debris slide, lateral spreading, debris avalanche, earth flow, and soil creep. Landslides may be triggered by both natural- and human-induced changes in the environment resulting in slope instability. The Project is located on relatively level terrain and no hillsides exist in the immediate area. No impact would occur. No mitigation is required.

b) Would the Project result in substantial soil erosion or the loss of topsoil?

Less than Significant Impact. According to the NRCS Web Soil Survey website (NRCS 2017), two soil types are located within the proposed Project site: Kimberlina fine sandy loam, sandy substratum and Cantua coarse sandy loam, 5 to 15 percent slopes. Both of these soils have a slight erosion potential for off-road areas. Cantua coarse sandy loam has a severe erosion potential for on-road and trail areas.

All excavation activities, grading, and construction would be conducted according to standard construction practices and building codes. Since the Project would affect more than one acre, a NPDES permit would be required for construction activities from the RWQCB, requiring a SWPPP. Implementation of the SWPPP, including the use of stormwater quality Best Management Practices (BMPs), would prevent erosion of soil from storm water runoff during Project construction (see Hydrology and Water Quality: Section IX of this Environmental Checklist). Once construction is completed, soils would be stabilized and monitored according to the SWPPP until a Notice of Termination for the NPDES construction permit is filed with the RWQCB. Consequently, the proposed Project would not result in substantial erosion and/or unstable earth conditions from Project construction or operation. For these reasons, erosion-related impacts are considered to be less than significant. No mitigation is required.

c) Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

No Impact. The Project site is located on relatively flat and level ground. There are no significant slopes in the immediate vicinity of the Project that would affect the Project site. There would be no impact from landslides at the Project site.

Lateral spreading is the horizontal movement or spreading of soil toward an open face, such as a streambank, the open side of fill embankments, or the sides of levees. The potential for failure from lateral spreading is highest in areas where there is a high groundwater table, where there are relatively soft and recent alluvial deposits, and where creek banks are relatively high. None of these conditions occur on the

Project site. Finally, since the Project site is relatively flat, the potential for lateral spreading is nominal. As such, the Project would have no impact related to lateral spreading.

Land surface subsidence can be induced by both natural and human phenomena. Natural phenomena include subsidence resulting from tectonic deformations and seismically induced settlements, soil subsidence from consolidation, hydro compaction, rapid sedimentation subsidence from oxidation or dewatering of organic-rich soils, and subsidence related to subsurface cavities. Subsidence related to human activity includes subsurface fluid or sediment withdrawal. Pumping of water for residential, commercial, and agricultural uses from subsurface water tables causes the majority of the identified subsidence in the U.S. According to the USGS, the San Joaquin Valley is located in an area of land subsidence due to groundwater pumping (USGS 2017). However, the proposed Project would not be affected by land subsidence as the Project would not include the construction of any buildings. Additionally, the Project would not increase the use of groundwater as no water, except for the occasional cleaning of the panels, would be used for the Project. Therefore, the Project would have no impact in this area.

As previously mentioned, the CGS identifies areas of California that are considered susceptible to liquefaction on their Information Warehouse: Regulatory Maps web-based mapping program (CGS 2015). According to this map, the Project site is not located in an area considered to be susceptible to liquefaction. No impact would occur.

d) *Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?*

Less than Significant Impact. Expansive soils can shrink and swell with drying and wetting. The shrink-swell potential of expansive soils can result in differential movement beneath foundations. The two soil types found on the Project site, Kimberlina fine sandy loam, sandy substratum and Cantua coarse sandy loam, 5 to 15 percent slopes, are both well-drained soils and are not considered expansive soils (NRCS 2017). A less than significant impact would occur. No mitigation is required.

e) *Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?*

No Impact. Neither septic tanks nor alternative waste water disposal systems are included in the Project. Wastewater generated during construction would consist primarily of sanitary waste, which would be managed through the use of portable toilets. During operation, the site would be unmanned. There would be no sanitary facilities available for workers at the site, including sinks for washing or toilets. No impact would occur. No mitigation is required.

f) *Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

Less than Significant Impact. A paleontological records search performed by the Natural History Museum of Los Angeles (NHMLA) on September 19, 2017 revealed no record of vertebrate fossil localities within the Project area. It was determined by NHMLA that shallow excavations in the younger Quaternary alluvial fan deposits exposed throughout the proposed Project area are unlikely to produce significant

vertebrate fossils. Deeper excavations are not anticipated as a part of the Project. Therefore, this impact is less than significant. No mitigation is required.

4.7 Greenhouse Gas Emissions

4.7.1 Greenhouse Gas Emissions (VII.) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.7.2 Environmental Setting

GHG emissions were evaluated in Section 3.0 of the Air Quality and Greenhouse Gas Assessment prepared by ECORP in February 2019 (ECORP 2019), found in Appendix A. ECORP calculated the resultant GHG emissions of the proposed Project using the CalEEMod, version 2016.3.2, computer program. CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for the use of government agencies, land use planners, and environmental professionals.

GHGs are released as byproducts of fossil fuel combustion, waste disposal, energy use, land use changes, and other human activities. This release of gases, such as CO₂, CH₄, N₂O, and chlorofluorocarbons, creates a blanket around the earth that allows light to pass through, but traps heat at the surface, preventing its escape into space. While this is a naturally occurring process known as the greenhouse effect, human activities have accelerated the generation of GHGs beyond natural levels. The overabundance of GHGs in the atmosphere has led to an unexpected warming of the earth and has the potential to severely impact the earth's climate system.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH₄ traps over 25 times more heat per molecule than CO₂, and N₂O absorbs 298 times more heat per molecule than CO₂. Often, estimates of GHG emissions are presented in CO₂ equivalents (CO₂e). Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO₂ were being emitted.

State Greenhouse Gas Regulations

The State of California promulgates aggressive GHG-reducing regulations including AB 32, the California Global Warming Solutions Act of 2006, which mandates reductions in statewide GHG emissions 1990 levels by 2020. Additionally, Senate Bill (SB) 32 requires the reduction of statewide emissions to levels 40 percent below 1990 levels before 2030.

SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020. SB X1-2 sets a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013, 25 percent by December 31, 2016, and 33 percent by December 31, 2020. SB X1-2 also requires the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California. SB X1-2 mandates that renewables from these sources make up at least 50 percent of the total renewable energy for the 2011-2013 compliance period, at least 65 percent for the 2014-2016 compliance period, and at least 75 percent for 2016 and beyond. In October 2015, SB 350 was signed by Governor Brown, which requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from renewable resources by 2030.

The SJVAPCD provides a tiered approach in assessing significance of project specific GHG emission increases. Projects implementing Best Performance Standards would be determined to have a less than cumulatively significant impact. Otherwise, demonstration of a 29 percent reduction in GHG emissions, from BAU, is required to determine that a project would have a less than cumulatively significant impact. The BAU approach was developed consistent with the GHG emission reduction targets established in the Scoping Plan. However, the BAU portion of the tiered approach is problematic based on the California Supreme Court decision in *Center for Biological Diversity v. California Department of Fish and Wildlife* (referred to as the Newhall Ranch decision hereafter). This California Supreme Court ruling confirmed that when an “agency chooses to rely completely on a single quantitative method to justify a no-significance finding, CEQA demands the agency research and document the quantitative parameters essential to that method.” A 29 percent reduction in GHG emissions from BAU (known as the BAU Threshold) is not supported by quantitative parameters. Therefore, it is recommended that emission thresholds of significance developed by Sacramento Metropolitan Air Quality Management District (SMAQMD) be used for evaluating construction- and operation-related GHG emissions.

Based on the discussion above, the following thresholds are applied to this analysis:

- For the evaluation of construction-related emissions, if the mass emissions associated with construction of the Project would exceed of 1,100 metric tons of CO₂e per year (MTCO₂e/year) then they would be cumulatively considerable.
- For the evaluation of operational emissions, such would not have a significant impact on the environment if they are less than 1,100 MTCO₂e/year.

4.7.3 Environmental Impacts and Mitigation Measures

a) *Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

Less than Significant Impact. The main source of GHG emissions associated with the proposed Project would be combustion of fossil fuels during short-term construction activities. The construction phase of the Project is temporary but would result in GHG emissions from the use of heavy construction equipment and construction-related vehicle trips. The operational phase would result in GHG emissions from worker trips and routine maintenance.

Construction-Generated Greenhouse Gas Emissions

Construction-related activities that would generate GHGs include worker commute trips, haul trucks carrying supplies and materials to and from the Project site, and off-road construction equipment (e.g., dozers, loaders, excavators). Table 6 illustrates the specific construction-generated GHG emissions that would result from construction of the Project.

Table 6. Construction-Related Greenhouse Gas Emissions (Metric Tons per Year)	
Emissions Source	CO ₂ e
2019	425
2020	786
SMAQMD Threshold	1,100
Exceeds Threshold?	No

Source: CalEEMod version 2016.3.2. Refer to Appendix A for Model Data Outputs.

Notes: Emissions account for 2,120-square-foot energy storage system enclosures, the grading of one acre, and a total of 58 average workers traveling a distance of 25 miles to the Project site over the course of construction.

As shown in Table 6, Project construction would not exceed the recommended significance threshold. A less than significant impact would occur.

Operational-Generated Greenhouse Gas Emissions

Operation of the Project would result in GHG emissions associated with minimal worker trips and equipment usage associated with ongoing operations, maintenance, repair, and security. Table 7 summarizes all the direct and indirect annual GHG emissions level associated with the Project.

Table 7. Operational-Related Greenhouse Gas Emissions (Metric Tons per Year)	
Emissions Source	CO ₂ e
Area Source (landscaping, hearth)	0.02
Energy	38.37
Mobile	0.00
Waste	1.32
Water	1.45
Total	41.16
SMAQMD Screening Threshold	1,100
Exceeds Threshold?	No

Source: CalEEMod version 2016.3.2. Refer to Appendix A for Model Data Outputs.

Notes: Emission estimates account for one permanent employee trip daily, lighting the Project site, water usage for cleaning the PV modules, and the operation of 2,120-square-foot energy storage system enclosures.

As shown in Table 7, operation of the Project would result in annual emissions of 41 metric tons of CO₂e per year, which does not exceed the recommended threshold of 1,100 metric tons of CO₂e per year. As such, a less than significant impact would occur. No mitigation is required.

Decommissioning-Generated Greenhouse Gas Emissions

Decommissioning and reclamation of the Project site is expected to involve activity similar to the construction phase, but over a shorter duration estimated at two months. As indicated above, construction emissions are calculated to be well below the SJVAPCD thresholds for GHG emissions, which would also be expected to be the case for decommissioning GHG emissions. Therefore, Project decommissioning would not generate GHG emissions, either directly or indirectly, that would have a significant on the environment. The Project's impact from decommissioning GHG emissions would be less than significant.

b) *Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

No Impact. GHG emissions generated by energy sources account for all stages of the life cycle (e.g., mining, construction), which are referred to as the cumulative GHG emissions and are usually expressed in grams of CO₂e per unit of busbar electricity (i.e., gCO₂/kWh_e). When comparing various fossil-fueled energy generators, the GHG emissions generated are dependent on the type of fuel (i.e., gas, oil, coal). GHG emissions generated by some of the more common types of fossil-fueled plants and solar power plants are summarized in Table 8.

Table 8. Life-Cycle Greenhouse Gas Emissions for Various Types of Energy Generators	
Type of Energy Generator	Cumulative GHG Emissions (gCO ₂ e/kWh _e) ^{1, 2}
Fossil Fueled	
Coal	950 to 1,250
Oil	500 to 1,200
Gas	440 to 780
Solar	43 to 733

As shown in Table 8, solar plants generate far less GHG life-cycle emissions (approximately 83 to 94 percent less) than fossil-fueled energy plants. Therefore, the Project would contribute to the continued reduction of GHG emissions in the interconnected California and western U.S. electricity systems, as the energy produced by the Project would displace GHG emissions that would otherwise be produced by existing BAU power generation resources (including natural gas, coal, arid renewable combustion resources). The Project would generate a maximum of 5 MW of electricity at any one time with a four-hour energy storage system. At peak production, the solar energy storage facility would supply enough clean energy to power up to 1,250 residential homes per year. Table 9 shows the emissions that would be displaced by the Project. Note that this estimate only includes that associated with the combustion of fossil fuels; it does not include the vehicle trips associated with the Project's operations, and it similarly does not include operational employee trips associated with natural gas or coal combustion nor the emissions associated with extracting and transporting those power sources. In addition, this estimate only includes the displacement of that portion of the California market that comes from fossil fuels and does not include the approximate 45 percent of the California electricity generated by non-combustion sources (wind, solar, nuclear, hydro-electric) (CEC 2017).

Table 9. Proposed Project Displaced GHG Emissions (Metric Tons)

	Emissions (Metric Tons)			
	Carbon Dioxide (CO ₂)	Methane (CH ₄)	Nitrous Oxide (N ₂ O)	Carbon Dioxide Equivalent (CO ₂ e)
Emissions Displaced Annually (metric tons)				
Displaced Natural Gas-Source Emissions	4,499	0	0	4,499
Displaced Coal-Source Emissions	1,165	0.01	0.006	1,167
Total	5,664	0.01	0.006	5,666
Emissions Displaced over 30 Years (metric tons)				
Displaced Natural Gas-Source Emissions	134,970	0	0	134,970
Displaced Coal-Source Emissions	34,950	0.3	0.2	35,010
Total	169,920	0.3	0.2	169,980

Source: Displaced emissions calculated by ECORP using USEPA's AP-42 Fifth Edition Compilation of Air Emissions Factors 1995; 2015.
Notes: In order to provide a conservative analysis, the Proposed Project is assumed to generate electricity 25 percent of the time available (2,015 hours annually). A heat rate of 10,000 BTU per kilowatt hour is assumed. The heat content of coal is assumed at 24 million BTU per ton of coal burned. [5 MW (10,075,000 annual kilowatt hours) x 10,000 heat rate = 100,750 million BTU displaced from fossil fuel production. Fossil fuel-based energy consumption in California is predominately derived from natural gas (89.49 percent). Coal constitutes 10.13 percent of all fossil fuel-based energy. Therefore, 90,161 million of the displaced BTU is displaced natural gas consumption and 10,205 million of the displaced BTU is displaced coal. At a rate of 24 million BTU per ton of coal burned, the Project would displace 425.25 tons of burned coal annually. .

As shown, the Project would potentially displace approximately 5,666 metric tons of CO₂e per year, and approximately 169,980 metric tons of CO₂e over the course of 30 years.

While the Project would emit some GHG emissions during construction and a very small amount during operations, the contribution of renewable resource energy production to meet the goals of the Renewable Portfolio Standard (AB 32 Scoping Plan Measure E-3) would result in a net cumulative reduction of GHG emissions, a key environmental benefit. (AB 32 Scoping Plan Measure E-3, Renewable Portfolio Standard, of the AB 32 Climate Change Scoping Plan requires that all investor-owned utility companies generate 33 percent of their energy demand from renewable sources.) Therefore, the short-term minor generation of GHG emissions during construction, which is necessary to create this new, low-GHG-emitting power-generating facility, as well as the negligible amount generated during ongoing maintenance operations, would be more than offset by GHG emission reductions associated with solar-generated energy during operation.

Increasing sources of solar energy is one of the measures identified under AB 32 to reduce statewide GHG emissions. The Project would reduce GHG emissions in a manner consistent with AB 32 and other California GHG-reducing legislation by creating a new source of solar power to replace the current use of fossil fuel power and reduce GHG emissions power generation and use. There is no impact. No mitigation is required.

4.8 Hazards and Hazardous Materials

4.8.1 Hazards and Hazardous (VIII.) Materials Checklist

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g)	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4.8.2 Environmental Setting

The hazardous materials used for construction would be typical of most construction projects of this type. Materials would include small quantities of gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol, and welding materials/supplies. If required by Kings County, a hazardous materials business plan would be provided to the Kings County Environmental Health Services Department/Hazardous Materials Section, which would include a complete list of all materials that would

be used onsite and information regarding how the materials would be transported and in what form they would be used. This information would be recorded to maintain safety and prevent possible environmental contamination or worker exposure. During Project construction, material safety data sheets for all applicable materials present at the site would be made readily available to onsite personnel.

4.8.3 Regulatory Setting

Federal Emergency Management Agency Classification

The Project site is located within Federal Emergency Management Agency (FEMA)–designated Flood Zone “X,” indicating that the site is outside of the 100-year flood hazard area. Therefore, the site is located within FEMA–designated areas of minimal flood hazard, which are areas outside of the Special Flood Hazard Area and higher than the elevation of the 0.2-percent-annual-chance flood.

California Health and Safety Code

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, State, or local agency or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined by the California Health and Safety Code, § 25501 as follows:

“Hazardous material” means any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. “Hazardous materials” include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.”

A hazardous material is defined in 22 CCR § 662601.10 as follows:

“A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed.”

Under Government Code § 65962.5, both the Department of Toxic Substances Control (DTSC) and the State Water Resources Control Board (SWRCB) are required to maintain lists of sites known to have hazardous substances present in the environment. Both agencies maintain up-to-date lists on their websites. The Project site is not listed by the DTSC or SWRCB as a hazardous substances site on the list of hazardous waste sites compiled pursuant to Government Code § 65962.5 (Cortese List). A search of the DTSC (2017) and SWRCB (2017) lists identified no open cases of hazardous waste violations within one mile of the Project site.

Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan

Kings County along with the four incorporated cities of Avenal, Corcoran, Hanford, and Lemoore, and a number of special districts developed the Kings County Multi-Jurisdictional Multi-Hazard Mitigation Plan (HMP) to reduce future losses to the County and its communities resulting from natural hazards. The HMP was adopted by the Kings County Board of Supervisors in October 2007. The Health and Safety Element of the Kings County General Plan focuses on the implementation of goals and policies as they relate to the County's responsibility in implementing the plan. The HMP was prepared to meet the requirements of the Disaster Mitigation Act of 2000 and to achieve eligibility for the FEMA Pre-Disaster Mitigation and Hazard Mitigation Grant Programs.

4.8.4 Hazards and Hazardous Materials (VIII.) Environmental Checklist and Discussion

a) *Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

Less than Significant with Mitigation Incorporated. Construction, operation, and decommissioning of a typical solar PV facility would include the use of common hazardous materials, such as diesel fuel, gasoline, lubricants, coolants, and detergents. Hazardous and non-hazardous wastes that may be generated include waste motor oils, used transformers and transformer oil, waste hydraulic fluids, and water solvents and adhesives. For the Project, the Project applicant has indicated hazardous liquids storage (i.e., exceeding 55-gallon threshold) will not occur onsite (Z Global 2019). The transport of hazardous materials by truck is regulated by federal safety standards under the jurisdiction of the U.S. Department of Transportation. Impacts associated with transport of such materials would be less than significant.

The operation of construction equipment and machinery during construction and decommissioning could result in minor spills or accidental release of hazardous materials, including fuel, engine oil, engine coolant, and lubricants. However, substances would generally not be stored on site in sufficient quantities to result in significant impacts to soil, groundwater or surface water. The applicant has stipulated that during the operational life of the solar facility no chemicals or soaps would be used to clean the solar panels (Z Global 2019).

However, in order to ensure that impacts due to the use, transport, and disposal of hazardous materials would be less than significant, the applicant would prepare and implement a Hazardous Materials Business Plan (HMBP) as outlined in Mitigation Measure HM-1, and a SWPPP as outlined in Mitigation Measure HYD-1 (Section 4.9.4, Hydrology and Water Quality).

Implementation of Mitigation Measure HM-1 would reduce any impacts by requiring that substances be appropriately handled and that accidental releases be minimized and contained.

HM-1 Hazardous Materials Business Plan. The Project applicant shall prepare and implement a HMBP in accordance with the requirements of the Kings County Public Health Department Environmental Services Division, which is the Certified Unified Program Agency for Kings 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 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 would specify procedures for proper disposal. 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. Implementation of the HMBP for the Leo Solar Project would ensure that minor spills or releases of hazardous materials would not pose a significant risk to the public or the environment.

Because the proposed Project would require over one acre of construction, the Project would also be required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ) to comply with Clean Water Act NPDES requirements. To ensure compliance with these requirements, Mitigation Measure HYD-1 includes preparation of a construction SWPPP that would specify BMPs to quickly contain and clean up any accidental spills or leaks. Due to the relatively short-term construction period (approximately eight months) and implementation of a construction SWPPP, the potential for an accidental release of hazardous materials to harm the public or the environment would be low. With implementation of Mitigation Measure HYD-1 impacts associated with construction and decommissioning of the facility would be less than significant.

b) Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less than Significant with Mitigation Incorporated. See discussion under a) above. Some hazardous materials, such as diesel fuel, would be used during construction. A SWPPP, listing BMPs to prevent construction pollutants and products from violating any water quality standard or waste discharge requirements would be prepared for the Project. The release of any spills to the environment would be prevented through the implementation of Mitigation Measure HM-1 and BMPs included in the SWPPP (HYD-1).

Battery Energy Storage System

Potential upset and accident conditions include fire that results from overheating or other electrical fault conditions within the BESS, or a fire that spreads to the Project site from an adjacent property. In most cases, mechanical damage would probably rank as the highest risk factor for initiating a thermal runaway (fire/explosion) event. Improper handling can result in crush or puncture damage possibly leading to the release of electrolyte material or short-circuiting. These actions could result in thermal runaway and a resulting fire and/or explosion.

Lithium-ion battery fire risks can be managed through proper planning, risk assessment, storage methods, and response protocols. The Project would use a fire protection system with the suppression through cooling, isolation, and containment strategy. Each BESS container would include a gaseous fire suppressant agent (e.g., 3M™ Novec™ 1230 Fire Protection Fluid) and an automatic fire extinguishing system with sound and light alarms. The system would be designed in accordance with National Fire Protection Association safety standards including an automatic shut-down system for fans that keep the container sealed when the fire extinguishing system is activated. The fire suppressant agent is released by

a releasing panel that uses an aspirating smoke detection system and has a manual release. The aspirating smoke detection system provides for four levels of signaling before release of the fire suppressant agent. A disable switch is provided for maintenance personnel to allow for work on the container without accidental discharge. Novec 1230 Fire Protection Fluid is not regulated as a hazardous material and is identified as safe to use in occupied spaces (3M 2003).

At the system level, a three-tiered battery management system (BMS) would monitor parameters critical to safety, including all cell voltages, all currents, and representative temperatures. A robust system of logic-based isolation interlocks would prevent exposing cells to unsafe voltages, currents, and temperatures by providing both active and passive isolation. In the event that the three-tiered BMS were to fail, each of the battery cells include features designed to reduce the potential for short circuits, excessive pressure, overheating, and other factors that could potentially lead to a thermal runaway and a resulting fire and/or explosion.

Personnel training would be required to help address the issues this type of battery technology presents, such as battery fire behavior, emergency response procedures, and fire extinguisher use (lithium-ion battery focus). To ensure compliance with the Occupational Safety and Health Administration's (OSHA's) Emergency Action Plan Standard, 29 CFR 1910.38, and to prepare personnel for dealing with emergency situations, an emergency action plan would be developed. This emergency action plan would be developed to effectively address possible emergencies that might occur at the BESS. Such a plan shall include a designated emergency coordinator who would be responsible for notification of emergency personnel, safely evacuating Project employees, and the proper use of fire extinguishers (if applicable). All personnel working onsite or on call would receive instruction and training on the emergency action plan.

Site security would consist of an eight-foot-high chain link fence with three-strand barbed wire installed around the perimeter of the BESS facility. Additional site security measures may include a monitored camera system designed to cover the entire facility and an intrusion detection system. With the aforementioned fire suppression systems and site security measures and with implementation of the mitigation measure below there is a very low likelihood of the Project creating a significant hazard onsite or offsite.

The following preventative mitigation measure is required to prevent any significant hazards to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials:

HM-2 Emergency Contingency Plan (ECP). In coordination with the Kings County Office of Emergency Management, the applicant shall develop an ECP, which may also function as the OSHA Emergency Action Plan. The emergency contingency plan shall, at a minimum, indicate and describe in detail the backup fire suppression equipment that will be available to County Fire Department responders that can be used in the event of a battery storage container fire. A map or plan identifying the locations of nearby specialized fire suppression retardants and existing water sources shall be included. Any specialized fire response manuals or technical guidelines applicable to the Project shall be included in the plan. Provisions for fire suppression training for Kings County Fire personnel shall be included. The ECP shall effectively address all emergencies

that may be reasonably expected to occur at the BESS Project site. The ECP shall be submitted for approval by Kings County Fire Marshall.

With incorporation of the mitigation measure listed above Project impacts would be reduced to levels of less than significant.

c) *Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

No Impact. Construction, operation, and decommissioning of the Project would include the use of common hazardous materials, such as diesel fuel, lubricants, and detergents. These materials would be handled consistent with State and federal regulations. The closest schools to the Project site are Kettleman City Elementary School, located approximately 15 miles north of the Project site, and Lost Hills Elementary School, located approximately 15.5 miles to the south in Kern County. No impact would occur. No mitigation is required.

d) *Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

No Impact. A search of the Envirostor database indicates the Project site is not on the list of known hazardous sites (DTSC 2017). No impact would occur. No mitigation is required.

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?*

No Impact. No public airports exist within two miles of the Project site. The Project site is not located within an airport land use compatibility plan (Kings County 2010). The Project site falls well outside the Naval Air Station (NAS) Lemoore Military Influence Area (MIA) covering most of the northwest portion of Kings County. The MIA was established to address land use compatibility around NAS Lemoore, which straddles both Kings and Fresno counties. The closest public airport to the Project site is Wasco-Kern County Airport, located approximately 30 miles to the southeast, in Kern County. Given the distance of the Project site to the airport there would be no safety hazards for people residing or working in the Project area. No impact would occur. No mitigation is required.

f) *Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

Less than Significant Impact. The Project would be limited to a solar PV facility with battery energy storage component that would not generate substantial long-term traffic, and would not result in any permanent road closures or affect any existing emergency shelters. The Project would not interfere with an adopted emergency response plan or evacuation plan. As a result, this impact is considered less than significant. No mitigation is required.

g) Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Less than Significant Impact. The Project site is not in an area designated by California Department of Forestry and Fire Prevention (CAL FIRE 2007) as a Fire Hazard Severity Zone. Furthermore, no Very High Fire Hazard Severity Zones are located nearby. The Project site is accessible by emergency personnel and vehicles in the event of a wildland fire. CAL FIRE maintains Fire Station 51 approximately 30 miles southwest of the Project site in Shandon, and its Kings County Fire Department Station 9 approximately nine miles due northwest of the Project site in Kettleman City. By its nature, the Project would not include construction of structures for human habitation and there would be no permanent employees stationed at the site. For these reasons, this impact would be less than significant. No mitigation is required.

4.9 Hydrology and Water Quality

4.9.1 Hydrology and Water Quality (IX.) Materials Checklist

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i)	result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii)	Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv)	impede or redirect flood flows?				

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.9.2 Environmental Setting

The Project site is situated in the central portion of the San Joaquin Valley and is encompassed by the Tulare Lake Hydrologic Region. Kings County, and in particular the Tulare Lake Basin, once served as the natural drainage of the Kings River, Cross Creek, and Tule River as a part of the hydrologic watershed of the Sierra Nevada Mountains along the east side of the San Joaquin Valley. Canal and flood control development in the late 1800s and early 1900s redirected water flow and managed waterways through a series of canals, water storage, and agricultural levees. This led to the conversion of thousands of acres of lake basin land into farmable ground. These waterways and the lake basin remain the predominant flood prone areas in the region as defined by the FEMA Flood Insurance Rate Maps.

Drainage in the Tulare Lake Hydrologic Region, which encompasses the proposed Project, is completely internal. Inflowing water leaves the region through evaporation and losses due to plant transpiration. All drainages terminate on the valley floor in lakes and sinks. Drainage runoff in the Delano vicinity, including the Project site, travels in a northwesterly direction to the historic Tulare Lake bed.

4.9.3 Regulatory Setting

FEMA Flood Hazards

Significant flooding occurs in Kings County approximately every five years. FEMA and the Federal Insurance Administration have assessed flood hazards for major streams in Kings County. Projected areas and likely severity of flooding are shown on the Flood Insurance Rate Maps compiled by FEMA. In 2009, FEMA completed their Digital Flood Insurance Rate Map (DFIRM) conversion and updated a number of flood zone areas using 2005 levee certification criteria. In 2007, the California Department of Water Resources (DWR) completed their Awareness Floodplain Mapping of Kings County to identify all pertinent flood hazard areas that are not mapped under FEMA's program, which provides an additional resource for identifying special flood hazard areas within the County. Figure HS – 6 in the Kings County General Plan displays flood zones based upon FEMA's DFIRM (2009) and DWR's Awareness Floodplain Map (2007). The Project site is not located within any mapped floodplains.

4.9.4 Hydrology and Water Quality (IX.) Environmental Checklist and Discussion

a) *Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?*

Less than Significant with Mitigation Incorporated. Short-term adverse storm events can occur during the winter months, when the majority of precipitation occurs in the proposed Project area. During construction of the Project, water quality impacts could occur without proper controls. Soil loosened during grading, spills of fluids or fuels from vehicles and equipment or miscellaneous construction materials and debris, if mobilized and transported offsite in overland flow, could degrade groundwater quality. In the event of heavy rainfall, flow from construction areas could flow offsite and reach nearby surface water drainage facilities. Because the area of ground disturbance affected by construction of the Project would exceed one acre, the proposed Project would be subject to the requirements of the statewide NPDES stormwater permit for construction activity (Order 98-08 DWQ). A SWPPP would be prepared for the proposed Project, listing BMPs to prevent construction pollutants and products from violating any water quality standard or waste discharge requirements. The Project would comply with applicable post-construction water quality requirements adopted by the RWQCB—Central Valley Region (Region 5). Additionally, the Project's drainage plan would be designed by a registered civil engineer to safely retain, detain, and or convey stormwater runoff.

To ensure that there are no violations of water quality standards or waste discharge requirements during construction, Mitigation Measure HYD-1 shall be implemented.

HYD-1 Stormwater Quality Protection. Prior to construction grading and prior to the decommissioning, the applicant shall be required to file a Notice of Intent with the SWRCB to comply with the General Permit and prepare a SWPPP. The SWPPP shall be prepared by a licensed engineer 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 solar project development. The SWPPP(s) required for decommissioning shall specify BMPs to be implemented during that final project phase. Construction contracts shall include the requirement to implement the BMPs in accordance with the SWPPPs.

With implementation of Mitigation Measure HYD-1, a less than significant impact would occur.

b) *Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?*

No Impact. Water for construction would be hauled in by truck. It is conservatively estimated that up to four acre-feet of water would be required during the construction period to support Project site roadway compaction, dust control, panel washing, and sanitary use.

The primary water demand during operation would be the washing of the PV modules to remove dust to maintain power generation efficiency. The amount of water needed for this purpose is conservatively estimated at 0.0075 acre feet per washing, with up to four washings per year, or a total of up to 0.03 acre feet of water annually. The necessary water would be trucked in via a 4,000-gallon water truck and each washing is anticipated to take up to one week to complete. No chemicals or soaps would be used in the

cleaning process. As local groundwater supplies will not be utilized as a part of the Project, no impact would occur. No mitigation is required.

c) *Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that 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 that 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?***
- iv) *Impede or redirect flood flows?***

Less than Significant Impact. The Project would not substantially alter the existing drainage pattern of the site and area. As noted in items a) and b), construction of the proposed Project would require surficial grading of the Project site. All runoff occurring during construction and decommissioning would be handled by the SWPPP's BMPs designed to prevent construction pollutants and products from violating any water quality standard or waste discharge requirements. As such, any required site drainage and storm water controls will be designed to comply with the SWRCB general guidelines and preclude substantial erosion or siltation. The increase in impervious surface area associated with perimeter road, solar PV equipment installation, and the battery storage unit would be minor. Any precipitation would flow off the panels and percolate into the ground. The Project would not substantially increase the rate or amount of surface runoff, would not cause flooding onsite or offsite, nor contribute runoff water that would exceed the capacity of any stormwater drainage system. The Project is not within any mapped floodplains. The Project would not result in physical alteration of drainage patterns at the site and implementation of BMPs through Mitigation Measure HYD-1 would minimize potential erosion or siltation from the site. A less than significant impact would occur.

d) *Would the Project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?*

No Impact. The Project site is not located within a 100-year flood hazard area or other flood hazard delineation map area (Kings County 2010). According to Figure HS – 7 in the Kings County General Plan (2010), the Project site is not located in an area subject to inundation due to dam or levee failure. The site is located inland and is not near any large bodies of water or hillsides. It is not located in an area subject to seiche or tsunami. No impact would occur.

e) *Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

No Impact. The Project would comply with applicable construction and post-construction water quality requirements adopted by the RWQCB—Central Valley Region (Region 5). The proposed Project would be subject to the requirements of the statewide NPDES stormwater permit for construction activity (Order 98-08 DWQ). A SWPPP would be prepared for the proposed Project, listing BMPs to prevent construction pollutants and products from violating any water quality standard or waste discharge requirements. Any

required site drainage and storm water control will be designed to comply with the SWRCB general guidelines. The increase in impervious surface area associated with footings and foundations for the solar PV equipment and battery storage unit would be negligible. Local groundwater supplies will not be utilized as a part of the Project, No impact on a water quality control plan or sustainable groundwater management plan would occur.

4.10 Land Use and Planning

4.10.1 Land Use and Planning (X.) Materials Checklist

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.10.2 Environmental Setting

The Project is located on 40 acres of unincorporated land in Kings County, California. The Project site has a Kings County General Plan designation of A (Agriculture). The entire site is zoned AG 40 (General Agricultural-40 District) pursuant to the County Zoning Ordinance. The surrounding land uses are generally irrigated agricultural fields with flat topography. Surrounding lands are characterized as agricultural land primarily used for irrigated agriculture, with irrigation/drainage ditches and canals installed. The Project was reviewed to determine consistency with the Kings County General Plan (2010).

4.10.3 Land Use and Planning (X.) Environmental Checklist and Discussion

a) Would the Project physically divide an established community?

No Impact. Unlike the Project, projects such as a railroad line, major highway, or a water canal may result in physically dividing an established community by removing existing roadway connections, walkways and bike paths and other types of links between community areas. This may result in the division of an existing community by removing those connections. However, no established communities exist in the Project area. As such, the Project would not physically divide an established community. No impact would occur.

b) Would the Project 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?

No Impact. The Project would comply with applicable County plans, regulations, and standards as discussed below.

General Plan. The 2035 Kings County General Plan designates the site as "General Agriculture – 40 acre." This land use designation falls under the broader General Plan category of Agricultural Open Space, which permits a range of agricultural uses and ancillary activities, as well as solar voltaic generating facilities.

Therefore, the planned installation of solar PV generating facilities within the Project site would be consistent with the General Plan Land Use Map.

Zoning. As designated in the Kings County Zoning Plan, the Project site is currently zoned "AG-40 General Agricultural-40." As provided in Article 4 of the Kings County Development Code, utility-scale photovoltaic electricity generation is a conditionally permitted use in this agricultural zoning district. In addition, utility structures such as the Gen-Tie Line are permitted uses in all Agricultural zoning districts. Therefore, the Project would be consistent with the development code upon the granting of the subject CUP for the Project.

Section 1112B.2 of the Kings County Development Code establishes specific requirements that must be satisfied for the granting of a CUP for a solar generating facility described as follows:

- a. 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.
- b. 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 3 MW) may be located more than 1 mile from a 60 kV or higher transmission line subject to the following findings:
 1. The project site is located on low or very low priority farmland.
 2. The project site is not restricted by a Williamson Act or Farmland Security Zone contract.
 3. The project will connect to existing utility infrastructure without building new power lines.
 4. The project will not result in any additional easements on agricultural land, other than access easements or easements within the public Right-of-Way.
- c. 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.
- d. 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.
- e. The project shall include a pest management plan and weed abatement plan to protect adjacent farmland from nuisances and disruption.
- f. The project shall space internal access driveways per Kings County Fire Department standards.
- g. The project shall include a solid waste management plan for site maintenance and disposal of trash and debris.

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

The Project site is located within an area designated by the DOC as Grazing Land, on which the existing vegetation is suited to the grazing of livestock. Therefore, no Prime farmland, Unique Farmland, or Farmland of Statewide importance will be converted as a result of this project. According to Figure RC-13 Priority Agricultural Land (2035 Kings County General Plan, Resource Conservation Element, Page RC-20), the subject parcel is classified as "Very Low Priority."

As a 5-MW facility, the Project is considered a "small community commercial solar project." The Project site is not restricted by a Williamson Act or Farmland Security Zone contract and will connect to existing utility infrastructure located on the Project site that meets the requirement for being located within one mile of the 60 kV or higher power line. The Project proposes to tie-in to nearby 60 kV power lines in King Road that extend south to the PG&E Twisselman Substation at Twisselman Road in Kern County, located approximately four miles southeast of the Project site. The Project will not result in any additional easements on agricultural land, other than access easements or easements within the public ROW.

The Project shall include a reclamation plan and financial assurance acceptable to the County, a pest management and weed abatement plan, and a solid waste management plan for site maintenance and disposal of trash and debris. Project driveways shall provide adequate County Fire Department access to and through the site. No impact would occur. No mitigation is required.

4.11 Mineral Resources

4.11.1 Mineral Resources (XI.) Materials Checklist

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.11.2 Environmental Setting

Surface Mining and Reclamation Act of 1975

The State-mandated Surface Mining and Reclamation Act of 1975 requires the identification and classification of mineral resources in areas within the state subject to urban development or other irreversible land uses that could otherwise prevent the extraction of mineral resources. Mineral Resource Zones (MRZs) are classified by the State Geologist by analyzing associated geologic and economic factors

without regard to current land use or ownership. There are four general classifications (MRZ-1 through MRZ-4) based upon the State Geologist's determination of identified mineral resource significance. The major divisions between these four classifications are: MRZ-1 "Areas of No Mineral Resource Significance, wherein geologic information indicates no significant mineral deposits are present; MRZ-2 "Areas of Identified Mineral Resource Significance," are areas that contain identified mineral resources; MRZ-3 "Areas of Undetermined Mineral Resource Significance," are areas of undetermined mineral resource significance; and MRZ-4 Areas of Unknown Mineral Resource Significance, are areas of unknown mineral resource potential (DOC 2000).

The CGS provides mineral land classification maps and reports throughout California. The Aggregate Sustainability in California - Map Sheet 52 provides general information about the current availability of California's permitted aggregate resources. As shown on this map, the Project site is not located in an area identified for aggregate resources (CGS 2012). The nearest area identified for aggregate resources is near Avenal, approximately 20 miles northwest of the Project site.

Kings County General Plan Resource Conservation Element

According to the Kings County General Plan, only limited amounts of soil, sand, and some gravel is excavated for commercial use. In 2009, the County had only one surface mining permit for a non-active gravel operation, and two agricultural reclamation sites that were fully reclaimed (Kings County 2010).

4.11.3 Mineral Resources (XI.) Environmental Checklist and Discussion

a) Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No Impact. There are no active mining sites within the vicinity of the Project site (Kings County 2010). The Project would have no impact related to mineral resources. No mitigation is required.

b) Would the Project 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 Project area is located on an agricultural field currently used for grazing. There are no designated mineral resource sites in the Project vicinity. The Project would have no impact related to mineral resources. No mitigation is required.

4.12 Noise

4.12.1 Noise (XII.) Materials Checklist

Would the Project result in:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	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	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Would the Project result in:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	ordinance, or applicable standards of other agencies?				
b)	Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c)	For a project 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.12.2 Environmental Setting

Some land uses are considered more sensitive to intrusive noise than others due to the amount of noise exposure and the types of activities typically involved at the receptor location. Noise exposure at these sensitive receptors is predicated on the magnitude and frequency of said noise event, exposure duration, and exterior-to-interior sound attenuation. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, nursing homes, and parks are generally more sensitive to noise than commercial and industrial land uses. The Project site is located in an agricultural area, surrounded on all sides by agricultural fields. There are no residences for miles in each direction of the Project site. The closest enclave of sensitive receptors to the Project site are the residences in Kettleman City, located approximately 15 miles northwest of the Project site.

Kings County General Plan Noise Element

Kings County has adopted local guidelines to identify the existing and projected future noise environment in Kings County and provide policy direction and implementation efforts to protect county residents from exposure to excessive noise levels. The Noise Element of the Kings County General Plan provides the basis for comprehensive local policies to control and abate environmental noise from stationary and mobile noise sources and reduce conflicts between noise and noise-sensitive land uses. As previously stated, no sensitive receptors are present in the vicinity of the Project site.

4.12.3 Regulatory Setting

It is generally recognized that in an urban noise environment, a three decibel (dBA) increase in noise level considered to be barely perceptible, while an increase of five dBA would be clearly perceptible. An increase above ambient noise levels between three dBA and five dBA would result in an adverse, but not significant impact, while an increase in noise level of five dBA or more would be considered a significant impact. These guidelines are commonly used in acoustics and noise impact assessments to address increases in noise levels.

4.12.4 Noise (XII.) Environmental Checklist and Discussion

- a) Would the Project 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 generated by the construction of the Project would be temporary (limited to the anticipated eight-month construction period and the decommissioning period), and no permanent noise sources would be created. Operational noise from the solar PV facility would be limited largely to vehicular trips to the site for periodic maintenance and increases in ambient noise levels would not occur. The Project site is surrounded by agricultural uses in all directions. No single-family and multi-family residences, parks, schools, or other sensitive noise receptors are located within the immediate proximity to the Project site. Impacts would be less than significant. No mitigation is required.

- b) Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?**

Less than Significant Impact. See discussion under a) above. The construction of the Project would introduce temporary groundborne vibrations and noise levels in the Project vicinity in the form of rough grading. The potential impacts would diminish over time and end at the completion of construction activities, decommissioning, and site reclamation activities are not expected to result in significant groundborne vibration or noise impacts. Impacts would be less than significant. No mitigation is required.

- 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. The Project site is not located within the vicinity of a private airstrip, an airport land use plan, public airport, or a public use airport. The closest private airstrip is Paramount Farming Airport, located approximately 9.5 miles south of the Project site. The Project site is not located within an airport land use compatibility plan (Kings County 2010). The closest public airport is Wasco/Kern County Airport, located approximately 30 miles to the southeast in Kern County. No impact would occur. No mitigation is required.

4.13 Population and Housing

4.13.1 Population and Housing (XIV.) Materials Checklist

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.13.2 Environmental Setting

Population

According to the Housing Element of the Kings County General Plan, Kings County had a total population of approximately 132,184 in 2009 (excluding the population of State prisons at Avenal and Corcoran). Of this number, approximately 33,354 are located in unincorporated areas of the county. The U.S. Census Bureau estimated that Kings County had a population of 149,785 as of July 2016 (U.S. Census Bureau QuickFacts 2017).

Housing

It was estimated that Kings County had a total of 42,484 housing units in 2009, representing a growth of 5,921 new units (16 percent) countywide since 2000. As is typical in small towns and rural areas, the majority of housing stock in all jurisdictions is comprised of single-family detached houses. Single-family attached (condominium) units represent just six percent of all units countywide. Meanwhile, approximately 18 percent of the county's housing stock consisted of multi-family projects, such as apartments and townhomes. The remaining five percent of housing units in Kings County were mobile and manufactured homes.

Employment

Kings County supports a diversified economy. Government represents the largest sector (due in large part to State prisons) and provided 31 percent of all jobs in the county as of 2004. Farm employment represented 16 percent of jobs, while related food-processing employment represented an additional six percent. Retail trade comprised nine percent of jobs while education and health services (excluding public schools) comprised eight percent.

4.13.3 Population and Housing (XIV.) Environmental Checklist and Discussion

a) *Would the Project induce substantial 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 Project would not directly or indirectly induce population growth in unincorporated Kings County. The construction workers employed for the Project would consist of laborers, electricians, supervisory personnel, support personnel, and construction management personnel. The onsite assembly and construction workforce are expected to reach a peak of 30 workers during the anticipated eight-month construction duration. Module washing is anticipated to require two or three workers approximately two to four times per year. There would not be a significant increase in employees

as a result of the installation of solar panels. The development of these utilities would serve electricity demand of the existing population. A less than significant impact would occur. No mitigation is required.

b) Would the Project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

No Impact. The Project would be constructed on undeveloped land in an agricultural area. No displacement of existing housing units would result. No impact would occur. No mitigation is required.

4.14 Public Services

4.14.1 Public Services (XV.) Environmental Checklist and Discussion

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	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:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Fire Protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Police Protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Other Public Facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.14.2 Environmental Setting

Police Services

The Kings County Sheriff's Office provides law enforcement response to unincorporated areas of the county. The Kings County Sheriff's Office provides law enforcement response to unincorporated communities of Armona, Home Garden, Kettleman City, and Stratford. The county is currently divided into six beat districts with five substations throughout Kings County. Each beat district has at least one deputy sheriff on duty at all times to serve the unincorporated communities and surrounding County areas.

Fire Services

The County Fire Department also provides contracted services to the cities of Avenal and Corcoran. Kings County operates 10 fire stations and one headquarter and has a professional staff of 61 employees who are assisted by 10 volunteer companies with approximately 100 volunteer firefighters. 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.

The Kings County Fire Department maintains a mutual aid agreement with the City of Hanford Fire Department and other outside agency fire departments. Additional fire protection response services in the county include the City of Lemoore Volunteer Fire Department, NAS Lemoore Fire Department, and Santa Rosa Rancheria Fire. CAL FIRE also responds to incidents in the State Responsibility Area that is southwest of SR-33. There are no CAL FIRE Stations in Kings County, with the nearest responding stations located in Fresno County and San Luis Obispo County.

There are four fire stations within the vicinity of the Project. Kings County Fire Station #9 is located approximately 15 miles northwest of the Project site in Kettleman City, at 85 Highway 41. Kings County Fire Station #11 is located approximately 27 miles northeast of the Project site in Corcoran, at 1033 Chittenden Street. CAL FIRE Station 51 is located approximately 30 miles southwest of the Project site in Shandon, at 501 East Centre Street. Finally, CAL FIRE has a station approximately 35 miles northwest of the Project site in Coalinga, at 25600 Jayne Avenue.

Schools

The Project is located within the Reef-Sunset Unified School District. The nearest public education facilities to the Project site are Kettleman City Elementary School, located approximately 15 miles north of the Project site.

Parks

Kings County presently owns and maintains three parks (Burris, Hickey, and Kingston), located in the north portions of the county and surrounded by agricultural areas. Burris Park is located south of Clinton Avenue between 6th and 7th Avenues. Hickey Park is located north of Flint Avenue at 17th Avenue. Kingston Park is located north of Douglas Avenue between 12 $\frac{3}{4}$ Avenue and 13 $\frac{1}{4}$ Avenue. Both Hickey Park and Kingston Park are primarily open space with grass and trees. Burris Park has more recreational amenities and a museum. Hickey and Kingston parks are within a five-minute drive from cities and communities located in the north half of the county and Burris Park is about a 15-minute drive from Hanford. Three community parks also exist within the county but are supported and maintained by the Community Services Districts of Kettleman City, Home Garden, and Armona for each respective individual park.

4.14.3 Public Services (XV.) Environmental Checklist and Discussion

- a) *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:***

- i) Fire protection?
- ii) Police protection?
- iii) Schools?

- iv) Parks?
- v) Other public facilities?

No Impact. The proposed Project would not create a new fire or public safety hazard. Maintenance procedures would include equipment maintenance of the solar panels and other components, including repairs inside the facility, as well as vegetation management. Therefore, the risk of fire would be low, and the Project would not require extensive fire protection services that would require alteration or construction of fire stations or other fire suppression infrastructure. The solar PV facility would be unmanned, self-contained, and enclosed with wildlife friendly security fencing; no impact on police protection or services is anticipated. The proposed Project would not cause permanent relocation of employees; therefore, there would be no additional demand for schools, parks, or other public facilities. The Project would not result in the need for new or physically altered government facilities nor affect response time or other performance objectives. No impact would occur. No mitigation is required.

4.15 Recreation

4.15.1 Recreation (XVI.) Materials Checklist

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b)	Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.15.2 Environmental Setting

As previously mentioned, Kings County presently owns and maintains three parks (Burris, Hickey, and Kingston), located in the north portions of the county and surrounded by agricultural areas.

Kings County General Plan

The Kings County General Plan Open Space Element identifies outdoor recreational open space, which includes parks and fishing access areas, as areas that provide pleasure and enjoyment for Kings County residents and visitors. These spaces may be used by residents and visitors for recreation and general health maintenance activities.

4.15.3 Recreation (XVI.) Environmental Checklist and Discussion

- a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

No Impact. The proposed Project is the construction of a solar PV power generation system and does not involve residential uses. The solar Project would be maintained periodically and would not include any permanent onsite staff. Thus, there would be no substantial demand for existing parks and public facilities. No impact would occur. No mitigation is required.

- b) Would the Project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?**

No Impact. The proposed Project would not include recreational facilities nor require the construction or expansion of recreational facilities that might have an adverse effect on the environment. No impact would occur. No mitigation is required.

4.16 Transportation

4.16.1 Transportation (XVII.) Materials Checklist

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict or be inconsistent with CEQA guidelines Section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.16.2 Environmental Setting

The circulation systems within Kings County include streets and highways, public transit, rail, nonmotorized, and aviation. Of these systems, streets and highways serve as the dominant mode of transportation, with highway traffic generally composed of farm-to-market, business, and commuter trips. Local roads are utilized largely for movement of agricultural products, and to a lesser extent local travel to destinations where goods and services are provided. As the urban populations continue to increase, traffic demand upon the county's major streets and highways is anticipated to occur with added commuter and business trips.

As a county that is predominantly rural in nature, limited alternative modes of transportation are currently available. However, some public transit options are available and the growing preference for Agricultural Industries Transportation System and Kings Area Rural Transit (KART) Commuter Vanpool services have spread to several adjacent counties and serves as a successful local approach to reducing the number of vehicles on the roadway and their associated emissions. Public bus transit services are provided by KART and the Corcoran Area Transit. The Kings County Area Public Transit Agency, which oversees the operations of the local transit providers consists of Kings County, Avenal, Hanford, and Lemoore. Other local agency and common carrier transit services are also provided. Rail service within the county includes Amtrak passenger rail service and freight rail service. Public, private, and military aviation facilities exist within the county, with the Hanford Municipal Airport and Corcoran Airport serving as the publicly accessible sites, and the NAS Lemoore as a strategic military installation for the western U.S.

All together in 2008, the county contains approximately 27 miles of interstate freeway, 130 miles of state facilities, 956 miles of county roads, and 337 miles of city streets. There are two public use airports and approximately 67 miles of rail lines within the county, including the Amtrak San Joaquin corridor.

Project Site Access

The proposed Project is located in an agriculturally zoned area within unincorporated Kings County. The surrounding land uses are generally irrigated agricultural fields with flat topography. Surrounding lands are characterized as level agricultural land primarily used for irrigated agriculture, with irrigation/drainage ditches and canals installed. Major freeways and highways that could be used to access the Project site include I-5, SR-33, SR-41, and SR-46 with direct access to the site proposed via a farm road accessed from 25th Avenue or King Road.

The Project site would contain a network of access roads. An all-weather access road would be up to 20 feet wide and capable of supporting Kings County fire protection vehicles. The access point would be gated and keyed to prevent unauthorized access to the site. Interior roads would have a minimum width of 14 feet. The network of unpaved interior roads would run between power blocks for operations and maintenance. Turnaround areas would run around each of the inverters and/or equipment pads. In addition, unpaved perimeter roads would surround the facility.

4.16.3 Transportation (XVII.) Environmental Checklist and Discussion

a) *Would the Project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?*

Less than Significant Impact. Roadway Facilities. Transportation policies and programs in Kings County are set forth in the Kings County 2035 *General Plan Circulation Element*, which establishes Level of Service D as the minimum service level to be maintained on county streets and roadways (Kings County 2010d). In general, the Project would not interfere with implementation of the Circulation Element policies and programs due to the minimal addition/changes needed to the existing transportation system. The temporary change needed for construction (and decommissioning) would consist of the provision of an up to 20-foot wide, all-weather access road to allow ingress/egress onto the Project site and internal circulation. The proposed Project would generate short-term, construction-related vehicle trips. Construction of the Project is anticipated to last eight months and would require temporary containers

with equipment in designated areas. The areas would be prepared with a compacted road base that would allow trucks to enter the site and deliver materials. During construction, the foundations for the racking system(s) may require the use of a pile driver. It is anticipated that the workforce during the construction period would peak at 30, during the mechanical and electrical work phase. This represents approximately 60 vehicle trips per day without discounting for worker carpools to the Project site. This volume of vehicle trips is quite low and is not expected to adversely impact any minimum service levels on the primary roadways providing access to the Project site (i.e. King Road, 25th Avenue, SR33, SR-41, and SR-46.)

During Project operations, two or three offsite employees would be reserved for maintenance and would be dispatched to the site for routine scheduled maintenance and on an as-needed basis for unscheduled maintenance. Vehicles for operation and maintenance would typically include trucks such as pickups or flatbeds, as well as water trucks for solar panel washing. Large heavy-haul transport equipment may be brought to the site infrequently for equipment repair or replacement. The footprint needed for these activities would be limited to the Project site and its access driveway.

With regard to traffic management, the applicant will comply with a County Condition of Approval assuring implementation of traffic safety measures during project construction and decommissioning. Measures include, but are not limited to notification and consultation with Caltrans and/or the County prior to initiation of construction and decommissioning, and implementation of appropriate traffic controls in accordance with the California Vehicle Code and other State and local requirements to avoid or minimize traffic impacts.

According to the Circulation Element, the only public transit route within proximity to the Project is along SR-41. The closest stop is within Kettleman City (15 miles northwest of the Project site). Therefore, public transit would not be affected by construction, operation or decommissioning of the Project. The Project would not impede the County from promoting public transportation or coordination of efforts with local and regional agencies.

Transit, Bicycle and Pedestrian Facilities. Pedestrian and bicycle facilities are not located within the Project vicinity. Plans for future development of these facilities do not indicate potential conflicts with the Project site, as they generally focus on facilities located within the urban areas of the county to the north. Due to the relative position of the Project site as compared to the location of mass transit and non-motorized transportation facilities, no impacts would be anticipated to occur to these facilities.

Project construction and operations would not generate a significant number of vehicle trips and would not conflict with roadway measures of effectiveness of the circulation system. Similarly, there would be no Project impact on existing or planned public transit routes, pedestrian facilities, or bicycle routes. A less than significant impact would occur. No mitigation is required.

b) Would the Project conflict or be inconsistent with CEQA Guidelines 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 such thresholds. At this time the County

has not adopted thresholds to determine impacts based on VMT as a result of a project. As this threshold is not yet in effect, the Project would have no impact.

c) Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. The Project would not substantially increase hazards due to a geometric design feature. To ensure the safety of the public, the facility's perimeter would be secured with a six-foot-tall (minimum) chain link fence with barbed wire added on top for a total height of eight feet. All employees and contractors would be required to adhere to the appropriate health and safety plans and emergency response plans. All construction and operation contractors would be trained and required to operate under a health and safety program that meets industry and OSHA standards. No roadway modifications are proposed as part of the Project. No impact would occur. No mitigation is required.

d) Would the Project result in inadequate emergency access?

No Impact. Design of the proposed Project includes an all-weather access road (in compliance with the Kings County Improvement Standards) providing access to the Project site from 25th Avenue. Major freeways and highways that could be used to access the Project site include I-5, SR-33, SR-41, and SR-46, with direct access to the site proposed via a local road accessed from 25th Avenue or King Road. The Project would utilize either stationary fixed-tilt, ground-mounted racking or single-axis trackers for its mounting structures. The proposed perimeter road would be designed to County standards. The chosen racking solution would be constructed in compliance with Kings County Fire Department requirements to provide for drive aisle ingress/egress, maintenance, and emergency vehicles. No impact would occur. No mitigation is required.

4.17 Tribal Cultural Resources

4.17.1 Tribal Cultural Resources (XVIII.) Materials Checklist

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code 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:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i)	Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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 Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.17.2 Environmental Setting

Effective July 1, 2015, AB 52 amended CEQA to require 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 commencement of the CEQA process to identify tribal cultural resources. Furthermore, because a significant effect on a tribal cultural resource is considered a significant effect on the environment under CEQA, an offer to consult is required to develop appropriate avoidance, impact minimization, and mitigation measures.

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.

4.17.3 Tribal Cultural Resources (XVIII.) Environmental Checklist and Discussion

a) Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code 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 Public Resources Code 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 Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.**

Less than Significant with Mitigation Incorporated. The following California Native American tribe(s) traditionally and culturally affiliated with the Project area have been notified of the Project: Santa Rosa Rancheria Tachi Yokut Tribe (Tribe). Notice was provided with the Kings County CDA's Project Review-Consultation Notice (8/23/2017). No tribes have requested consultation pursuant to Public Resources Code section 21080.3.1. As a result, no formal consultation meeting was held with the tribe. A copy of the County's notification is on file with the Kings County CDA Planning Division.

A Cultural Resources Inventory Report was prepared by ECORP (ECORP 2017b, Appendix C) for the proposed Project to determine if cultural resources were present in or adjacent to the Project area and assess the sensitivity of the Project area for undiscovered or buried cultural resources. The cultural context of the Project area including regional and local prehistory, ethnography, and regional and Project area histories can be found in the report in Appendix C. A search of the Sacred Lands File by the NAHC showed no tribal cultural resources in the Project area. The Records Search and site survey identified no cultural resources in the Project area either listed in or eligible for the CRHR or a local historic register.

No formal project consultation pursuant to AB 52 between the Kings County CDA and the Tribe was requested, and none has occurred. The County CDA, as lead agency, is not aware of any significant tribal cultural resources in the Project area. Although the 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.

In the event that tribal cultural resources are discovered during project site disturbance that have not previously been evaluated for significance, the Kings County CDA will evaluate the significance of the resource in cooperation with the Santa Rosa Rancheria Cultural and Historical Preservation Department, through application of the criteria for eligibility for listing on the CRHR, as required under AB 52. Mitigation Measure CUL-1 (see Section 4.5.3) specifies that prior to any ground disturbance, the project proponent shall offer the Tribe the opportunity to provide a Native American Monitor during ground disturbing activities both during construction and decommissioning. Tribal participation would be dependent upon the availability and interest of the Tribe. Implementation of Mitigation Measure CUL-1 during construction would reduce the impact to a level of less than significant.

4.18 Utilities and Service Systems

4.18.1 Utilities and Service Systems (XIX.) Materials Checklist

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	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, electrical power, natural gas or telecommunications facilities, the construction	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Would the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e)	Comply with federal, State, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4.18.2 Environmental Setting

Water Service

The Kettleman City Community Services District (KCCSD) provides water to the unincorporated community of Kettleman City from two groundwater wells. The KCCSD has established a moratorium on new commercial and residential development until water system improvements or an imported water source is identified. KCCSD is not restricted in the amount of groundwater wells that can be drilled. The KCCSD and Armona Community Services District Capital Facilities Plans include the provision of new wells and additional water storage capacity to accommodate buildout of the General Plan land use policies. As demand for water supply increases with population growth, these community service districts will drill new wells and construct additional water storage facilities in accordance with their Capital Facilities Plans.

All of the incorporated cities and unincorporated communities in Kings County have indicated sufficient water supply to support projected populations at buildout of the General Plans without depleting groundwater aquifers.

Wastewater

In most of the unincorporated areas within Kings County, such as the proposed Project site, wastewater treatment services are not provided, and residential development relies on individual septic systems.

Solid Waste

The Kings Waste & Recycling Authority (KWRA) manages the materials recovery facility located east of Highway 43, south of Hanford Armona Road. The KWRA facility continues to implement efforts to recycle and re-use material to divert waste from entering the landfills. The KWRA serves all county unincorporated areas, and the cities of Corcoran, Hanford, and Lemoore. Non-recyclable materials generated in these areas are first directed to the KWRA facility and then transferred to the B-17 Landfill Unit at 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. 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 dependent on the rate of fill (CalRecycle 2018).

4.18.3 Utilities and Service Systems (XIX.) Environmental Checklist and Discussion

a) *Would the Project 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 of which could cause significant environmental effects?*

Less than Significant Impact. The proposed Project would not require the construction of new or expanded water, wastewater, or storm water drainage, natural gas or telecommunications facilities. Maintenance of the solar PV panels would require cleaning approximately four times per year. Cleaning of the PV panels would be conducted with a pressure washer with water brought onsite from an offsite source. New water or wastewater facilities would not be required to accommodate the Project. The Project-generated electric power would be transmitted through PG&E-owned distribution circuits, a portion of which would be comprised of a distribution line extension the project Proponent is asking PG&E to build as part of the project interconnection upgrades and improvements. Utility construction impacts would be less than significant.

b) *Would the Project 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. The proposed Project is not considered a large land use development project for purposes of compliance with Government Code § 66473.7 and Water Code § 10912. The proposed Project does not occupy more than 40 acres of land and is therefore not considered a project pursuant to Water Code 10912. The proposed Project would require water for cleaning of the panels approximately four times per year, conservatively estimated at 0.0075 acre feet per washing, or up to 0.03 acre feet per year. Water would be brought from an offsite source to the Project site via a 4,000-gallon water truck. For purposes of compliance with SB 1262 and satisfying requirements for water supply assessments, hauled water is not considered a source of water (Water Code § 10910(i).) New or expanded water supply would not be required. A less than significant impact would occur. No mitigation is required.

- c) ***Would the Project 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. The proposed Project would not require wastewater service. No impact would occur. No mitigation is required.

- d) ***Would the Project 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 goals?***

Less than Significant Impact. Non-recyclable construction and operational waste would be disposed of at the Kettleman Hills Facility Landfill or other local landfill permitted to accept such waste. Construction waste would be sorted onsite 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. Utilizing a factor of 10 cubic yards of solid waste for every MW, the Project would produce a maximum of total of 50 cubic yards of solid waste during construction, of which approximately five 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.

Therefore, Project waste disposal would have a minimal impact on the remaining capacity of Municipal Solid Waste Landfill B-17 and would not require the development of new or expanded landfills. The Project would result in a less than significant impact.

- e) ***Would the Project comply 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 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. As described above, the Project would generate a maximum of 50 cubic yards of solid waste during construction, of which approximately five cubic yards would be recycled. Materials would be disposed of at Chemical Waste Management, Inc. Unit B-17 in Kettleman City, 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 consistent with AB 939 and County policy. 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. Therefore, the Project would have a less than significant impact. No mitigation is required.

4.19 Energy

4.19.1 Energy (VI.) Materials Checklist

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.19.2 Environmental Setting

The California Public Utilities Commission, CEC, and California Power Authority adopted an Energy Action Plan in 2003 to meet California's electricity and natural gas needs. Revised and updated in 2005 and again in 2008, the plan's primary objectives are to invest in energy efficiency, renewable resources, and a clean conventional electricity supply. SB 100, passed in 2018, establishes a goal to produce 50-percent renewable energy by 2026, 60-percent renewable energy by 2030, and 100-percent renewable energy by 2045 within the California energy 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).

4.19.3 Energy (VI.) Environmental Checklist and Discussion

a) *Would the project 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. During construction, the Project would require energy in the form of diesel and gasoline through the use of onsite, off-road equipment, onsite 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). The Project's gasoline fuel consumption during the one-time construction period is estimated to be 119,409 gallons of fuel, which would increase the annual gasoline fuel use in the county, by 0.27 percent (according the CARB EMFAC2014 modeling software [2014], 111,357,850 gallons of gasoline is consumed within Kings County annually [$119,409 \div 111,357,850 = 0.0027$]). As such, Project construction would have a nominal effect on local and regional energy supplies.

No unusual Project characteristics would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in the region or the state. Construction contractors would purchase their own gasoline and diesel fuel from local suppliers and would conserve the use of their supplies to minimize costs to their profits. Additionally, construction equipment fleet turnover and increasingly stringent State and federal regulations on engine efficiency combined with State regulations limiting engine idling times and requiring recycling of construction debris, would further reduce the amount of transportation fuel demand during Project construction. Energy use related to construction would be temporary. The Project's construction-related energy use would not represent a significant demand on energy resources because it would be limited to an approximately eight-month period. The Project would implement standard construction BMPs, including adherence to maintenance schedules to maintain equipment in optimal working order and rated energy efficiencies. For these reasons, it is expected that construction fuel consumption associated with the Project would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature.

During solar PV facility operations, two or three offsite employees would be reserved for maintenance and would be dispatched to the site for routine scheduled maintenance and on an as-needed basis for unscheduled maintenance. Vehicles for operation and maintenance would typically include trucks such as pickups or flatbeds, as well as water trucks for solar panel washing. Large heavy-haul transport equipment may be brought to the site infrequently for equipment repair or replacement. Energy demand associated with scheduled and unscheduled maintenance vehicle trips to the site would be nominal.

The proposed solar facility would be capable of generating 5 MW of electrical power under peak solar conditions. The energy that would be generated by the Project is estimated at 10,075 MW hours per year. With this offset, the Project would have a net benefit of reducing energy consumption. Therefore, the Project would not consume energy in a wasteful, inefficient, or unnecessary manner during operation, and impacts would be less than significant.

During decommissioning, the Project would require energy in the forms similar to the construction phase: gasoline and diesel through the use of onsite, off-road equipment, onsite vehicles, and on-road vehicles. The Project's energy use during the approximately two-month decommissioning phase would be less than that consumed during construction and would not represent a significant demand on energy resources. The Project would implement standard BMPs, such as following maintenance schedules to maintain equipment in working order and rated energy efficiencies, to avoid or reduce inefficient, wasteful, and unnecessary consumption of energy. Moreover, in 2050 when decommissioning is estimated to occur, fuel economy would likely be substantially improved. Therefore, the Project's decommissioning phase energy impacts would be less than significant.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact. The Project would promote the use of renewable energy throughout the Central Valley and the state, consistent with Energy Action Plan and SB 100. Although the Project would consume energy during construction, operations, and decommissioning activities, the proposed solar PV facility would offset Project energy consumption requirements and result in a net benefit of reducing energy consumption. 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, the

Kings County General Plan Resource Conservation Element Objective RC G1.2 encourages development of sustainable and renewable alternative energy sources, including solar (Kings County 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 impact would occur.

4.20 Wildfire

4.20.1 Wildfire (XX.) Materials Checklist

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 Incorporated	Less than Significant Impact	No Impact
a)	Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.20.2 Environmental Setting

The Project site is located within a State Responsibility Area (SRA) where the CAL FIRE is identified as the primary emergency response agency responsible for fire suppression and prevention (CAL FIRE 2019). The SRA extends westerly from the California Aqueduct and north of the Kings County/Kern County boundary to the steeper terrain of the Avenal Gap and hillsides in southwest Kings County. The Project site is not in an area designated by California Department of Forestry and Fire Prevention (CAL FIRE 2007) as a Fire Hazard Severity Zone. Furthermore, no Very High Fire Hazard Severity Zones are located nearby. The Project site is accessible by emergency personnel and vehicles in the event of a wildland fire. CAL FIRE maintains Fire Station 51 approximately 30 miles southwest of the Project site in Shandon, and its Kings County Fire Department Station 9 approximately nine miles due northwest of the Project site.

4.20.3 Wildfire (XX.) Environmental Checklist and Discussion

a) *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?*

No Impact. The Project site is within a SRA. The proposed solar PV facility with battery energy storage component would not generate substantial long-term traffic, and would not result in any permanent road closures or affect any existing emergency shelters. The proposed Project would not interfere with an adopted emergency response plan or evacuation plan. As a result, this impact is considered less than significant. No impact would occur.

b) *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, 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?*

No Impact. The Project site consists of grassland on flat terrain and is not located within a Very High Fire Hazard Severity Zone. By its nature, the Project would not include construction of structures for human habitation and there would be no permanent employees stationed at the site. No impact would occur.

c) *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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?*

Less than Significant Impact. The Project would require installation of onsite roads, drive aisles between solar arrays, transformers, battery energy container units, and a Gen Tie-in. The Project is not identified within a Very High Fire Hazard area (Kings County 2010). Mitigation Measure HM-2 will implement an Emergency Contingency Plan to effectively address emergencies that may be reasonably expected to occur at the Project site. Impacts would be less than significant.

d) *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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 would not include construction of structures for human habitation and there would be no permanent employees stationed at or near the site. The Project would not expose people to significant risks, including flooding, landslides, slope instability, or changes in drainage patterns. No impact would occur.

4.21 Mandatory Findings of Significance

Mandatory Findings of Significance (XVIII.) Environmental Checklist and Discussion

Does the Project:		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b)	Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c)	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Environmental Evaluation of Mandatory Findings of Significance

- a) *Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?***

Less than Significant with Mitigation Incorporated. With implementation of mitigation measures to be incorporated into the Project, it is expected that the Project would not 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 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 considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?**

Less than Significant Impact. 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. Current and proposed solar projects in Kings County are summarized in Table 10.

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 projects.

It should be noted that the Project is located in a more remote area of southwestern Kings County where relatively few cumulative solar projects are identified. The nearest mapped pending, approved, or completed solar PV project is Alamo Springs (pending), located 5.5 miles to the west. Refer to Figure 10 for locations of the cumulative projects in the county.

Table 10, 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 & 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	CUP Approved
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	30.00	5.00	Pending
Lincoln	--	--	Expired

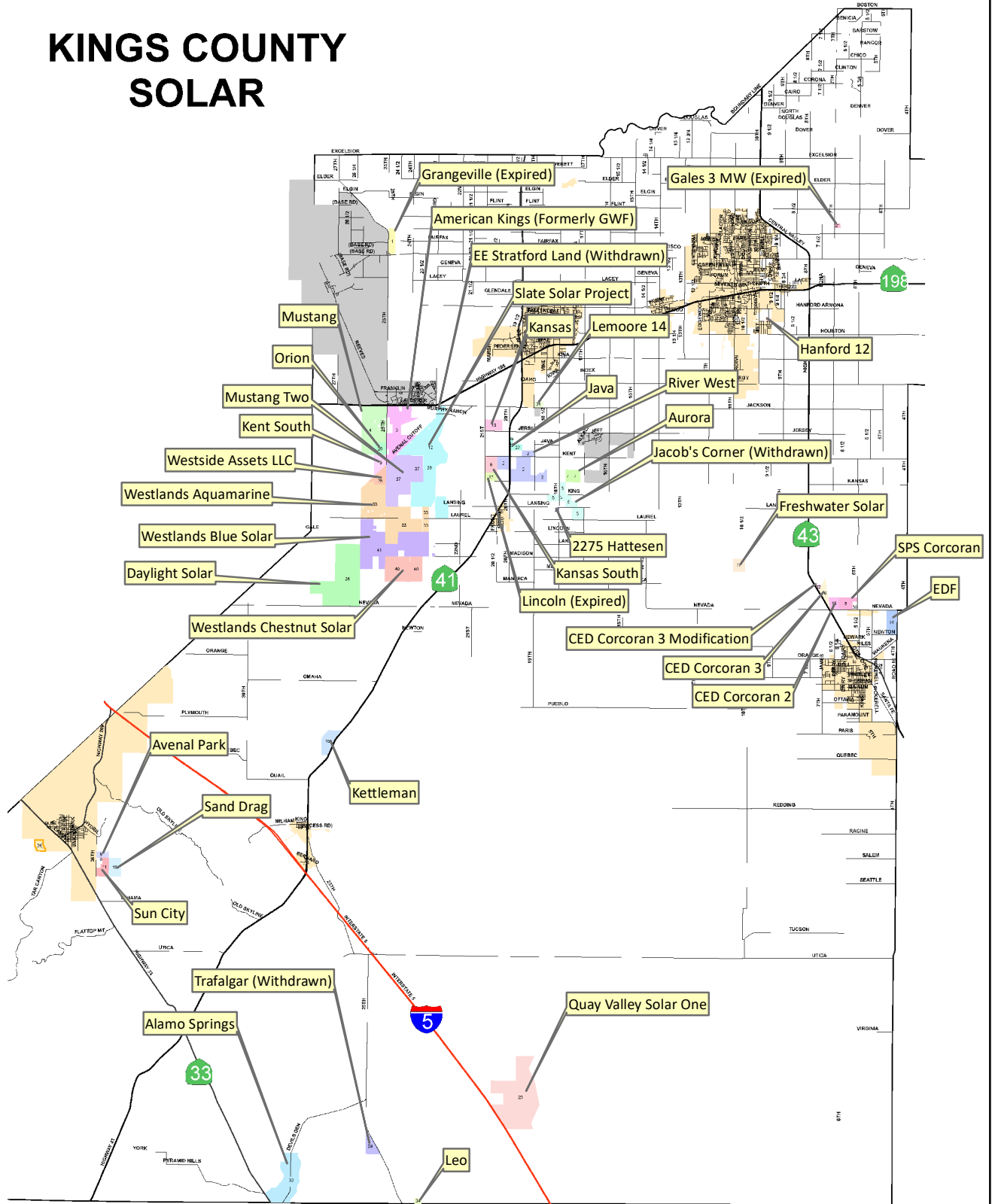
Table 10, Pending, Approved, and Completed Solar PV Projects			
Project	Area (Acres)	Generating Capacity (MW)	Status (as of April 2019)
Mustang	1,422.00	160.00	Constructed
Mustang Two	2,459.15	150.00	CUP Approved
Orion	200.00	20.00	Constructed
Quay Valley Solar One			Withdrawn
Sand Drag	240.00	19.00	Constructed
RE Slate Solar	2,490.00	300	Pending
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	1,950.00	250.00	Pending
Westlands Solar Park	21,000.00	2,000.00	Pending
Westside Solar	287.00	22.00	Phase 1 Constructed
Total	39,057.67	3,986.7	

Source: Kings County CDA 2019.

The potential for the Project, together with the cumulative projects (including other solar PV developments), to contribute to cumulative impacts with regard to Agriculture Resources, Air Quality, Biological Resources, Cultural Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Transportation, and Wildfire are described below.

Agriculture Resources. The Project site is comprised of approximately 40 acres of non-native grassland, 30 acres of which are proposed for development with the solar PV facility. The entire site is classified as Grazing Land by the California Department of Conservation (CDC). In 2016 Kings County had approximately 338,243 acres of grazing land (CDC 2018). Portions of the Project site and other cumulative solar projects would potentially be used for grazing during project operations, and, thus, would remain agricultural land uses. At the end of their productive lives, all of the cumulative projects would be decommissioned, including soil reclamation and financial assurances. The combined effects of the cumulative projects would not result in cumulatively significant impact. The proposed Project would result in a less than significant contribution to cumulative impacts on agriculture resources in the area.

KINGS COUNTY SOLAR



Location: N:\2017\2017-202 Leo Solar Facility CUP\WAPS\Borders\LS_SolarPV_Projects_Kings_County.mxd (44)-mapping_guest 8/7/2019

Map Date: 8/7/2019

Source: Helix 2019, Kings County Community Development Agency 2019

Figure 10. Solar PV Projects in Kings County

2017-202 Leo Solar Facility CUP

Air Quality. The region where the proposed Project would be built is designated as nonattainment for the ozone precursors PM₁₀ 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). As shown in Section 4.3.4 b), Project construction and operations would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in non-attainment under any applicable federal or State ambient air quality standard (including PM₁₀, PM_{2.5} and ozone precursors.) Although the decommissioning phase includes equipment and activities similar to construction, the time frame for decommissioning and reclamation is shorter and emissions would be expected to be less than the already less than significant emissions associated with construction. The Project would not result in a cumulatively considerable net increase of any criteria pollutants for which the region is in non-attainment and impacts under this criterion would be less than significant.

Biological Resources. As discussed in Section 4.4. Biological Resources, the Project would not contribute to a significant impact to biological resources. The Project would have no impact on riparian habitat, wetlands, movement of wildlife, or an adopted habitat conservation plan. Therefore, it would not contribute to any cumulative impact on those resources.

Implementation of Mitigation Measures BIO-1, BIO-2, BIO-3, BIO-4, and BIO-5 would reduce Project impacts to other biological resources to less than significant. Potential impacts to burrowing owls would be mitigated through preconstruction surveys and avoidance and/or passive relocation. Potential impacts to San Joaquin kit fox and American badger would be mitigated through preconstruction surveys and avoidance, exclusion, and/or passive relocation. Preconstruction burrow surveys for special status small mammal species and blunt-nosed leopard lizard shall be conducted, and preconstruction surveys will be conducted for nesting birds and raptors. Consequently, the Project would not contribute to a significant cumulative impact to those resources.

Cultural Resources. The Project could contribute a cumulative impact and loss of Cultural Resources, as described in Section 4.5, Cultural Resources; however, implementation of Mitigation Measures CUL-1: Protection of Cultural Resources, and CUL-2: 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 4.6, Greenhouse Gas Emissions. GHG emissions and their contribution to the global effect of climate change are an inherently cumulative impact. Similar to the proposed Project, the cumulative projects would help to 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 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 Project would not contribute to adverse cumulative impacts due to GHG emissions. As described above, the Project and cumulative projects would result in a beneficial effect on GHG.

Hazards and Hazardous Materials. As discussed in Section 4.8, Hazards and Hazardous Materials, the Project would not have a significant impact in terms of: 1) creating a significant public hazard through

transport, use, or disposal of hazardous materials; 2) emitting hazardous emissions or acutely hazardous materials, substances, or waste in the vicinity of a school; 3) being located on a list of hazardous materials sites; 4) location within two miles of a private or public use airport; 5) impaired implementation or interference with an adopted emergency response plan or evacuation plan; or 6) exposure of people or structures to a significant risk of loss, injury or death involving wildland fires.

Implementation of Mitigation Measures HM-1: Hazardous Materials Business Plan, and HM-2: Emergency Contingency Plan, would reduce other Project-specific impacts to less than significant. The individual cumulative projects would be required to similar to these identified for the Project. Therefore, the Project's contribution would be less than significant and cumulative impacts on hazards and hazardous materials would be less than significant.

Hydrology and Water Quality. As discussed in Section 4.9, Hydrology and Water Quality the Project would have a less than significant impact on groundwater supplies and groundwater recharge. Water for construction would be hauled in by truck. It is conservatively estimated that up to four acre-feet of water would be required during the construction period to support Project site roadway compaction, dust control, panel washing, and sanitary use. The primary water demand during operation would be the washing of PV modules to remove dust to maintain power generation efficiency. The necessary water would be trucked in via a 4,000-gallon water truck. The amount of water needed for this purpose is conservatively estimated up to 0.03 acre feet of water annually.

With respect to storm water drainage and water quality, the Project and other cumulative projects occur on similar flat topography, in a semi-arid climate. Most of these project sites contain permeable soil and some vegetated cover during operations, and runoff from even a major storm event would be captured by the numerous agricultural ditches spread throughout the county. Like the Project, each project would also be required to prepare and implement a SWPPP (included as Mitigation Measure HYD-1 for the 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 groundwater supplies, storm water runoff and water quality would be less than significant, and the contribution of the Project would be less than significant.

Transportation. As indicated in Section 4.16 Transportation, the Project would generate short-term construction-related vehicle trips over an eight-month period. At peak period, this would result in approximately 60 vehicle trips per day. During operations two or three offsite employees would be reserved for routine maintenance on an as-needed. Project construction, operations and decommissioning would not generate a significant number of trips. The Project is located approximately five miles from the nearest pending solar PV project in Kings County. Project impacts would be less than significant and would not contribute to any significant cumulative impact on the area circulation system.

Wildfire. As indicated in Section 4.20, Wildfire, the Project is located in a State responsibility area. The Project would have no impact on an adopted emergency response plan or emergency evacuation plan. It would not expose any occupants or employees to pollutant concentrations associated with a wildfire, nor would it expose people or structures to risks associated with flooding, landslides, slope instability, or drainage changes. Implementation of Mitigation Measure HM-2: Emergency Contingency Plan will effectively reduce any potential fire response and suppression emergencies at the site to less than

significant. Therefore, the Project's contribution to impacts would be less than significant and cumulative impacts on wildfire would be less than significant.

c) *Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?*

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 most of these potential hazards would be avoided or reduced to less than significant levels through compliance with existing laws, regulations, or requirements that are intended to protect human health and safety. In other instances, the potential impacts to humans would be avoided or reduced to less than significant levels through mitigation measures identified in this document. 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 that will cause substantial adverse effects on human beings, either directly or indirectly.

SECTION 5.0 LIST OF PREPARERS

5.1 Kings County

Lead Agency

Chuck Kinney, Deputy Director-Planning

5.2 ECORP Consulting, Inc.

CEQA Documentation/Biological and Cultural Resources/Air Quality and Greenhouse Gas (GHG)

Chris Stabenfeldt, Senior Environmental Planner, Program Manager

Tom Holm, Senior Environmental Planner, Project Manager

Jessie Dubus, Associate Environmental Scientist

Phillip Wasz, Senior Wildlife Biologist

Seth Myers, Air Quality/GHG/Noise Analyst

Lindsay Taylor, Air Quality/GHG/Noise Analyst

Wendy Blumel, Staff Archeologist

Robert Cunningham, Staff Archeologist

Karla Green, Technical Editor

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SECTION 7.0 LIST OF APPENDICES

Appendix A – Air Quality/Greenhouse Gas Assessment

Appendix B – Biological Technical Report

Appendix C – Cultural Resources Technical Report (Confidential-Not for Public Distribution)

Appendix D – Paleontological Records Search Results

Appendix E – Project Site Details

APPENDIX A

Air Quality/Greenhouse Gas Assessment

Leo Solar - Kings County, Annual

Leo Solar
Kings County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	1,306.80	1000sqft	30.00	1,306,800.00	0
General Light Industry	2.12	1000sqft	0.00	2,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	37
Climate Zone	3			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Leo Solar - Kings County, Annual

Project Characteristics -

Land Use - Lot acreage adjusted to match that of the project.

Construction Phase - Construction pahse updated to match that of the Project

Off-road Equipment - Construction equipment updated to match the project.

Off-road Equipment - Grading pahse=close out

Off-road Equipment - Building construction phase =mechanical & electrical

Grading - Grading updated to refelct that of the project.

Trips and VMT - Worker and vendor trips updated to reflect that of the project.

Energy Use - Light energy updated to match that of the project.

Construction Off-road Equipment Mitigation -

Water And Wastewater - Water updated to include the water trucks.

Vehicle Trips - Trips updated to match that of the project.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	440.00	185.00
tblConstructionPhase	NumDays	45.00	80.00
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	PhaseEndDate	2/24/2021	9/25/2020
tblConstructionPhase	PhaseEndDate	6/19/2019	1/10/2020
tblConstructionPhase	PhaseEndDate	4/17/2019	9/20/2019
tblConstructionPhase	PhaseStartDate	6/20/2019	1/11/2020
tblConstructionPhase	PhaseStartDate	4/18/2019	9/21/2019
tblConstructionPhase	PhaseStartDate	3/21/2019	7/1/2019
tblEnergyUse	LightingElect	0.00	0.08
tblFleetMix	HHD	0.16	0.00
tblFleetMix	LDA	0.49	0.00

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tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.15	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.5750e-003	0.00
tblFleetMix	MCY	5.7820e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	7.3500e-004	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	1.7420e-003	0.00
tblFleetMix	SBUS	9.6400e-004	0.00
tblFleetMix	UBUS	1.8330e-003	0.00
tblGrading	AcresOfGrading	200.00	1.00
tblGrading	AcresOfGrading	60.00	0.00
tblLandUse	LotAcreage	0.05	0.00
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment

Leo Solar - Kings County, Annual

tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripNumber	215.00	10.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripNumber	30.00	20.00
tblTripsAndVMT	WorkerTripNumber	25.00	8.00
tblTripsAndVMT	WorkerTripNumber	550.00	30.00
tblVehicleTrips	ST_TR	1.32	0.50
tblVehicleTrips	SU_TR	0.68	0.50
tblVehicleTrips	WD_TR	6.97	0.50
tblWater	IndoorWaterUseRate	0.00	5,000.00

2.0 Emissions Summary

Leo Solar - Kings County, Annual

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.3942	4.3282	2.5770	4.7000e-003	0.5952	0.2007	0.7959	0.3222	0.1848	0.5070	0.0000	421.8779	421.8779	0.1289	0.0000	425.0991
2020	0.6271	6.2677	5.0928	8.8700e-003	0.0978	0.3239	0.4217	0.0332	0.3002	0.3334	0.0000	781.5742	781.5742	0.2033	0.0000	786.6576
Maximum	0.6271	6.2677	5.0928	8.8700e-003	0.5952	0.3239	0.7959	0.3222	0.3002	0.5070	0.0000	781.5742	781.5742	0.2033	0.0000	786.6576

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.3942	4.3282	2.5770	4.7000e-003	0.5952	0.2007	0.7959	0.3222	0.1848	0.5070	0.0000	421.8774	421.8774	0.1289	0.0000	425.0986
2020	0.6271	6.2677	5.0928	8.8700e-003	0.0978	0.3239	0.4217	0.0332	0.3002	0.3334	0.0000	781.5734	781.5734	0.2033	0.0000	786.6568
Maximum	0.6271	6.2677	5.0928	8.8700e-003	0.5952	0.3239	0.7959	0.3222	0.3002	0.5070	0.0000	781.5734	781.5734	0.2033	0.0000	786.6568

[illegible]

Leo Solar - Kings County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
2	5-7-2019	8-6-2019	0.9449	0.9449
3	8-7-2019	11-6-2019	2.3511	2.3511
4	11-7-2019	2-6-2020	2.3346	2.3346
5	2-7-2020	5-6-2020	2.3045	2.3045
6	5-7-2020	8-6-2020	2.3527	2.3527
7	8-7-2020	9-30-2020	1.2786	1.2786
		Highest	2.3527	2.3527

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1226	1.1000e-004	0.0121	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0234	0.0234	6.0000e-005	0.0000	0.0249
Energy	2.4000e-004	2.1700e-003	1.8200e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	38.2137	38.2137	1.6700e-003	3.8000e-004	38.3682
Mobile	0.0000	0.0000	0.0000	0.0000	1.0000e-003	0.0000	1.0000e-003	2.4000e-004	0.0000	2.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.5339	0.0000	0.5339	0.0316	0.0000	1.3226
Water						0.0000	0.0000		0.0000	0.0000	0.1571	0.7796	0.9367	0.0162	3.9000e-004	1.4568
Total	0.1229	2.2800e-003	0.0139	1.0000e-005	1.0000e-003	2.0000e-004	1.2000e-003	2.4000e-004	2.0000e-004	4.4000e-004	0.6910	39.0167	39.7076	0.0495	7.7000e-004	41.1725

Leo Solar - Kings County, Annual

2.2 Overall Operational**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1226	1.1000e-004	0.0121	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0234	0.0234	6.0000e-005	0.0000	0.0249
Energy	2.4000e-004	2.1700e-003	1.8200e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	38.2137	38.2137	1.6700e-003	3.8000e-004	38.3682
Mobile	0.0000	0.0000	0.0000	0.0000	1.0000e-003	0.0000	1.0000e-003	2.4000e-004	0.0000	2.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.5339	0.0000	0.5339	0.0316	0.0000	1.3226
Water						0.0000	0.0000		0.0000	0.0000	0.1571	0.7796	0.9367	0.0162	3.9000e-004	1.4568
Total	0.1229	2.2800e-003	0.0139	1.0000e-005	1.0000e-003	2.0000e-004	1.2000e-003	2.4000e-004	2.0000e-004	4.4000e-004	0.6910	39.0167	39.7076	0.0495	7.7000e-004	41.1725

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/1/2019	9/20/2019	5	60	
2	Grading	Grading	9/21/2019	1/10/2020	5	80	
3	Building Construction	Building Construction	1/11/2020	9/25/2020	5	185	

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Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1

Acres of Paving: 30

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

OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Dumpers/Tenders	2	8.00	16	0.38
Site Preparation	Other Construction Equipment	4	8.00	172	0.42
Site Preparation	Graders	2	8.00	187	0.41
Building Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Building Construction	Cranes	0	0.00	231	0.29
Grading	Excavators	2	8.00	158	0.38
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Grading	Other Construction Equipment	2	8.00	172	0.42
Building Construction	Trenchers	1	8.00	78	0.50
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Other Construction Equipment	8	8.00	172	0.42
Building Construction	Rubber Tired Loaders	1	8.00	203	0.36
Building Construction	Forklifts	1	8.00	89	0.20
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

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Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	12	20.00	0.00	0.00	25.00	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	10	8.00	0.00	0.00	25.00	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	16	30.00	10.00	0.00	25.00	25.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2019**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3613	0.0000	0.3613	0.1986	0.0000	0.1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1779	1.9565	1.0126	1.8700e-003		0.0937	0.0937		0.0863	0.0863	0.0000	167.6655	167.6655	0.0524	0.0000	168.9744
Total	0.1779	1.9565	1.0126	1.8700e-003	0.3613	0.0937	0.4550	0.1986	0.0863	0.2849	0.0000	167.6655	167.6655	0.0524	0.0000	168.9744

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3.2 Site Preparation - 2019**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.6900e-003	5.0800e-003	0.0457	1.1000e-004	0.0112	7.0000e-005	0.0112	2.9600e-003	7.0000e-005	3.0300e-003	0.0000	9.6015	9.6015	3.8000e-004	0.0000	9.6110
Total	5.6900e-003	5.0800e-003	0.0457	1.1000e-004	0.0112	7.0000e-005	0.0112	2.9600e-003	7.0000e-005	3.0300e-003	0.0000	9.6015	9.6015	3.8000e-004	0.0000	9.6110

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3613	0.0000	0.3613	0.1986	0.0000	0.1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1779	1.9565	1.0126	1.8700e-003		0.0937	0.0937		0.0863	0.0863	0.0000	167.6653	167.6653	0.0524	0.0000	168.9742
Total	0.1779	1.9565	1.0126	1.8700e-003	0.3613	0.0937	0.4550	0.1986	0.0863	0.2849	0.0000	167.6653	167.6653	0.0524	0.0000	168.9742

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3.2 Site Preparation - 2019**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.6900e-003	5.0800e-003	0.0457	1.1000e-004	0.0112	7.0000e-005	0.0112	2.9600e-003	7.0000e-005	3.0300e-003	0.0000	9.6015	9.6015	3.8000e-004	0.0000	9.6110
Total	5.6900e-003	5.0800e-003	0.0457	1.1000e-004	0.0112	7.0000e-005	0.0112	2.9600e-003	7.0000e-005	3.0300e-003	0.0000	9.6015	9.6015	3.8000e-004	0.0000	9.6110

3.3 Grading - 2019**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2173	0.0000	0.2173	0.1192	0.0000	0.1192	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2079	2.3642	1.4968	2.6700e-003		0.1069	0.1069		0.0984	0.0984	0.0000	240.0022	240.0022	0.0759	0.0000	241.9005
Total	0.2079	2.3642	1.4968	2.6700e-003	0.2173	0.1069	0.3243	0.1192	0.0984	0.2176	0.0000	240.0022	240.0022	0.0759	0.0000	241.9005

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3.3 Grading - 2019**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7300e-003	2.4400e-003	0.0219	5.0000e-005	5.3500e-003	3.0000e-005	5.3900e-003	1.4200e-003	3.0000e-005	1.4500e-003	0.0000	4.6087	4.6087	1.8000e-004	0.0000	4.6133
Total	2.7300e-003	2.4400e-003	0.0219	5.0000e-005	5.3500e-003	3.0000e-005	5.3900e-003	1.4200e-003	3.0000e-005	1.4500e-003	0.0000	4.6087	4.6087	1.8000e-004	0.0000	4.6133

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2173	0.0000	0.2173	0.1192	0.0000	0.1192	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2079	2.3642	1.4968	2.6700e-003		0.1069	0.1069		0.0984	0.0984	0.0000	240.0019	240.0019	0.0759	0.0000	241.9002
Total	0.2079	2.3642	1.4968	2.6700e-003	0.2173	0.1069	0.3243	0.1192	0.0984	0.2176	0.0000	240.0019	240.0019	0.0759	0.0000	241.9002

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3.3 Grading - 2019**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.7300e-003	2.4400e-003	0.0219	5.0000e-005	5.3500e-003	3.0000e-005	5.3900e-003	1.4200e-003	3.0000e-005	1.4500e-003	0.0000	4.6087	4.6087	1.8000e-004	0.0000	4.6133
Total	2.7300e-003	2.4400e-003	0.0219	5.0000e-005	5.3500e-003	3.0000e-005	5.3900e-003	1.4200e-003	3.0000e-005	1.4500e-003	0.0000	4.6087	4.6087	1.8000e-004	0.0000	4.6133

3.3 Grading - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0246	0.0000	0.0246	0.0133	0.0000	0.0133	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2422	0.1604	3.0000e-004		0.0109	0.0109		0.0100	0.0100	0.0000	26.0845	26.0845	8.4400e-003	0.0000	26.2954
Total	0.0217	0.2422	0.1604	3.0000e-004	0.0246	0.0109	0.0355	0.0133	0.0100	0.0233	0.0000	26.0845	26.0845	8.4400e-003	0.0000	26.2954

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3.3 Grading - 2020**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	2.4000e-004	2.1600e-003	1.0000e-005	5.9000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4961	0.4961	2.0000e-005	0.0000	0.4966
Total	2.8000e-004	2.4000e-004	2.1600e-003	1.0000e-005	5.9000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4961	0.4961	2.0000e-005	0.0000	0.4966

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0246	0.0000	0.0246	0.0133	0.0000	0.0133	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2422	0.1604	3.0000e-004		0.0109	0.0109		0.0100	0.0100	0.0000	26.0845	26.0845	8.4400e-003	0.0000	26.2954
Total	0.0217	0.2422	0.1604	3.0000e-004	0.0246	0.0109	0.0355	0.0133	0.0100	0.0233	0.0000	26.0845	26.0845	8.4400e-003	0.0000	26.2954

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3.3 Grading - 2020**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	2.4000e-004	2.1600e-003	1.0000e-005	5.9000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4961	0.4961	2.0000e-005	0.0000	0.4966
Total	2.8000e-004	2.4000e-004	2.1600e-003	1.0000e-005	5.9000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4961	0.4961	2.0000e-005	0.0000	0.4966

3.4 Building Construction - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5720	5.7726	4.6951	7.3400e-003		0.3109	0.3109		0.2881	0.2881	0.0000	640.7857	640.7857	0.1902	0.0000	645.5412
Total	0.5720	5.7726	4.6951	7.3400e-003		0.3109	0.3109		0.2881	0.2881	0.0000	640.7857	640.7857	0.1902	0.0000	645.5412

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3.4 Building Construction - 2020**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.2900e-003	0.2321	0.0481	7.5000e-004	0.0210	1.8400e-003	0.0229	6.0700e-003	1.7600e-003	7.8300e-003	0.0000	71.1846	71.1846	3.1500e-003	0.0000	71.2633
Worker	0.0239	0.0206	0.1870	4.8000e-004	0.0516	3.3000e-004	0.0519	0.0137	3.0000e-004	0.0140	0.0000	43.0233	43.0233	1.5100e-003	0.0000	43.0612
Total	0.0332	0.2527	0.2351	1.2300e-003	0.0726	2.1700e-003	0.0748	0.0198	2.0600e-003	0.0218	0.0000	114.2079	114.2079	4.6600e-003	0.0000	114.3245

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5720	5.7726	4.6951	7.3400e-003		0.3109	0.3109		0.2881	0.2881	0.0000	640.7849	640.7849	0.1902	0.0000	645.5404
Total	0.5720	5.7726	4.6951	7.3400e-003		0.3109	0.3109		0.2881	0.2881	0.0000	640.7849	640.7849	0.1902	0.0000	645.5404

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3.4 Building Construction - 2020**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	9.2900e-003	0.2321	0.0481	7.5000e-004	0.0210	1.8400e-003	0.0229	6.0700e-003	1.7600e-003	7.8300e-003	0.0000	71.1846	71.1846	3.1500e-003	0.0000	71.2633
Worker	0.0239	0.0206	0.1870	4.8000e-004	0.0516	3.3000e-004	0.0519	0.0137	3.0000e-004	0.0140	0.0000	43.0233	43.0233	1.5100e-003	0.0000	43.0612
Total	0.0332	0.2527	0.2351	1.2300e-003	0.0726	2.1700e-003	0.0748	0.0198	2.0600e-003	0.0218	0.0000	114.2079	114.2079	4.6600e-003	0.0000	114.3245

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	1.0000e-003	0.0000	1.0000e-003	2.4000e-004	0.0000	2.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	1.0000e-003	0.0000	1.0000e-003	2.4000e-004	0.0000	2.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
General Light Industry	1.06	1.06	1.06	3,095	3,095
Total	1.06	1.06	1.06	3,095	3,095

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

[illegible]

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5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	35.8526	35.8526	1.6200e-003	3.4000e-004	35.9931
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	35.8526	35.8526	1.6200e-003	3.4000e-004	35.9931
NaturalGas Mitigated	2.4000e-004	2.1700e-003	1.8200e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3611	2.3611	5.0000e-005	4.0000e-005	2.3751
NaturalGas Unmitigated	2.4000e-004	2.1700e-003	1.8200e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3611	2.3611	5.0000e-005	4.0000e-005	2.3751

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5.2 Energy by Land Use - NaturalGas**Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	44244.4	2.4000e-004	2.1700e-003	1.8200e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3611	2.3611	5.0000e-005	4.0000e-005	2.3751
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		2.4000e-004	2.1700e-003	1.8200e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3611	2.3611	5.0000e-005	4.0000e-005	2.3751

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	44244.4	2.4000e-004	2.1700e-003	1.8200e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3611	2.3611	5.0000e-005	4.0000e-005	2.3751
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		2.4000e-004	2.1700e-003	1.8200e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	2.3611	2.3611	5.0000e-005	4.0000e-005	2.3751

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5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	18698.4	5.4396	2.5000e-004	5.0000e-005	5.4609
Other Non-Asphalt Surfaces	104544	30.4131	1.3800e-003	2.8000e-004	30.5322
Total		35.8526	1.6300e-003	3.3000e-004	35.9931

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	18698.4	5.4396	2.5000e-004	5.0000e-005	5.4609
Other Non-Asphalt Surfaces	104544	30.4131	1.3800e-003	2.8000e-004	30.5322
Total		35.8526	1.6300e-003	3.3000e-004	35.9931

6.0 Area Detail**6.1 Mitigation Measures Area**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1226	1.1000e-004	0.0121	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0234	0.0234	6.0000e-005	0.0000	0.0249
Unmitigated	0.1226	1.1000e-004	0.0121	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0234	0.0234	6.0000e-005	0.0000	0.0249

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0287					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0928					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1300e-003	1.1000e-004	0.0121	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0234	0.0234	6.0000e-005	0.0000	0.0249
Total	0.1226	1.1000e-004	0.0121	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0234	0.0234	6.0000e-005	0.0000	0.0249

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6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0287					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0928					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1300e-003	1.1000e-004	0.0121	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0234	0.0234	6.0000e-005	0.0000	0.0249
Total	0.1226	1.1000e-004	0.0121	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.0234	0.0234	6.0000e-005	0.0000	0.0249

7.0 Water Detail**7.1 Mitigation Measures Water**

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	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.9367	0.0162	3.9000e-004	1.4568
Unmitigated	0.9367	0.0162	3.9000e-004	1.4568

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0.49025 / 0	0.9273	0.0160	3.8000e-004	1.4421
Other Non-Asphalt Surfaces	0.005 / 0	9.4600e-003	1.6000e-004	0.0000	0.0147
Total		0.9367	0.0162	3.8000e-004	1.4568

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7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0.49025 / 0	0.9273	0.0160	3.8000e-004	1.4421
Other Non-Asphalt Surfaces	0.005 / 0	9.4600e-003	1.6000e-004	0.0000	0.0147
Total		0.9367	0.0162	3.8000e-004	1.4568

8.0 Waste Detail**8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.5339	0.0316	0.0000	1.3226
Unmitigated	0.5339	0.0316	0.0000	1.3226

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8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	2.63	0.5339	0.0316	0.0000	1.3226
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.5339	0.0316	0.0000	1.3226

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	2.63	0.5339	0.0316	0.0000	1.3226
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		0.5339	0.0316	0.0000	1.3226

9.0 Operational Offroad

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

Fire Pumps and Emergency Generators

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

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

Equipment Type	Number
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11.0 Vegetation

Leo Solar - Kings County, Summer

Leo Solar
Kings County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	1,306.80	1000sqft	30.00	1,306,800.00	0
General Light Industry	2.12	1000sqft	0.00	2,120.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	37
Climate Zone	3			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Leo Solar - Kings County, Summer

Project Characteristics -

Land Use - Lot acreage adjusted to match that of the project.

Construction Phase - Construction phase updated to match that of the Project

Off-road Equipment - Construction equipment updated to match the project.

Off-road Equipment - Grading phase=close out

Off-road Equipment - Building construction phase =mechanical & electrical

Grading - Grading updated to reflect that of the project.

Trips and VMT - Worker and vendor trips updated to reflect that of the project.

Energy Use - Light energy updated to match that of the project.

Construction Off-road Equipment Mitigation -

Water And Wastewater - Water updated to include the water trucks.

Vehicle Trips - Trips updated to match that of the project.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	440.00	185.00
tblConstructionPhase	NumDays	45.00	80.00
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	PhaseEndDate	2/24/2021	9/25/2020
tblConstructionPhase	PhaseEndDate	6/19/2019	1/10/2020
tblConstructionPhase	PhaseEndDate	4/17/2019	9/20/2019
tblConstructionPhase	PhaseStartDate	6/20/2019	1/11/2020
tblConstructionPhase	PhaseStartDate	4/18/2019	9/21/2019
tblConstructionPhase	PhaseStartDate	3/21/2019	7/1/2019
tblEnergyUse	LightingElect	0.00	0.08
tblFleetMix	HHD	0.16	0.00
tblFleetMix	LDA	0.49	0.00

Leo Solar - Kings County, Summer

tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.15	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.5750e-003	0.00
tblFleetMix	MCY	5.7820e-003	0.00
tblFleetMix	MDV	0.12	0.00
tblFleetMix	MH	7.3500e-004	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	1.7420e-003	0.00
tblFleetMix	SBUS	9.6400e-004	0.00
tblFleetMix	UBUS	1.8330e-003	0.00
tblGrading	AcresOfGrading	200.00	1.00
tblGrading	AcresOfGrading	60.00	0.00
tblLandUse	LotAcreage	0.05	0.00
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment

Leo Solar - Kings County, Summer

tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripLength	7.30	25.00
tblTripsAndVMT	VendorTripNumber	215.00	10.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripLength	10.80	25.00
tblTripsAndVMT	WorkerTripNumber	30.00	20.00
tblTripsAndVMT	WorkerTripNumber	25.00	8.00
tblTripsAndVMT	WorkerTripNumber	550.00	30.00
tblVehicleTrips	ST_TR	1.32	0.50
tblVehicleTrips	SU_TR	0.68	0.50
tblVehicleTrips	WD_TR	6.97	0.50
tblWater	IndoorWaterUseRate	0.00	5,000.00

2.0 Emissions Summary

Leo Solar - Kings County, Summer

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	6.1326	65.7349	42.3042	0.0758	12.4242	3.1256	15.5498	6.7212	2.8784	9.5996	0.0000	7,503.6780	7,503.6780	2.3314	0.0000	7,561.9632
2020	6.5597	65.0434	53.6802	0.0932	6.1874	3.3839	8.9084	3.3520	3.1366	5.8553	0.0000	9,051.3314	9,051.3314	2.3303	0.0000	9,109.4095
Maximum	6.5597	65.7349	53.6802	0.0932	12.4242	3.3839	15.5498	6.7212	3.1366	9.5996	0.0000	9,051.3314	9,051.3314	2.3314	0.0000	9,109.4095

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	6.1326	65.7349	42.3042	0.0758	12.4242	3.1256	15.5498	6.7212	2.8784	9.5996	0.0000	7,503.6780	7,503.6780	2.3314	0.0000	7,561.9632
2020	6.5597	65.0434	53.6802	0.0932	6.1874	3.3839	8.9084	3.3520	3.1366	5.8553	0.0000	9,051.3314	9,051.3314	2.3303	0.0000	9,109.4095
Maximum	6.5597	65.7349	53.6802	0.0932	12.4242	3.3839	15.5498	6.7212	3.1366	9.5996	0.0000	9,051.3314	9,051.3314	2.3314	0.0000	9,109.4095

[illegible]

Leo Solar - Kings County, Summer

2.2 Overall Operational**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.6782	1.2300e-003	0.1342	1.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004		0.2865	0.2865	7.6000e-004		0.3055
Energy	1.3100e-003	0.0119	9.9800e-003	7.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004		14.2609	14.2609	2.7000e-004	2.6000e-004	14.3456
Mobile	0.0000	0.0000	0.0000	0.0000	5.6200e-003	0.0000	5.6200e-003	1.3800e-003	0.0000	1.3800e-003		0.0000	0.0000	0.0000		0.0000
Total	0.6795	0.0131	0.1441	8.0000e-005	5.6200e-003	1.3800e-003	7.0000e-003	1.3800e-003	1.3800e-003	2.7600e-003		14.5474	14.5474	1.0300e-003	2.6000e-004	14.6511

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.6782	1.2300e-003	0.1342	1.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004		0.2865	0.2865	7.6000e-004		0.3055
Energy	1.3100e-003	0.0119	9.9800e-003	7.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004		14.2609	14.2609	2.7000e-004	2.6000e-004	14.3456
Mobile	0.0000	0.0000	0.0000	0.0000	5.6200e-003	0.0000	5.6200e-003	1.3800e-003	0.0000	1.3800e-003		0.0000	0.0000	0.0000		0.0000
Total	0.6795	0.0131	0.1441	8.0000e-005	5.6200e-003	1.3800e-003	7.0000e-003	1.3800e-003	1.3800e-003	2.7600e-003		14.5474	14.5474	1.0300e-003	2.6000e-004	14.6511

Leo Solar - Kings County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/1/2019	9/20/2019	5	60	
2	Grading	Grading	9/21/2019	1/10/2020	5	80	
3	Building Construction	Building Construction	1/11/2020	9/25/2020	5	185	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1

Acres of Paving: 30

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

OffRoad Equipment

Leo Solar - Kings County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Dumpers/Tenders	2	8.00	16	0.38
Site Preparation	Other Construction Equipment	4	8.00	172	0.42
Site Preparation	Graders	2	8.00	187	0.41
Building Construction	Rough Terrain Forklifts	1	8.00	100	0.40
Building Construction	Cranes	0	0.00	231	0.29
Grading	Excavators	2	8.00	158	0.38
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Grading	Other Construction Equipment	2	8.00	172	0.42
Building Construction	Trenchers	1	8.00	78	0.50
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Other Construction Equipment	8	8.00	172	0.42
Building Construction	Rubber Tired Loaders	1	8.00	203	0.36
Building Construction	Forklifts	1	8.00	89	0.20
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Leo Solar - Kings County, Summer

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	12	20.00	0.00	0.00	25.00	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	10	8.00	0.00	0.00	25.00	25.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	16	30.00	10.00	0.00	25.00	25.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2019**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.0442	0.0000	12.0442	6.6205	0.0000	6.6205			0.0000			0.0000
Off-Road	5.9293	65.2173	33.7527	0.0625		3.1231	3.1231		2.8761	2.8761		6,160.653 4	6,160.653 4	1.9237		6,208.745 5
Total	5.9293	65.2173	33.7527	0.0625	12.0442	3.1231	15.1673	6.6205	2.8761	9.4966		6,160.653 4	6,160.653 4	1.9237		6,208.745 5

Leo Solar - Kings County, Summer

3.2 Site Preparation - 2019**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2033	0.1573	1.8168	3.8900e-003	0.3801	2.4300e-003	0.3825	0.1008	2.2400e-003	0.1030		387.1741	387.1741	0.0158		387.5692
Total	0.2033	0.1573	1.8168	3.8900e-003	0.3801	2.4300e-003	0.3825	0.1008	2.2400e-003	0.1030		387.1741	387.1741	0.0158		387.5692

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.0442	0.0000	12.0442	6.6205	0.0000	6.6205			0.0000			0.0000
Off-Road	5.9293	65.2173	33.7527	0.0625		3.1231	3.1231		2.8761	2.8761	0.0000	6,160.6534	6,160.6534	1.9237		6,208.7455
Total	5.9293	65.2173	33.7527	0.0625	12.0442	3.1231	15.1673	6.6205	2.8761	9.4966	0.0000	6,160.6534	6,160.6534	1.9237		6,208.7455

Leo Solar - Kings County, Summer

3.2 Site Preparation - 2019**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2033	0.1573	1.8168	3.8900e-003	0.3801	2.4300e-003	0.3825	0.1008	2.2400e-003	0.1030		387.1741	387.1741	0.0158		387.5692
Total	0.2033	0.1573	1.8168	3.8900e-003	0.3801	2.4300e-003	0.3825	0.1008	2.2400e-003	0.1030		387.1741	387.1741	0.0158		387.5692

3.3 Grading - 2019**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0353	0.0000	6.0353	3.3117	0.0000	3.3117			0.0000			0.0000
Off-Road	5.7759	65.6720	41.5775	0.0742		2.9704	2.9704		2.7327	2.7327		7,348.8084	7,348.8084	2.3251		7,406.9355
Total	5.7759	65.6720	41.5775	0.0742	6.0353	2.9704	9.0057	3.3117	2.7327	6.0444		7,348.8084	7,348.8084	2.3251		7,406.9355

Leo Solar - Kings County, Summer

3.3 Grading - 2019**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0813	0.0629	0.7267	1.5600e-003	0.1520	9.7000e-004	0.1530	0.0403	8.9000e-004	0.0412		154.8697	154.8697	6.3200e-003		155.0277
Total	0.0813	0.0629	0.7267	1.5600e-003	0.1520	9.7000e-004	0.1530	0.0403	8.9000e-004	0.0412		154.8697	154.8697	6.3200e-003		155.0277

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0353	0.0000	6.0353	3.3117	0.0000	3.3117			0.0000			0.0000
Off-Road	5.7759	65.6720	41.5775	0.0742		2.9704	2.9704		2.7327	2.7327	0.0000	7,348.8084	7,348.8084	2.3251		7,406.9355
Total	5.7759	65.6720	41.5775	0.0742	6.0353	2.9704	9.0057	3.3117	2.7327	6.0444	0.0000	7,348.8084	7,348.8084	2.3251		7,406.9355

Leo Solar - Kings County, Summer

3.3 Grading - 2019**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0813	0.0629	0.7267	1.5600e-003	0.1520	9.7000e-004	0.1530	0.0403	8.9000e-004	0.0412		154.8697	154.8697	6.3200e-003		155.0277
Total	0.0813	0.0629	0.7267	1.5600e-003	0.1520	9.7000e-004	0.1530	0.0403	8.9000e-004	0.0412		154.8697	154.8697	6.3200e-003		155.0277

3.3 Grading - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0353	0.0000	6.0353	3.3117	0.0000	3.3117			0.0000			0.0000
Off-Road	5.4258	60.5409	40.1064	0.0742		2.7201	2.7201		2.5025	2.5025		7,188.3189	7,188.3189	2.3249		7,246.4401
Total	5.4258	60.5409	40.1064	0.0742	6.0353	2.7201	8.7554	3.3117	2.5025	5.8141		7,188.3189	7,188.3189	2.3249		7,246.4401

Leo Solar - Kings County, Summer

3.3 Grading - 2020**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0736	0.0553	0.6446	1.5100e-003	0.1520	9.4000e-004	0.1530	0.0403	8.6000e-004	0.0412		150.0542	150.0542	5.4600e-003		150.1908
Total	0.0736	0.0553	0.6446	1.5100e-003	0.1520	9.4000e-004	0.1530	0.0403	8.6000e-004	0.0412		150.0542	150.0542	5.4600e-003		150.1908

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.0353	0.0000	6.0353	3.3117	0.0000	3.3117			0.0000			0.0000
Off-Road	5.4258	60.5409	40.1064	0.0742		2.7201	2.7201		2.5025	2.5025	0.0000	7,188.3189	7,188.3189	2.3249		7,246.4401
Total	5.4258	60.5409	40.1064	0.0742	6.0353	2.7201	8.7554	3.3117	2.5025	5.8141	0.0000	7,188.3189	7,188.3189	2.3249		7,246.4401

Leo Solar - Kings County, Summer

3.3 Grading - 2020**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0736	0.0553	0.6446	1.5100e-003	0.1520	9.4000e-004	0.1530	0.0403	8.6000e-004	0.0412		150.0542	150.0542	5.4600e-003		150.1908
Total	0.0736	0.0553	0.6446	1.5100e-003	0.1520	9.4000e-004	0.1530	0.0403	8.6000e-004	0.0412		150.0542	150.0542	5.4600e-003		150.1908

3.4 Building Construction - 2020**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	6.1836	62.4068	50.7573	0.0794		3.3606	3.3606		3.1144	3.1144		7,636.1654	7,636.1654	2.2668		7,692.8363
Total	6.1836	62.4068	50.7573	0.0794		3.3606	3.3606		3.1144	3.1144		7,636.1654	7,636.1654	2.2668		7,692.8363

Leo Solar - Kings County, Summer

3.4 Building Construction - 2020**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1000	2.4294	0.5058	8.1500e-003	0.2316	0.0199	0.2515	0.0666	0.0190	0.0856		852.4627	852.4627	0.0358		853.3577
Worker	0.2762	0.2072	2.4171	5.6600e-003	0.5701	3.5200e-003	0.5736	0.1512	3.2400e-003	0.1544		562.7033	562.7033	0.0205		563.2155
Total	0.3761	2.6366	2.9229	0.0138	0.8017	0.0234	0.8251	0.2178	0.0222	0.2400		1,415.1660	1,415.1660	0.0563		1,416.5732

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	6.1836	62.4068	50.7573	0.0794		3.3606	3.3606		3.1144	3.1144	0.0000	7,636.1654	7,636.1654	2.2668		7,692.8363
Total	6.1836	62.4068	50.7573	0.0794		3.3606	3.3606		3.1144	3.1144	0.0000	7,636.1654	7,636.1654	2.2668		7,692.8363

Leo Solar - Kings County, Summer

3.4 Building Construction - 2020**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1000	2.4294	0.5058	8.1500e-003	0.2316	0.0199	0.2515	0.0666	0.0190	0.0856		852.4627	852.4627	0.0358		853.3577
Worker	0.2762	0.2072	2.4171	5.6600e-003	0.5701	3.5200e-003	0.5736	0.1512	3.2400e-003	0.1544		562.7033	562.7033	0.0205		563.2155
Total	0.3761	2.6366	2.9229	0.0138	0.8017	0.0234	0.8251	0.2178	0.0222	0.2400		1,415.1660	1,415.1660	0.0563		1,416.5732

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Leo Solar - Kings County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	5.6200e-003	0.0000	5.6200e-003	1.3800e-003	0.0000	1.3800e-003		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	5.6200e-003	0.0000	5.6200e-003	1.3800e-003	0.0000	1.3800e-003		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
General Light Industry	1.06	1.06	1.06	3,095	3,095
Total	1.06	1.06	1.06	3,095	3,095

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

[illegible]

Leo Solar - Kings County, Summer

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	1.3100e-003	0.0119	9.9800e-003	7.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004		14.2609	14.2609	2.7000e-004	2.6000e-004	14.3456
NaturalGas Unmitigated	1.3100e-003	0.0119	9.9800e-003	7.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004		14.2609	14.2609	2.7000e-004	2.6000e-004	14.3456

Leo Solar - Kings County, Summer

5.2 Energy by Land Use - NaturalGas**Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	121.218	1.3100e-003	0.0119	9.9800e-003	7.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004		14.2609	14.2609	2.7000e-004	2.6000e-004	14.3456
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		1.3100e-003	0.0119	9.9800e-003	7.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004		14.2609	14.2609	2.7000e-004	2.6000e-004	14.3456

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	0.121218	1.3100e-003	0.0119	9.9800e-003	7.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004		14.2609	14.2609	2.7000e-004	2.6000e-004	14.3456
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		1.3100e-003	0.0119	9.9800e-003	7.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004		14.2609	14.2609	2.7000e-004	2.6000e-004	14.3456

6.0 Area Detail**6.1 Mitigation Measures Area**

Leo Solar - Kings County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.6782	1.2300e-003	0.1342	1.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004		0.2865	0.2865	7.6000e-004		0.3055
Unmitigated	0.6782	1.2300e-003	0.1342	1.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004		0.2865	0.2865	7.6000e-004		0.3055

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1574					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5082					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0125	1.2300e-003	0.1342	1.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004		0.2865	0.2865	7.6000e-004		0.3055
Total	0.6782	1.2300e-003	0.1342	1.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004		0.2865	0.2865	7.6000e-004		0.3055

Leo Solar - Kings County, Summer

6.2 Area by SubCategory**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1574					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5082					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0125	1.2300e-003	0.1342	1.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004		0.2865	0.2865	7.6000e-004		0.3055
Total	0.6782	1.2300e-003	0.1342	1.0000e-005		4.8000e-004	4.8000e-004		4.8000e-004	4.8000e-004		0.2865	0.2865	7.6000e-004		0.3055

7.0 Water Detail**7.1 Mitigation Measures Water****8.0 Waste Detail****8.1 Mitigation Measures Waste****9.0 Operational Offroad**

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Leo Solar - Kings County, Summer

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

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

Equipment Type	Number
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11.0 Vegetation

APPENDIX B

Biological Technical Report

Biological Technical Report for the Z Global Leo Solar Project

Kings County, California



Prepared For:

Z Global, Inc.

September 22, 2017

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1.0 INTRODUCTION

ECORP Consulting, Inc. (ECORP) conducted a biological reconnaissance survey for the proposed Z Global – Leo Solar project (project). The biological reconnaissance survey was conducted for the purposes of determining the baseline biological conditions and to identify any biological constraints that could affect the site plan for the project. The project site consisted of undeveloped land in an unincorporated area near Kettleman City, Kings County, California (Figure 1). The project site consisted of one parcel totaling approximately 40 acres. The assessor's parcel number for the project site is 048-350-016-000. The project will be subject to county, state, and federal regulations regarding compliance with the federal Endangered Species Act (ESA), California ESA, Migratory Bird Treaty Act (MBTA), and California Fish and Game Code (FGC).

1.1 Location and Setting

The project site is located on the Kings County and Kern County line, between California State Route 33 and Interstate 5, approximately 0.5 mile east of 25th Avenue, Kings County, California (Figure 2). The project site is located within the San Joaquin Valley, which is a part of the larger Central Valley of California. The site is bounded by undeveloped land to the north, east, and west, and active agriculture and undeveloped land to the south. Surrounding land uses included agriculture, livestock grazing, and open land. The project site, as depicted on United States Geological Survey (USGS) 7.5-minute Avenal Gap topographic quadrangle, lies within Section 36 of Township 24 South, Range 19 East. Elevation on the project site is approximately 315 feet (ft) above mean sea level [msl].

1.2 Project Description

The parcel is under consideration for development of 3 megawatt (MW) photo voltaic solar power generating facility. The solar panels will occupy approximately 20 acres of the 40 acre parcel. The facility would consist of solar photovoltaic modules mounted on fixed-tilt ground-mounted racking or single axis trackers, utility scale central inverters, associated transformers, power poles, an access road, and perimeter fencing. The project would feed into existing electrical distribution lines and be decommissioned after 25 years of service.

1.3 Purpose

ECORP conducted a biological reconnaissance survey that included characterizing the vegetation communities present on the project site, identifying suitable habitat for special-status species, and assessing the potential for special-status species and habitats to occur. The purpose of the biological reconnaissance survey and the literature review was to determine the baseline biological conditions on the project site and to identify any biological constraints that could affect the site plan for the project.

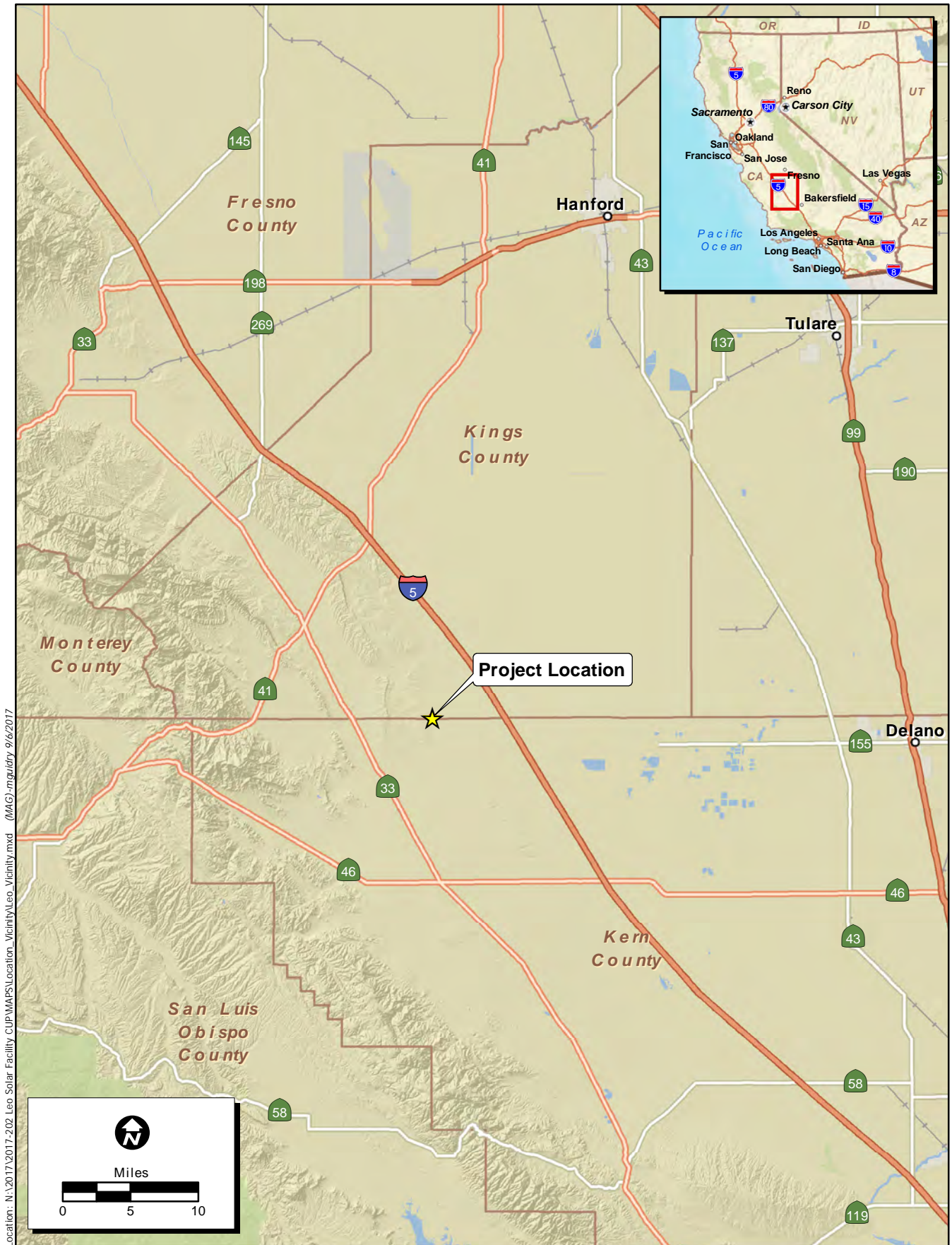


Figure 1. Project Vicinity

2017-2022 Leo Solar Facility CUP

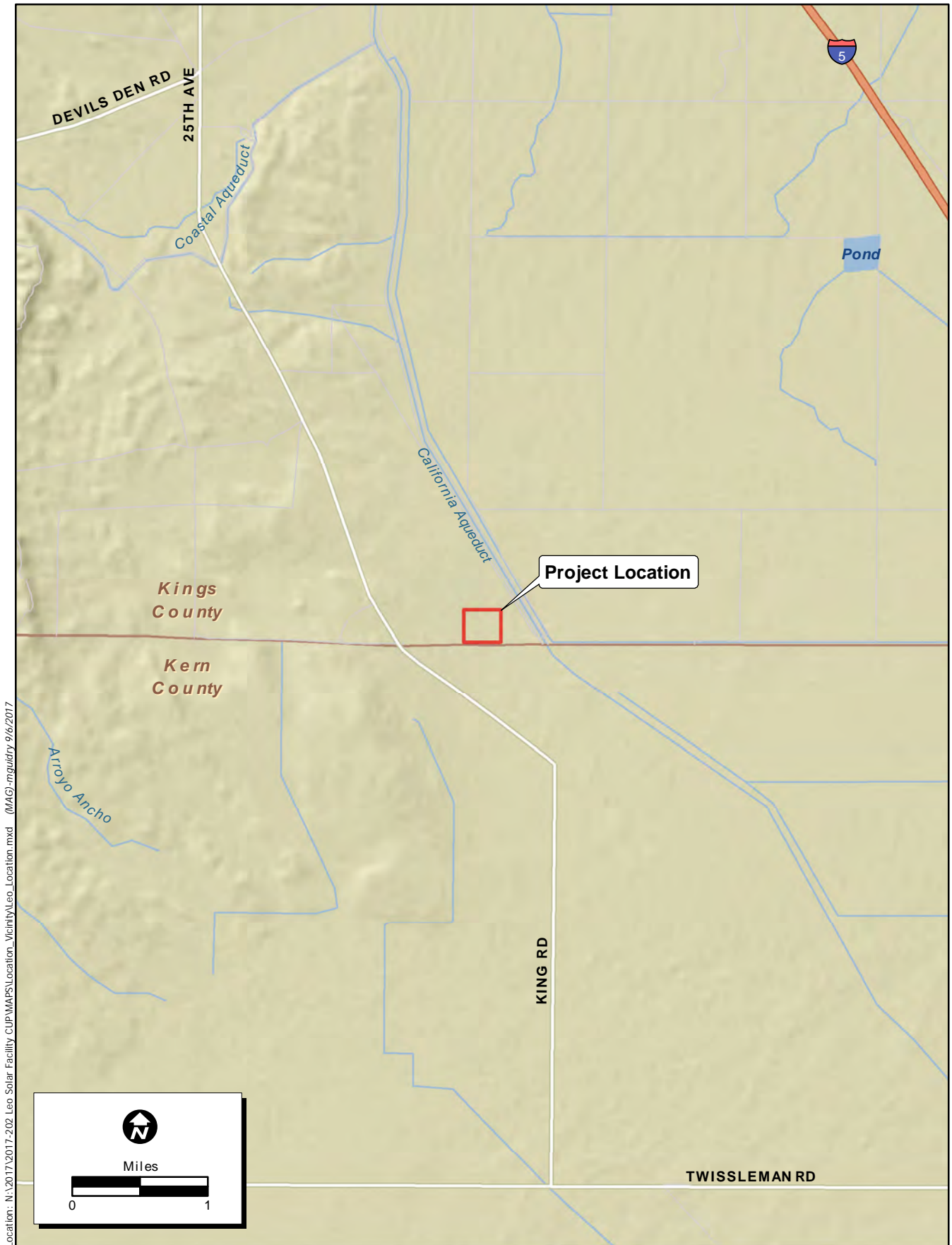


Figure 2. Project Location

2017-202 Leo Solar Facility CUP

1.4 Special-Status Species Regulations

This literature review and biological reconnaissance survey was conducted to identify potential issues and ensure compliance with state and federal regulations regarding listed, protected, and sensitive species. The regulations are detailed below:

- The Federal Endangered Species Act of 1973 (FESA) (16 U.S.C. section 1531 et seq.) provides for the conservation of endangered and threatened species listed pursuant to Section 4 of FESA (16 U.S.C. section 1533) and the ecosystems upon which they depend. Two sections of this law mandate protection for species in this category: FESA § 9: It is unlawful for anyone to “take” a listed animal. Take may be direct, e.g., harming or killing species, and indirect, e.g., by significantly modifying its habitat in such a way that it causes harm to the species (USFWS 1973). The second part, Section 7 of FESA (16 U.S.C. section 1536) requires Federal agencies to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of Critical Habitat for these species. The USFWS administers this federal program (USFWS 1973).
- The California Endangered Species Act (CESA) (FGC section 2050 et seq.) requires the California Department of Fish and Wildlife (CDFW) to establish a list of endangered and threatened species (section 2070) and to prohibit the incidental taking of any such listed species except as allowed by the Act (sections 2080-2089). In addition, CESA prohibits take of candidate species (under consideration for listing). The definition of “take” includes harass, harm, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.
- CESA also requires the CDFW to comply with the California Environmental Quality Act (CEQA) (Pub. Resources Code Section 21000 et seq.) when evaluating incidental take permit applications [FGC section 2081(b) and California Code of Regulations, Title 14, section 783.0 et seq.], and the potential impacts the project or activity for which the application was submitted may have on the environment. The CDFW’s CEQA obligations include consultation with other public agencies that have jurisdiction over the project or activity [California Code of Regulations, Title 14, section 783.5(d)(3)], but in no event may the CDFW issue an incidental take permit if issuance would jeopardize the continued existence of the species [FGC section 2081(c); California Code Regulations, Title 14, section 783.4(b)] (CDFG 1984).
- The Migratory Bird Treaty Act (MBTA) of 1918 (16 USC sections 703-712) is a federal law that implements international treaties and conventions held to protect migratory birds (USFWS 1918). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10. This includes feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The MBTA requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (February 1 to August 31, annually) to avoid nest abandonment and/or loss of eggs or young. The loss of habitat upon which the birds depend could constitute a violation of the MBTA. In addition to MBTA, CDFW also enforces the protection of non-game native birds. Sections 3503, and 3503.5 of the FGC mandate the protection of California non-

game native birds' nests, and FGC 3800 makes it unlawful to take California-native non-game birds (CDFG 1984).

- The Bald and Golden Eagle Protection Act (The Eagle Act) of 1940 and amended in 1962 was first employed for the protection of bald eagles (*Haliaeetus leucocephalus*). In 1962 the Eagle Act was amended to include golden eagles (*Aquila chrysaetos*) as well. This addition was made to help strengthen the protection of bald eagles who were often times killed by people confusing them with golden eagles. This act has made it illegal to import, export, take, sell, purchase, or barter bald or golden eagles (USFWS 1940).
- The Native Plant Protection Act (NPPA) of 1977 (FGC sections 1900-1913) is a state act that was created to help "preserve, protect, and enhance rare and endangered plants in this state." The NPPA is regulated by the CDFW who has the authority to classify native plants as endangered or rare to help prevent these species from take. Endangered and rare plants species would also be provided additional protection under CESA.

2.0 METHODOLOGY

The methods used for the literature review and biological reconnaissance survey are presented below.

2.1 Literature Review

Prior to conducting the biological reconnaissance survey, a literature review was performed using the CDFW's California Natural Diversity Database (CNDDDB; CDFW 2017a) and the California Native Plant Society's (CNPS) Electronic Inventory (CNPSEI; CNPS 2017) to determine the special-status species that have been documented in the vicinity of the project site. The CNDDDB and CNPSEI database searches were conducted on August 28, 2017 (CDFW 2017a; CNPS 2017). ECORP searched CNDDDB and CNPSEI records within the project boundaries as depicted on USGS 7.5-minute Avenal Gap topographic quadrangle, plus the surrounding eight topographic quadrangles, including Antelope Plain, Dudley Ridge, Emigrant Hill, Kettleman Plain, Los Viejos, Pyramid Hills, Sawtooth Ridge, and West Camp. The CNDDDB and CNPSEI contain records of reported occurrences of federal and/or state-listed endangered, threatened, proposed endangered or threatened species, California Species of Special Concern (SSC), and/or other special-status species or habitats that may occur on or in the vicinity of the project. Additional information was gathered from the following sources and includes, but is not limited to:

- Natural Resources Conservation Service "Web Soil Survey" (NRCS 2017);
- State and Federally Listed Endangered and Threatened Animals of California (CDFG 2011);
- Special Animals List (CDFW 2017a);
- The Jepson Manual (Hickman 1993);
- various online websites (e.g., Calflora 2017); and
- The Manual of California Vegetation, 2nd Edition (Sawyer et al. 2009).

Using this information and observations in the field, a list of special-status plant and animal species that have the potential to occur on or around the project was generated. For the purposes of this assessment, special-status species are defined as plants or animals that:

- have been designated as either rare, threatened, or endangered by CDFW, CNPS, or the U.S. Fish and Wildlife Service (USFWS), and/or are protected under either FESA or CESA;
- are candidate species being considered or proposed for listing under these same acts;
- are fully protected by the California FGC, Sections 3511, 4700, 5050, or 5515; and/or
- are of expressed concern to resource and regulatory agencies, or local jurisdictions.

Special-status species reported for the region in the literature review or for which suitable habitat occurs on the project site were assessed for their potential to occur within the project site based on the following guidelines:

- Present: The species was observed on site during a site visit or focused survey.
- High: Habitat (including soils and elevation factors) for the species occurs on site and a known occurrence has been recorded within five miles of the site.
- Moderate: Either habitat (including soils and elevation factors) for the species occurs on site and a known occurrence has been reported in the database, but not within five miles of the site, or a known occurrence occurs within five miles of the site and marginal or limited amounts of habitat occurs on site.
- Low: Limited habitat for the species occurs on site and a known occurrence has been reported in the database, but not within five miles of the site, or suitable habitat strongly associated with the species occurs on site, but no records were found in the database search.
- Presumed Absent: Focused surveys were conducted and the species was not found, or species was found in the database search but habitat (including soils and elevation factors) is not present on site, or the known geographic range of the species does not include the survey area.

Note that location information on some special-status species in the CNDDDB may be of questionable accuracy or may be unavailable. Therefore, for survey purposes, the environmental factors associated with a species' occurrence requirements may be considered sufficient reason to give a species a positive potential for occurrence. In addition, just because a record of a species does not exist in the databases does not mean it does not occur. In many cases, records may not be present in the databases because an area has not been surveyed for that particular species.

2.2 Biological Reconnaissance Survey

The biological reconnaissance survey was conducted by walking the entire project site to determine the vegetation communities and wildlife habitats on the project site. The biologist documented the plant and animal species present on the project site and the location and condition of the project site were assessed for the potential to provide habitat for special-status plant and wildlife species. Data were recorded on Global Positioning System (GPS) units, field notebooks, and maps. Photographs were also taken during the survey to provide visual representation of the condition of

the project site. The project site was also examined to assess its potential to function as a movement corridor for wildlife moving throughout the region.

All plant and wildlife species, including any special-status species that were observed during the survey, were recorded. Plant and wildlife species were identified using a variety of sources including but not limited to:

- The Jepson Manual, vascular plants of California, second edition (Hickman 1993);
- A Field Guide to Western Reptiles and Amphibians (Stebbins 2003);
- The American Ornithologists' Union (AOU) Checklist of North American Birds, 7th edition with 53rd Supplement (American Ornithologists' Union [AOU] 1998, 2012); and
- Mammal Species of the World (Wilson and Reeder 2005).

In instances where a special-status species was observed, the date, species, location, habitat, and GPS coordinates were recorded. Locations of incidentally observed special-status species were recorded using a handheld GPS in NAD 83, UTM coordinates, Zone 11S.

3.0 RESULTS

Summarized below are the results of the literature review, database searches , and field surveys, including site characteristics, vegetation communities, wildlife, special-status species, and special-status habitats (including any potential wildlife corridors).

3.1 Literature Review

The literature review and database searches resulted in records for 13 special-status plant species and 13 special-status wildlife species that could occur on and/or in the vicinity of the project site.

3.1.1 *Special-Status Plants*

There were 13 special-status plants that appeared in the literature review and database searches for the project site. A list was generated from the results of the literature review and the project was evaluated for suitable habitat to support any of the special-status plant species on the list. Of the 13 special-status wildlife species identified in the literature review, one was found to have a high potential to occur, two were found to have a moderate potential to occur, nine were found to have a low potential to occur, and one species is presumed absent from the project site.

For the purposes of this study, plants with CNPS designation of 4.3 were not included in this analysis, as they are defined as "not very endangered in California (<20% of occurrences threatened or no current threats known)" (CNPS 2016). The 13 special-status plant species are listed below with their status designation. Descriptions of the CNPS designations can be found in Table 1.

Table 1. CNPS Status Designations

List Designation	Meaning
1A	Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
1B	Plants Rare, Threatened, or Endangered in California and Elsewhere
2A	Plants Presumed Extirpated in California, But Common Elsewhere
2B	Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
3	Plants about which we need more information; a review list
4	Plants of limited distribution; a watch list
List 1B, 2, and 4 extension meanings:	
.1	Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2	Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

Note: According to CNPS (Skinner and Pavlik 1994), plants on Lists 1B and 2 meet definitions for listing as threatened or endangered under Section 1901, Chapter 10 of the California FGC (CDFG 1984). This interpretation is inconsistent with other definitions.

Special-Status Plant Species with a High Potential to Occur

The following species have a high potential to occur due to the presence of suitable habitat (including soils and elevation factors) for the species occurring on the project site and a known occurrence that has been recorded within five miles of the project site.

San Joaquin woollythreads (Monolopia congdoni)

San Joaquin woollythreads is a CNPS list 1B.2 and federally listed endangered plant species that is typically found in shadescale scrub, valley grassland, and foothill woodland habitats. The project site, consisting of nonnative grassland, provided suitable habitat for this species and the database searches identified one record of this species within five miles of the project site. The closest record of this species was identified in 1992 approximately 0.5 mile north of the project site (Appendix A). The same location was then revisited in 2013 and no San Joaquin woollythreads were observed, but excellent habitat was still present for the species (CDFW 2017a). Therefore, this species has been classified as having a high potential to occur on the project site.

Special-Status Plant Species with a Moderate Potential to Occur

The following species have a moderate potential to occur on the project site because either habitat for the species occurs on site and a known occurrence has been reported in the database, but not within five miles of the site, or a known occurrence within five miles of the site and marginal or limited amounts of habitat occurs on site.

Lost Hills crownscale (Atriplex coronata var. vallicola)

Lost Hills crownscale is a CNPS list 1B.2 plant species that is typically found in shadescale scrub, valley grassland, freshwater wetlands, and wetland-riparian habitats. The project site, consisting of nonnative grassland, provided marginally suitable habitat for this species, but the database searches

identified one record of this species within five miles of the project site. The closest record of this species was identified in 2010 approximately 4.3 miles northeast of the project site (CDFW 2017a). Therefore, this species has been classified as having a moderate potential to occur on the project site.

Recurved larkspur (Delphinium recurvatum)

Recurved larkspur is a CNPS list 1B.2 plant species that is typically found in shadescale scrub, valley grassland, and foothill woodland habitats. The project site, consisting of nonnative grassland, provided marginally suitable habitat for this species, but the database searches identified one record of this species within five miles of the project site. The closest record of this species was identified in 2005 approximately 3.5 miles northwest of the project site (CDFW 2017a). Therefore, this species has been classified as having a moderate potential to occur on the project site.

Special-Status Plant Species with a Low Potential to Occur

The following species have a low potential to occur on the project site because limited habitat for the species occurs on site and a known occurrence has been reported in the database, but not within five miles of the site, or suitable habitat strongly associated with the species occurs on site, but no records were found in the database search.

Forked fiddleneck (Amsinckia furcata)

Forked fiddleneck is a CNPS list 4.2 plant species that is typically found in valley grassland and foothill woodland habitats. The project site, consisting of nonnative grassland, provided marginally suitable habitat for this species and the database searches did not identify any records within five miles of the project site. The closest record of this species was identified in 1937 approximately 12.3 miles northwest of the project site (CNPS 2017a). Therefore, this species has been classified as having a low potential to occur on the project site.

Crownscale (Atriplex coronata var. coronata)

Crownscale is a CNPS list 4.2 plant species that is typically found in valley and foothill grassland, chenopod scrub, and vernal pools habitats. The project site, consisting of nonnative grassland, provided marginally suitable habitat for this species and the database searches did not identify any records within five miles of the project site. The closest record of this species was identified in 1988 approximately 12.3 miles northwest of the project site (CNPS 2017). Therefore, this species has been classified as having a low potential to occur on the project site.

California jewel flower (Caulanthus californicus)

California jewel flower is a CNPS list 1B.1 plant species. This species is also federally and state listed as endangered. This plant species is typically found in shadescale scrub, valley grassland, and pinyon-juniper woodland. The project site, consisting of nonnative grassland, provided marginally suitable habitat for this species and the database searches did not identify any records within five miles of the project site. Additionally, all known populations of this species are limited to three areas within hilly terrain west of the San Joaquin Valley. These locations include the Carrizo Plain, Santa Barbara Canyon, and the Kreyenhagen Hills (Fresno County) (USFWS 1998). The closest record of

this species was identified in 1935 approximately 9.1 miles south of the project site. The location of that record was revisited in 1986 and the habitat was eliminated, and the only remaining habitat was highly disturbed due to oil and gas development (CDFW 2017a). Therefore, this species has been classified as having a low potential to occur on the project site.

Lemmon's jewelflower (Caulanthus lemmonii)

Lemmon's jewelflower is a CNPS list 1B.2 plant species. This plant species is typically found in pinyon-juniper woodland and valley grassland, but current populations are confined to the foothills west of the San Joaquin Valley floor. The project site located within the valley floor only provided marginally suitable habitat for this species and no records were identified within five miles of the project site. The closest record of this species was identified in 1962 approximately 19.2 miles northwest of the project site (CDFW 2017a). Therefore, this species has been classified as having a low potential to occur on the project site.

Round-leaved fillaree (California macrophylla)

Round-leaved fillaree is a CNPS list 1B.2 plant species that is typically found in valley grassland and foothill woodland habitats, but current populations are confined to the foothills west, south, and east of the San Joaquin Valley floor. The project site located within the valley floor only provided marginally suitable habitat for this species and no records were identified within five miles of the project site. One record of this species was identified in 1935 approximately 13.0 miles west of the project site (CDFW 2017a). Therefore, this species has been classified as having a low potential to occur on the project site.

Hoover's Eriastrum (Eriastrum hooveri)

Hoover's eriastrum is a CNPS list 4.2 plant species that is typically found in valley grassland and shadscale scrub habitats. The project site, consisting of nonnative grassland, provided marginally suitable habitat for this species and the database searches did not identify any records within five miles of the project site. The closest record of this species was identified approximately 10.6 miles north of the project site (CNPS 2017). Therefore, this species has been classified as having a low potential to occur on the project site.

Munz's tidy-tips (Layia munzii)

Munz's tidy-tips is a CNPS list 1B.2 plant species that is typically found in valley grassland, shadscale scrub, and wetland-riparian habitats. The project site, consisting of nonnative grassland, provided marginally suitable habitat for this species and the database searches did not identify any records within five miles of the project site. One record of this species was identified in 1954 approximately 7.8 miles south of the project site (CDFW 2017a). Therefore, this species has been classified as having a low potential to occur on the project site.

Jared's pepper-grass (Lepidium jaredii ssp. jaredii)

Jared's pepper-grass is a CNPS list 1B.2 plant species that is typically found in valley grassland habitats that contain washes or alluvial-fans. Current populations are confined to the foothills west, of the San Joaquin Valley floor. The project site located within the valley floor only provided

marginally suitable habitat for this species and no records were identified within five miles of the project site. One record of this species was identified in 1989 approximately 11.5 miles southwest of the project site (CDFW 2017a). Therefore, this species has been classified as having a low potential to occur on the project site.

San Joaquin bluecurls (Trichostema ovatum)

San Joaquin bluecurls is a CNPS list 4.2 plant species that is typically found in valley grassland habitat. The project site, consisting of nonnative grassland, provided marginally suitable habitat for this species but the database searches did not identify any records within five miles of the project site. The closest record of this species was identified in 2010 approximately 7.9 miles north of the project site (CNPS 2017). Therefore, this species has been classified as having a low potential to occur on the project site.

Plant Species Presumed Absent

The following species is presumed absent from the project site due to the lack of suitable habitat, soil type, and/or elevation range at the project site.

Kings gold (Tropidocarpum californicum)

Kings gold is a CNPS list 1B.1 plant species that is typically found in chenopod scrub habitats. No chenopod scrub was identified on the project site. In addition, the known elevation range for this species is not present on site, therefore, this species has been presumed absent from the project site (CNPS 2017).

3.1.2 Special-Status Wildlife

Of the 13 special-status wildlife species identified in the literature review, three were found to have a high potential to occur, two were found to have a moderate potential to occur, six were found to have a low potential to occur, and two species are presumed absent from the project site. A brief natural history and discussion of the 13 special-status wildlife species identified in the literature review is provided below.

Special-Status Wildlife Species with a High Potential to Occur

The following species have a high potential to occur on the project site due to the presence of suitable habitat (including soils and elevation factors) for the species occurring on the project site and a known occurrence that has been recorded within five miles of the project site.

Burrowing owl (Athene cunicularia)

The burrowing owl is a CDFW SSC (CDFW 2017b). It is typically found in dry open areas with few trees and short grasses; it can also be found in vacant lots near human habitation. It uses uninhabited mammal burrows for roosts and nests. It primarily feeds on large insects and small mammals, but will also eat birds and small reptiles. The project site contained suitable open habitat with soils suitable for burrowing, and California ground squirrels (*Otospermophilus beecheyi*), for which burrowing owls sometimes rely for burrows, were observed on site. One suitable burrowing

owl burrow (no owl sign observed) was identified on the project site. The burrow was likely an old coyote (*Canis latrans*) den and although it was larger than a typical burrowing owl burrow, it would still be considered suitable for the species. Additionally, California ground squirrels on site could create burrows suitable for burrowing owl. The project site contained suitable foraging habitat for burrowing owl, as the nonnative grassland habitat likely supports an adequate numbers of small mammals and insects that make up the majority of the burrowing owl prey base. Six burrowing owl records were identified within five miles of the project site, with the closest of these observations being documented in 1996 approximately 0.1 mile northeast of the project site along the California Aqueduct (Appendix A; CDFW 2017a). Due to the presence of suitable burrowing and foraging habitat and the recorded observations within five miles of the site, this species has a high potential to occur on the project site.

American badger (Taxidea taxus)

The American badger is a CDFW SSC (CDFW 2017b). This territorial mammal species prefers habitat that includes dry open areas consisting of shrubs, grasslands, forest, and herbaceous habitats, with loose soils for digging burrows (NatureServe 2017). This typically solitary species is scattered at low densities throughout the San Joaquin Valley, but has the ability to move long distances to find suitable habitat and mates. The project site contained soils suitable for burrowing and the grassland habitat on the project site likely supports an adequate prey base that could support American badger. The previously identified large burrow on the project site was also suitable American badger. The literature review and data base search identified two records of the species, with the closest record identified in 1999 located approximately 4.7 miles northeast of the project site (CDFW 2017a). The presence of suitable habitat, the documented records of this species within five miles, and the fact that this species has the ability to move long distances, results in a high potential for occurrence for this species.

San Joaquin Kit Fox (Vulpes macrotis mutica)

The San Joaquin kit fox is a federally listed endangered and state listed threatened species (CDFW 2017b). This species prefers annual grasslands or open grassy areas with scattered shrubs and requires loose soils for digging burrows (USFWS 1998). This species is found scattered throughout the San Joaquin Valley, and individuals have been known to occasionally use agricultural land and other areas of marginal habitat adjacent to high-quality habitat for foraging or movement to other areas of their territory.

The project site, consisting of soft soils, provided suitable denning habitat for San Joaquin kit fox and the nonnative grassland habitat is likely to support an adequate prey base of small mammals for foraging. The project site was fenced with four strand barbwire along the south border, but was still easily accessible to kit fox making it suitable as movement habitat for kit foxes that may be moving through the area. One large potential kit fox den was identified on the project site, but no kit fox sign (i.e. scat and/or tracks) was observed at the den entrance. Based on the size and shape of the den it was likely created but a coyote, but would still be considered suitable for kit fox. Additionally, a livestock water trough was identified approximately 0.1 mile north of the northwest corner of the project site and the presence of standing water could attract wildlife, including kit fox, to the project

site. The literature review identified 14 records of the species within five miles of the project site (CDFW 2017a). Besides one record from 2016, all of the records within five miles were over 20 years old, with the closest record being identified in 1981 approximately 0.3 miles north of the project site (Appendix A). The most recent record from 2016 and was located approximately 4.4 miles north of the project site. Due to the presence of suitable denning, foraging, and movement habitat and the recorded observations within five miles of the site, this species has a high potential to occur on the project site.

Special-Status Wildlife Species with a Moderate Potential to Occur

The following species have a moderate potential to occur on the project site because either habitat for the species occurs on site and a known occurrence has been reported in the database, but not within five miles of the site, or a known occurrence within five miles of the site and marginal or limited amounts of habitat occurs on site.

San Joaquin (Nelson's) Antelope Squirrel (Ammospermophilus nelsoni)

The Nelson's Antelope Squirrel is a state listed threatened species (CDFW 2017b). This species is typically found in grassland and shrubland communities, but they are most prevalent in habitats with sparse to moderate shrub cover and are most often found in saltbush scrub communities (USFWS 1998). The project site, consisting of nonnative grassland completely devoid of shrubs, represented suitable, although not ideal, habitat for San Joaquin antelope squirrel. Multiple historical (>20 years old) records of this species occurring within five miles of the project site and multiple other records in the area were identified during the literature review (CDFW 2017a). The closest record was identified in 1988 approximately 2.5 miles northeast of the project site. Despite the historical records within five miles of the project site, the project site only contained marginally suitable habitat due to the lack of shrub cover. Therefore, this species was assigned a moderate potential to occur on the project site.

San Joaquin whipsnake (Masticophis flagellum ruddocki)

The San Joaquin whipsnake is a CDFW SSC (CDFW 2017b). This species occurs in open, dry, treeless areas, including grassland and valley saltbush scrub (Stebbins 2003). The project site, consisting on nonnative grassland, represented suitable habitat for this species, but no records of this species were identified within five miles of the project site. The closest recorded observation of this species was identified in 1999 approximately 9.3 miles southeast of the project site (CDFW 2017a). Although suitable habitat was present on the project site, no records of this species were identified within five miles of the project site. Therefore, this species was assigned a moderate potential to occur on the project site.

Migratory Birds and Raptors

Numerous species of migratory birds and raptors protected under the MBTA and FGC are expected to occur in the vicinity of the project site. No trees or shrubs suitable for nesting were present on the project site, but the tall grasses on site could be suitable for ground nesting species. Additionally, the transmission line that passes through the project site, power poles that line the road along the south border of the project site and the adjacent orchards could be utilized for

nesting by some of the migratory bird species in the area. Nesting birds are anticipated to occur on the project site in conjunction with the nesting bird season (typically February 1 through August 31).

Special-Status Wildlife Species with a Low Potential to Occur

The following species have a low potential to occur on the project site because limited habitat for the species occurs on site and a known occurrence has been reported in the database, but not within five miles of the site, or suitable habitat strongly associated with the species occurs on site, but no records were found in the database search.

Tricolored blackbird (Agelaius tricolor)

The tricolored blackbird is a CDFW SSC and California candidate species for listing as endangered (CDFW 2017b). Breeding habitat for this species includes wet and dry vernal pools, seasonal wetlands, and freshwater marshes with cattails, bulrush, and sedges. Nests are typically found in vegetation of marshes or thickets. This species feeds on insects and seeds and can utilize a variety of foraging habitats, including grasslands and agricultural land. One record of this species was identified in the database search in 1995 approximately 5.0 miles east of the project site. No suitable nesting habitat was identified on the project site but marginally suitable foraging habitat was present. Although one record of this species was identified within five miles of the project site, due to the lack of suitable nesting habitat within and around the project site this species has been assigned a low potential to occur on the project site while foraging and is not expected to nest on the project site.

Swainson's hawk (Buteo swainsoni)

The Swainson's hawk is a state listed threatened species (CDFG 2017a). This species prefers habitat with solitary trees for nesting and large, flat, open grasslands or agricultural land for foraging. It preys primarily on rodents and grasshoppers (NatureServe 2017). No Swainson's hawk records were identified within 10 miles of the project site. The closest observation was recorded approximately 13.0 miles west of the project site in 1961 (CDFW 2017a). Suitable nesting habitat was not present on the project site, but the nonnative grassland habitat on site was suitable foraging habitat. Due to the lack of suitable nesting habitat and absence of records of this species in the vicinity of the project sites this species has been given a low potential to occur on the project site while foraging and is not expected to nest on the project site.

Giant Kangaroo Rat (Dipodomys ingens)

The giant kangaroo rat (*Dipodomys ingens*) is a federally listed and state listed endangered species (CDFW 2017b). This species inhabits low growing grassland and shrub communities on a variety of soil types (USFWS 1998). Giant kangaroo rats rely on their senses and speed to avoid predators and typically prefer areas with bare ground or low growing vegetation. Areas of tall and dense vegetation can be problematic for giant kangaroo rat and reduce their ability to spot and evade predators. Therefore, giant kangaroo rats typically do not occupy areas with tall and dense vegetation. The project site, consisting of nonnative grassland, contained a few small areas of suitable habitat that consisted of low growing grasses and forbs, but much of the project site consisted of tall dense grasses that were either marginally suitable or not suitable for the species.

No giant kangaroo rat precincts were observed on the project site during the biological reconnaissance survey, and much of the project site consisted to tall dense grass that was marginally suitable or not suitable for the species. Two historical records of this species occurring within five miles of the site were identified during the literature review and database search (CDFW 2017a). The closest record was identified in 1979 approximately 3.0 miles north of the project site in similar habitat, while the other record was identified in 1985 approximately 4.6 miles northwest of the project site in the Kettleman Hills, but it is unknown if the species is still present in these locations. The project site contained a few small areas of suitable habitat within the low growing grass and forb areas, but most of the project site was very overgrown with tall grasses and would not be suitable for the species. Due to the lack of quality habitat and the historical nature of the records within five miles of the project site, this species has a low potential to occur on the project site.

Short-nosed kangaroo rat (Dipodomys nitratoides brevinasus)

The short-nosed kangaroo rat is a CDFW SSC (CDFW 2017b). This species generally inhabits flat to gently sloping terrain and is typically associated with desert shrub habitats, and often associates with saltbush scrub (USFWS 1998). The project site, consisting of nonnative grassland completely devoid of shrubs represented only marginally suitable, habitat for short-nosed kangaroo rat. No records of this species were identified within five miles of the project site, but four records from 2001 were identified within ten miles of the project site. The closest record was identified approximately 6.2 miles west of the project site (CDFW 2017a). Due to the lack of records for this species within five miles of the project site and the presence of only marginally suitable habitat due to the lack of shrub cover, this species was assigned a low potential to occur on the project site.

Tipton kangaroo rat (Dipodomys nitratoides nitratoides)

The Tipton kangaroo rat is a federally and state listed endangered species (CDFW 2017b). This species is typically found in alluvial fan and floodplain soils with sparsely vegetated woody shrub cover. Woody shrubs that are commonly associated with Tipton kangaroo rat include *Atriplex* spp., iodine bush, and pale-leaf goldenbush (NatureServe 2017). Although Tipton kangaroo rats can occur in terrace grasslands devoid of woody shrubs, sparse-to-moderate shrub cover is usually associated with populations of high density (USFWS 1998). The project site, consisting of nonnative grassland completely devoid of shrubs represented only marginally suitable habitat for Tipton kangaroo rat. No records of this species were identified within five miles of the project site, but two historical records from 1951 were identified within ten miles of the project site. The closest record was identified approximately 8.9 miles west of the project site (CDFW 2017a). Due to the lack of records of this species within five miles of the project site and the presence of only marginally suitable habitat due to the lack of shrub cover, this species was assigned a low potential to occur on the project site.

Blunt-nosed leopard lizard (Gambelia sila)

The blunt-nosed leopard lizard is a CDFW Fully Protected species and is federally and state listed as endangered (CDFW 2017a). This species is found in open, sparsely vegetated areas and is often associated with valley saltbush scrub and grassland habitats (USFWS 1998). The project site, consisting of nonnative grassland, contained a few small areas of suitable habitat that consisted of

low growing grasses and forbs, but much of the project site consisted of tall dense grasses that were marginally suitable or not suitable for the species. Blunt-nosed leopard lizards rely on their speed to avoid predators and typically prefer areas with bare ground or low growing vegetation. Previously the project site may have represented more suitable habitat for the species but the abundant winter rainfall that the San Joaquin Valley received this year may have caused an increase in the vegetative cover on the project site. Four records of this species were identified in the data base search within five miles of the project site. The closest observation is part of a very large polygon that overlaps with the southwest corner of the project site (Appendix A. The polygon starts at approximately where the California Aqueduct crosses under Interstate 5 and extends south along 25th Avenue until its ends slightly past the Kern and Kings County Line. The polygon includes blunt-nosed leopard lizard observations from 1979, 1993, 2002, 2004, and 2006 and was likely mapped as a polygon to account for some level of inaccuracy with the records (CDFW 2017a). It is unknown if blunt-nosed leopard lizards associated with the polygon were observed on the actual project site. The project site contained a few small areas of suitable habitat within the low growing grass and forb areas, but most of the project site was very overgrown with tall grasses and would not be suitable for the species. Although this species has been identified in close proximity to the project site, due to the lack of quality low growing grass and forb habitat, this species has a low potential to occur on the project site.

Special-Status Wildlife Species Presumed Absent

The following species are presumed absent from the project due to the lack of suitable habitat on the project site.

Western snowy plover (Charadrius alexandrinus nivosus)

The western snowy plover is a CDFW SSC and federally listed threatened species (CDFW 2017a). This shore bird typically occurs in habitat that includes beaches, dry mud or salt flats, and sandy shores of rivers, lakes, and ponds (NatureServe 2017). No suitable habitat for this species was identified on the project site. Therefore, this species is presumed absent from the project site.

Tulare grasshopper mouse (Onychomys torridus tularensis)

Tulare grasshopper mouse is a CDFW SSC (CDFW 2017b). This species is typically found in habitat that contains scattered shrubs with annual grass and forbs and is most often found in saltbush scrub communities (USFWS 1998). The project site, completely void of shrubs, would not be considered suitable habitat for this species. Additionally, the database search only identified one record of this species in 1931 approximately 14.8 miles northwest of the project site. No suitable habitat for this species was identified on the project site. Therefore, this species is presumed absent from the project site.

3.1.3 USFWS Designated Critical Habitat

The project site was not located within any USFWS designated critical habitat.

3.1.4 Jurisdictional Drainages

During the literature review, a desktop review of the U.S. Department of Agriculture Web Soil Survey was conducted to determine if there were any blue line streams or drainages that may potentially fall under the jurisdiction of either federal or state agencies. No blue line streams or hydric soils were identified on the project site (NRCS 2017).

3.2 Biological Reconnaissance Survey

The biological reconnaissance survey was conducted on August 31, 2017, by ECORP Senior Biologist Phillip Wasz. Mr. Wasz is listed as a Field Investigator for giant kangaroo rat (*Dipodomys ingens*) and Nelson's antelope squirrel on a Memorandum of Understanding with CDFW and has over seven years of experience conducting San Joaquin kit fox, burrowing owl, and rare plant habitat assessments and surveys in the San Joaquin Valley. Summarized below are the results of the biological reconnaissance survey, including site characteristics, plant communities, wildlife, special-status species, and special-status habitats (including any potential wildlife corridors). Weather conditions during the survey are summarized in Table 2.

Table 2. Weather Conditions during the Survey

Date	Time		Temperature (°F)		Cloud Cover (%)		Wind Speed (mph)	
	start	end	Min	Max	min	max	min	max
8/31/17	1030	1230	89	95	0	0	3	5

3.2.1 Property Characteristics

The property consisted of nonnative grassland that was currently being grazed by cattle. The nonnative grassland on the project site varied, as there were some areas of the project site that consisted of sparse low growing grasses and forbs, while the majority of the project site consisted of tall dense nonnative grasses. The nonnative grassland on the project site was dominated by foxtail brome (*Bromus madritensis*) and wild oat (*Avena fatua*). Cattle trails and manure were prevalent throughout the project site, but otherwise the project site was largely undisturbed. A review of historical aerial images confirmed that the project site has largely remained unchanged dating back at least 20 years. The substrate on the project site was generally sandy loam and the soil on site consisted of Cantua coarse sandy loam and Kimberlina fine sandy loam (NRCS 2017). Surrounding land uses consisted of agriculture, cattle grazing, agriculture processing plants, open land, and solar energy development. Representative site photographs are presented in Appendix B.

3.3 Plants

The plant species on the project site were consistent with what is typically found in nonnative grassland. The project site contained plant species adapted to grazing disturbance and the extreme temperatures and dry environment of the San Joaquin Valley. Plants observed on the project site during the survey consisted of mostly nonnative grasses and forbs, including foxtail brome, wildoat, red-stemmed filaree (*Erodium cicutarium*), and Russian thistle (*Salsola tragus*). Appendix C contains a list of all plant species observed during the survey.

3.4 Wildlife

The project site provided habitat for a number of wildlife species that are commonly found in the San Joaquin Valley. Wildlife species occurring within or using the project site at the time of the survey, included common raven (*Corvus corax*), mourning dove (*Zenaida macroura*), coyote (*Canis latrans*), and side-blotched lizard (*Uta stansburiana*). Appendix D contains a list of all wildlife species identified during the survey.

3.5 Jurisdictional Drainages

No hydric soils, jurisdictional drainages, stream courses, wetlands, and/or other water features were identified on the project site during the biological reconnaissance survey. The California Aqueduct is located approximately 900 ft east of the project site; however, no impacts to the California Aqueduct are anticipated.

3.6 Raptors and Migratory Birds

The project site did not contain any shrubs or trees suitable for nesting, but the tall grass habitat on site would be suitable for ground nesting migratory birds protected under MBTA. Additionally, the transmission line that passes through the project site, power poles that line the road along the south border of the project site, and the adjacent orchards could also be utilized for nesting by some of the migratory bird species in the area. Nesting birds are anticipated to occur on the project site in conjunction with the nesting bird season (typically February 1 through August 31). Raptors typically breed between February and August, while non-raptor birds protected under the MBTA generally nest between March and August.

3.7 Wildlife Movement Corridors and Linkages

During the survey the project site was assessed for its ability to facilitate wildlife movement and for the presence of wildlife corridors. A wildlife corridor is defined as a linear landscape element that serves as a linkage between historically connected habitats/natural areas, and is meant to facilitate movement between these natural areas (Beier and Loe 1992). The project site could provide wildlife movement opportunities due to the fact that it consists of open and unimpeded land. However, it would not be considered a wildlife movement corridor that would need to be preserved in order to allow wildlife to move between important natural habitat areas. The site was exposed and did not contain any major drainages or washes that would be considered movement corridors for wildlife.

4.0 DISCUSSION

The project site consisted of non-native grassland that is currently used for cattle grazing. No special-status plant species were observed during the biological reconnaissance survey of the site; however, suitable habitat for special-status plant species was present on the project site. Three special-status plant species were determined to have a high to moderate potential to occur on the project site based on the presence of suitable habitat and documented observations of the species in the vicinity of the project site, including the federally listed San Joaquin woollythreads. Therefore, avoidance, minimization, and/or mitigation measures, including focused surveys, will be required to

ensure that project related impacts to these special-status plant species are less than significant. The need for additional surveys and agency consultation is discussed in further detail in Section 5.0.

The project site also provided suitable habitat for 11 special-status wildlife species that have varying levels of potential to occur on the project site based on the presence of suitable habitat and documented observations of the species in the vicinity of the project site. Mitigation measures, including focused surveys, preconstruction surveys, and/or construction monitoring, will be required to ensure that project related impacts to these seven wildlife species are less than significant.

Burrowing owls were determined to have a high potential to occur on the project site due to the presence of suitable burrowing and foraging habitat and the recorded observation within 5 miles of the project site. One suitable burrowing owl burrow (no owl sign observed) was identified on the project site. The burrow was likely an old coyote den and although it was larger than a typical burrowing owl burrow, it would still be considered suitable for burrowing owl. Although burrowing owls may not have been present when the survey was conducted, the species is mobile and could take up residence at any time. Burrowing owls are a CDFW SSC but are also protected by the MBTA and California FGC. Preconstruction burrowing owl surveys will be required to determine if burrowing owls are present on the project site and to ensure that impacts to burrowing owls are less than significant. The need for additional surveys and agency consultation is discussed in further detail in Section 5.0.

San Joaquin kit fox and American Badger were determined to have a high potential to occur on the project site while foraging or moving through the area and the soils on site were also suitable for denning. Additionally, there were recorded observations of each species within five miles of the site. Therefore, these species were assigned a high potential to occur on the project site. San Joaquin kit fox is a federally listed endangered and state listed threatened species and American badger is a CDFW SSC. Preconstruction surveys will be required to determine if San Joaquin kit foxes or American badgers are present on the project site and to ensure that impacts to these species are less than significant. The need for additional surveys and agency consultation is discussed in further detail in Section 5.0.

San Joaquin antelope squirrel and giant kangaroo rat were determined to have a moderate and low potential to occur, respectively due to the presence of marginally suitable habitat and recorded observations within five miles of the project site. Small mammal burrows were identified on the project site, but no San Joaquin antelope squirrels or giant kangaroo rats were observed at the time of the survey. To determine if these species are present on the project site a preconstruction burrow survey will be necessary. The need for additional surveys and agency consultation is discussed in further detail in Section 5.0.

Blunt-nosed leopard lizard was determined to have a low potential to occur on the project site due to the presence of marginally suitable habitat and records of the species in close proximity to the project site. The closest observation in the CNDDDB is part of a very large polygon that overlaps with a portion of the project site. The polygon starts approximately where the California Aqueduct crosses under the Interstate 5 and extends south along 25th Avenue until its ends slightly past the Kern and Kings County Line. The polygon includes blunt-nosed leopard lizard observations from

1979, 1993, 2002, 2004, and 2006 and was likely mapped as a polygon to account for some level of inaccuracy with the records (CDFW 2017a). It is unknown if blunt-nosed leopard lizards associated with the polygon were observed on the actual project site. Although the polygon associated with these recorded observations overlaps with the project site, the project site itself contained only a few areas of suitable habitat that consisted of low growing grasses and forbs, much of the project site consisted of tall dense grasses that were marginally suitable or not suitable for the species. The blunt-nosed leopard lizard is state listed as endangered and also a CDFW Fully Protected species. The classification of Fully Protected was created in 1960's by the State of California to identify and provide additional protection to animals that were rare or faced possible extinction. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research. Therefore, the project will need to ensure that there is no "take" of this species. Take, under CESA, is defined as "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill". The need for additional surveys, agency consultation, and/or construction monitoring is discussed in further detail in Section 5.0.

The project site contained suitable nesting habitat for bird species that are protected under the MBTA. Development of the project site will be required to comply with the MBTA and avoid impacts to nesting birds. In order to ensure that impacts to the species covered under the MBTA are less than significant the project should implement the mitigation measures discussed in Section 5.0.

Tricolored blackbird, Swainson's hawk, short-nosed kangaroo rat, and Tipton kangaroo rat were determined to have a low potential to occur on the project site due to the presence of marginally suitable habitat on the project site and the lack of species records within five miles on the project site. With a low potential for occurrence it is unlikely that these species are present on the project site. However, in order to ensure that impacts to these species are less than significant, the project should implement mitigation measures for these species as discussed in Section 5.0.

The special-status plant and wildlife species with potential to occur on the project site include several federally and/or state listed species. Depending on the results on the preconstruction surveys discussed in Section 5.0, the project may need to consult with the wildlife agencies (CDFW and USFWS) and acquire a mechanism for "take" of federally and/or state listed plant or wildlife species. The need for additional surveys and agency consultation is discussed in further detail in Section 5.0.

The project site does not support riparian habitat, sensitive natural communities, wetlands, or trees that would need to be preserved and no project related impacts are anticipated for these resources.

5.0 MITIGATION, MINIMIZATION, AND AVOIDANCE MEASURES

The following surveys should be conducted prior to project implementation:

- **Rare Plant Survey:** Focused surveys for special-status plants, including the federally listed endangered San Joaquin woollythreads, should be conducted on the project site. The survey shall be conducted according to the CNPS Botanical Survey Guidelines (CNPS 2001). The survey shall be conducted during the appropriate time of year required for identification of the species

(February-May for most San Joaquin valley species). If the surveys are conducted outside of the appropriate blooming periods for the target species the results may be rejected by CDFW. If special-status plants are found on the project site then CDFW and/or USFWS shall be consulted to discuss appropriate mitigation measures. Mitigation measures could include, but are not limited to, seed collection and/or transplanting.

- **Preconstruction Surveys for Burrowing Owl:** Preconstruction surveys for burrowing owl should be conducted. The surveys should follow the methods described in the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). Two surveys should be conducted, with the first survey being scheduled between 30 and 14 days before initial ground disturbance (grading, grubbing, and construction), and second survey being conducted no more than 24-hours prior to initial ground disturbance. If burrowing owls and/or suitable burrowing owl burrows are identified on the project site during the survey, the project should consult with CDFW and follow the methods listed in the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFG 2012) for avoidance and/or passive relocation.
- **Preconstruction Survey for San Joaquin Kit Fox and American Badger:** A preconstruction survey for San Joaquin kit fox and American badger should be conducted between 30 and 14 days prior to the beginning of ground disturbance and/or construction activities or any project activity likely to impact San Joaquin kit fox. The survey should be conducted according to the guidelines listed in the USFWS *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011). If San Joaquin kit fox or American badger and/or suitable San Joaquin kit fox or American Badger dens are identified on the project site during the preconstruction survey, the project should consult with CDFW and USFWS, before proceeding and should follow the USFWS guidelines for avoidance, exclusion, and/or passive relocation.
- **Preconstruction Burrow Survey for Special-Status Small Mammal Species and Blunt-Nosed Leopard Lizard:** Special-status small mammal and blunt-nosed leopard lizard are dependent on burrows to survive. Therefore, a preconstruction burrow survey for San Joaquin antelope squirrel, giant kangaroo rat, Tipton kangaroo rat, and blunt-nosed leopard lizard should be conducted to determine if there are suitable burrows for these species on the project site. The survey should be conducted by a biologist experienced in identifying small mammal burrows. The survey should consist of walking the entire project site and identifying all burrows suitable for special-status small mammals and blunt-nosed leopard lizard. All small mammal burrows shall be marked with a GPS unit and avoided by construction. A 50-ft disturbance limit buffer will be placed around all identified small mammal burrows. The burrow and associated buffer must be avoided by construction, if avoidance of suitable small mammal burrows is not possible, the project shall conduct focused surveys for special-status small mammal species and blunt-nosed leopard lizard according to the accepted USFWS and/or CDFW protocols. If special-status small mammal species or blunt-nosed leopard lizard are identified on the project site during the focused surveys, the project shall initiate consultation with USFWS and CDFW to obtain the necessary incidental take permit authorizations or provided evidence that such a permit is not required before proceeding.

- **Preconstruction Nesting Bird and Raptor Survey:** If construction or other project activities are scheduled to occur during the bird breeding season (February through August for raptors and March through August for most other birds), a pre-construction nesting bird survey shall be conducted by a qualified biologist. The survey should be completed no more than 14 days prior to initial ground disturbance. The nesting bird survey should include the project site and adjacent areas where project activities have the potential to cause nest failure. If any active nests are identified, a qualified biologist should establish an appropriate disturbance limit buffer around the nest using flagging or staking. Construction activities will need to be avoided within any disturbance limit buffer zones until the nest is deemed no longer active by the biologist.
- **Biological Monitoring:** A qualified biologist (biological monitor) with experience monitoring for and identifying sensitive biological resources known to occur in the area will be present during all initial ground-disturbing activities related to the project. Biological monitoring duties will include, but are not limited to, conducting worker education training, verifying compliance with project permits, and ensuring project activities stay within designated work areas. The biological monitor will have the right to halt all activities in the area affected if a special-status species is identified in a work area and is in danger of injury or mortality. If work is halted in the area affected as determined by the biological monitor, work will proceed only after the hazards to the individual is removed and the animal is no longer at risk, or the individual has been moved from harm's way. The biological monitor will take representative photographs of the daily activities and will also maintain a daily log that documents general project activities and compliance with the project's permit conditions. Non-compliances will also be documented in the daily log, including any measures that were implemented to rectify the issue.

The following avoidance and minimization measures should be implemented to further reduce impacts to special-status species present on the property or that have potential to occur on the property:


- All activities should be confined to pre-determined work areas that avoid sensitive resources.
- All project-related vehicles should observe a daytime speed limit of 20 miles per hour (mph) and a nighttime speed limit of 10 mph throughout the project site, except on county roads and State and Federal highways.
- To prevent inadvertent entrapment of San Joaquin kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2 ft 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 shall 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 CDFW shall be contacted as noted below.
- Kit foxes are attracted to den-like structures, such as pipes and may enter stored pipes, and become trapped or injured. To prevent kit fox use of these structures, all construction pipes, culverts, or similar structures with a diameter of 4-inches or greater should be capped while stored on site. If any 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.

- 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.
- No firearms should be allowed on the project site.
- No pets, including dogs or cats, should be permitted on the project site to prevent harassment, mortality of kit foxes, or destruction of dens.
- Use of rodenticides and herbicides within the project site should be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the Service. If rodent control must be conducted, zinc phosphide should be used because of a proven lower risk to kit fox.
- A representative should 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 USFWS.
- An employee education program should be provided to all construction personnel working on the project. The program should consist of a brief presentation by persons with knowledge of the biology of the special-status species that could occur on the project site and legislative protection to explain endangered species concerns to construction personnel. The program should include the following: A description of the species and their habitat needs; a report of the occurrence of the special-status species in the vicinity of the project site; an explanation of the status of the special-status species and their protection under the Federal and State Endangered Species Acts; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information should be prepared for distribution to the previously referenced people and anyone else who may enter the project site.
- Any project 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 CDFG immediately in the case of a dead, injured or entrapped kit fox.
- The Sacramento Fish and Wildlife Office and CDFG should 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.

6.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Field work conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or the applicant's representative and that I have no financial interest in the project.

SIGNED: 

Phillip Wasz
Senior Wildlife Biologist

DATE: September 22, 2017

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LIST OF APPENDICES

Appendix A – Project Site Map (With CNDDDB Records)

Appendix B – Representative Project Site Photographs

Appendix C – Plant Compendium

Appendix D – Wildlife Compendium

APPENDIX A

Project Site Map (With CNDDB Records)

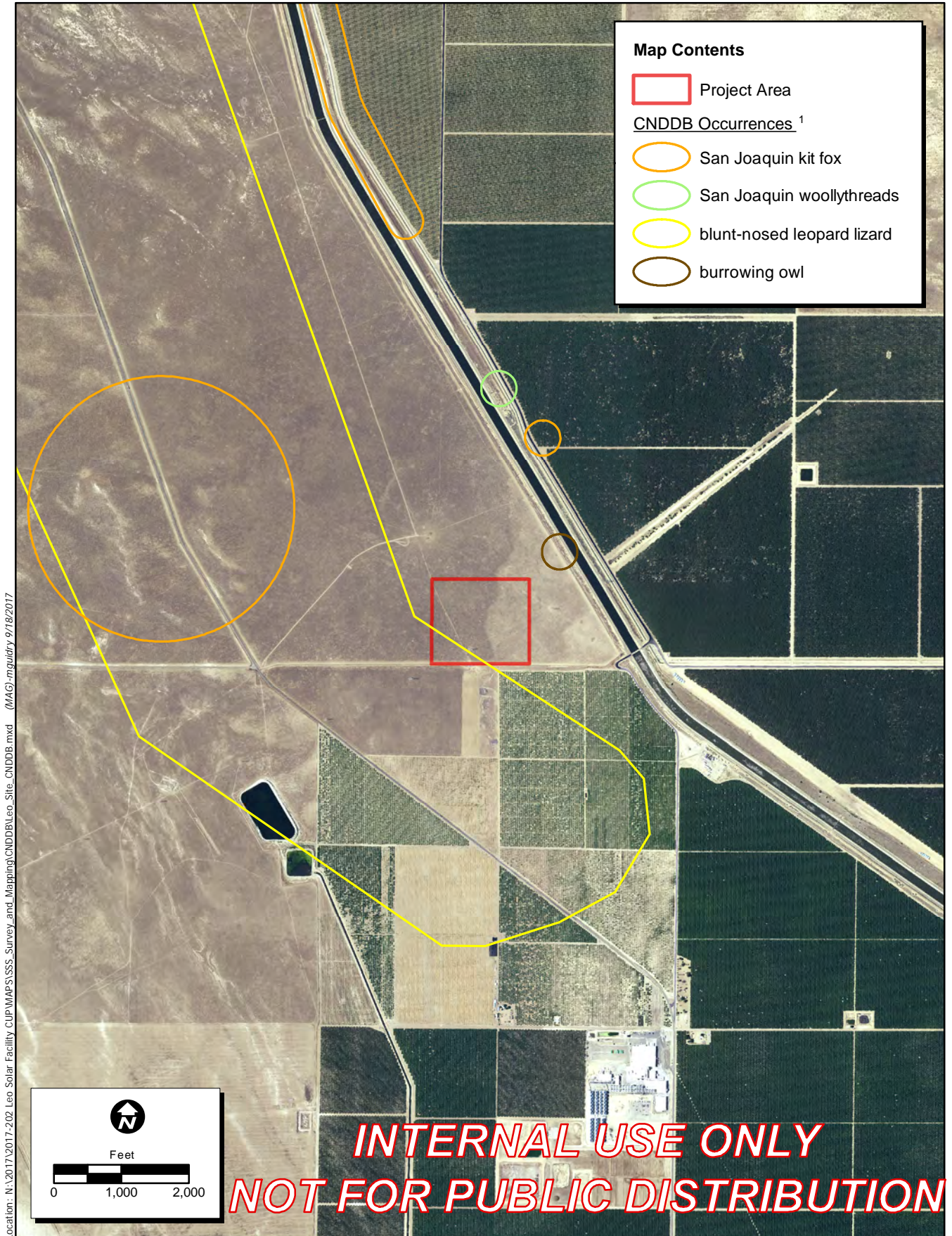


Figure 3. Project Site Map

2017-2022 Leo Solar Facility CUP

Appendix B – Representative Project Site Photographs



Photo 1. Southwest corner looking east along the south border of the project site.



Photo 2. Southwest corner looking northeast into the project site.



Photo 3. Middle of the project site looking north.



Photo 4. Northwest corner looking south across the project site.



Photo 5. Northwest corner looking southeast across the project site.



Photo 6. Northeast corner looking south across project site.



Photo 7. Northeast corner looking southwest across project site.



Photo 8. Large potential San Joaquin kit fox den, likely old coyote den (no kit fox sign).

SCIENTIFIC NAME	COMMON NAME
<i>Amsinkia menziesii</i>	fiddleneck
<i>Avena fatua</i>	wild oat
<i>Bromus diandrus</i>	ripgut brome
<i>Bromus madritensis</i> ssp. <i>rubens</i>	red brome
<i>Croton setigerus</i>	dove weed
<i>Erodium cicutarium</i>	red-stemmed filaree
<i>Salsola tragus</i>	Russian thistle
<i>Schismus arabicus</i>	Mediterranean grass
<i>Trichostema lanceolatum</i>	vinegarweed

SCIENTIFIC NAME	COMMON NAME
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Canis latrans</i>	coyote (scat)
<i>Cathartes aura</i>	turkey vulture
<i>Charadrius vociferus</i>	Killdeer
<i>Corvus corax</i>	common raven
<i>Lepus californicus</i>	black-tailed jackrabbit
<i>Uta stansburiana</i>	common side-blotched lizard
<i>Zenaida macroura</i>	mourning dove

APPENDIX C

Cultural Resources Technical Report (Confidential-Not for Public Distribution)

APPENDIX D

Paleontological Records Search Results

Natural History Museum
of Los Angeles County
900 Exposition Boulevard
Los Angeles, CA 90007
tel 213.763.DINO
www.nhm.org



Vertebrate Paleontology Section
Telephone: (213) 763-3325

e-mail: smcleod@nhm.org

19 September 2017

ECORP Consulting, Inc.
215 North Fifth Street
Redlands, CA 92374

Attn: Robert J. Cunningham, Staff Archaeologist

re: Paleontological resources for the proposed Leo Solar Project, ECORP Project #
2017-202, near the community of Kettleman City, Kings County, project area

Dear Robert:

I have conducted a thorough search of our paleontology collection records for the locality and specimen data for the proposed Leo Solar Project, ECORP Project # 2017-202, near the community of Kettleman City, Kings County, project area as outlined on the portion of the Avenal Gap USGS topographic quadrangle map that you sent to me via e-mail on 5 September 2017. We have no vertebrate fossil localities that lie directly within the boundaries of the proposed project area, but we do have localities somewhat nearby from sedimentary deposits similar to those that may occur at depth in the proposed project area.

Surface deposits in the entire proposed project area consist of younger Quaternary Alluvium, derived as alluvial fan deposits from the South Dome of the Kettleman Hills immediately to the west. We have no fossil vertebrate localities nearby from these types of deposits and they are unlikely to contain significant vertebrate fossils, at least in the uppermost layers, but they may be underlain at relatively shallow depth by older Quaternary deposits that do contain significant fossil vertebrate remains. Our closest vertebrate fossil localities from similar Quaternary Alluvium deposits are LACM 7844 and 7845, situated west-northwest of the proposed project area between Antelope Valley and Polonio Pass, that produced fossil specimens of common snakes, Colubridae, iguana lizards, Iguanidae, birds, Aves, jackrabbit, *Lepus*, cottontail, *Sylvilagus*, squirrels, Sciuridae, pocket gopher, *Thomomys*, pocket mouse,

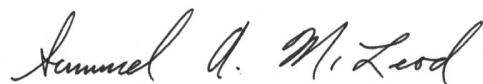
Perognathus, kangaroo rat, *Dipodomys*, and deer, *Odocoileus*. Our next closest vertebrate fossil locality from these deposits is LACM 1156, east-northeast of the proposed project area just north of Delano, that produced a fossil specimen of horse, *Equus*, from a depth of 45 feet below the surface in a well core.

Immediate to the west of the proposed project area there are exposures of the marine late Miocene Etchegoin Formation on South Dome, and this rock unit may also underlie the younger Quaternary deposits in the proposed project area. Our closest vertebrate fossil locality in the Etchegoin Formation is LACM 3814, situated just west of north of the proposed project area on Pintojo Ridge of the Middle Dome in the southeastern portion of the Kettleman Hills. A fossil hexanchid shark, *Notorhynchus primigenius*, is represented in our collections from locality LACM 3814 and this is also the locality for a U.S. National Museum of Natural History specimen of the fossil sea lion *Pliopedia pacifica* (see C.A. Repenning and Richard H. Tedford, 1977. Otarioid Seals of the Neogene. USGS Professional Paper 992: 49 citing locality 350 of W.P. Woodring, R. Stewart and R.W. Richards, 1940. Geology of the Kettleman Hills Oil Field. USGS Professional Paper 195:1-170.). We have other vertebrate fossil localities from the Etchegoin Formation, including LACM (CIT) 319, around Jacalitos Creek in the Kreyenhagen Hills northwest of the proposed project area, and LACM (CIT) 593, along Monocline Ridge in the Ciervo Hills northwest of the proposed project area, that are farther away in Fresno County. These localities have produced specimens of a fossil horse, *Pliohippus*, as is also reported by Repenning and Tedford 1977 cited above.

Shallow excavations in the younger Quaternary alluvial fan deposits exposed throughout the proposed project area are unlikely to produce significant vertebrate fossils. Deeper excavations that extend down into older Quaternary deposits or deposits of the Etchegoin Formation, however, may well encounter significant fossil vertebrate remains. Any substantial excavations in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

A handwritten signature in cursive script, reading "Samuel A. McLeod".

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

APPENDIX E

Project Site Details

LEO
SOLAR PROJECT

CONFIDENTIAL DOCUMENTS
THE INFORMATION EMBODIED ON THIS DRAWING IS STRICTLY CONFIDENTIAL AND IS SUPPLIED WITH THE UNDERSTANDING THAT IT WILL BE HELD CONFIDENTIAL AND NOT DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF ZGLOBAL, INC.

REV.	BY	DESCRIPTION	DATE	APPROV BY
1	CF	CUP SUB #1	5/16/17	
2	CK	CUP SUB #2	01/20/19	

LEGEND

PROPERTY LINE (P)



DRIVE AISLE



12kV LINE

① SITE INFORMATION:

- PROPERTY OWNER: APEX ENERGY SOLUTIONS, LLC
- APPLICANT: APEX ENERGY SOLUTIONS, LLC
- ASSESSOR PARCEL #: 048-350-016-000
- PARCEL ACREAGE: 40.0 AC.
- SYSTEM FOOTPRINT: 18.4 AC.

SOLAR SYSTEM INFORMATION:

- (APPROX. 15,588) 385W PV MODULES
- (5) SOLECTRIA 1000kW INVERTERS
- HORIZONTAL SINGLE AXIS TRACKER SYSTEM
- SYSTEM SIZE:
 - 5.0 MWDC
 - 6.0 MWAC

BATTERY SYSTEM INFORMATION:

- 5 MW / 20 MWH

1 inch
Scale to Confirm 24"x36" Plot

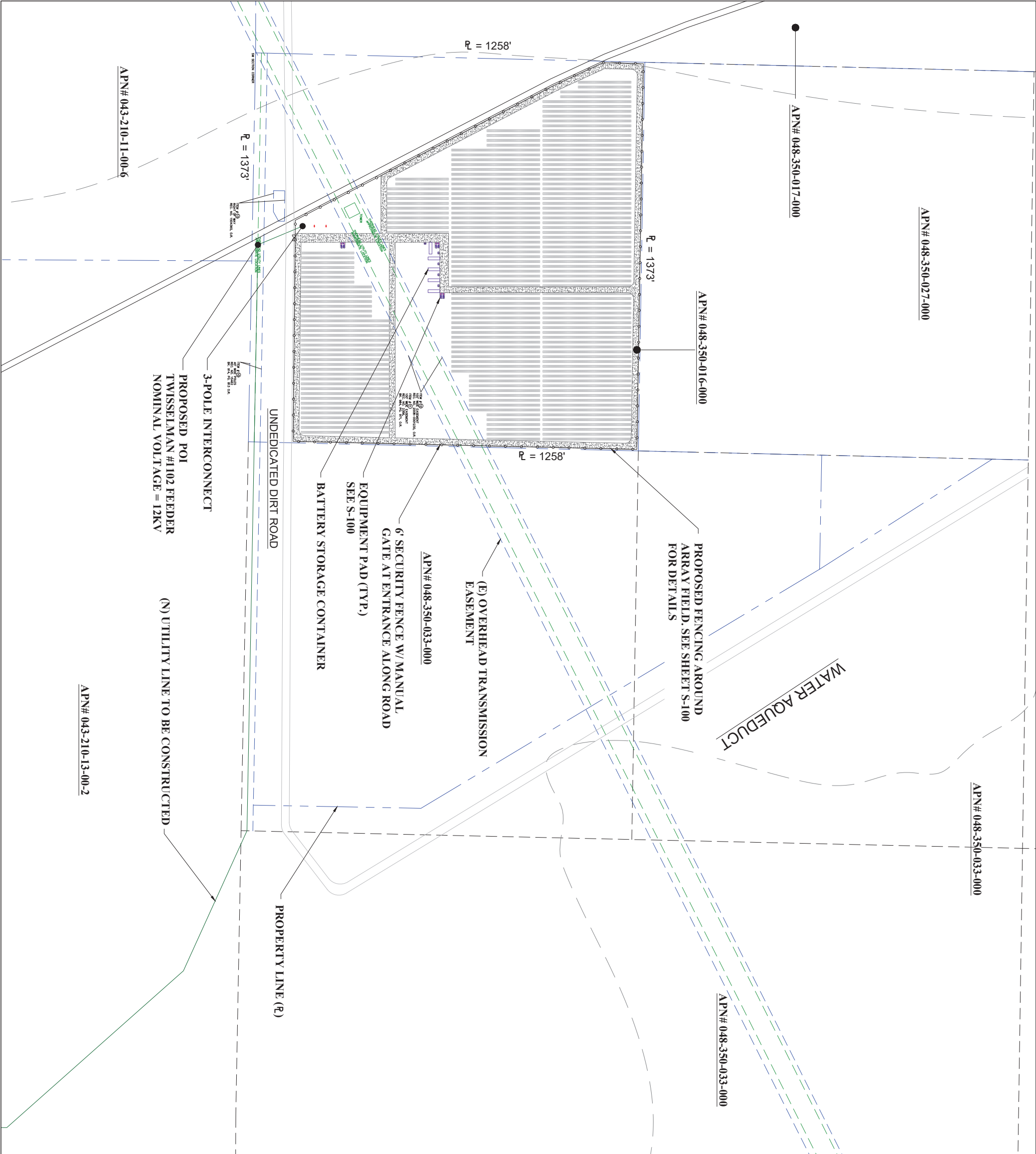


604 SUTTER ST, STE 250
FOLSOM, CA 95630
Phone : 916.985.9461
Fax: 916.985.9467

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SITE PLAN

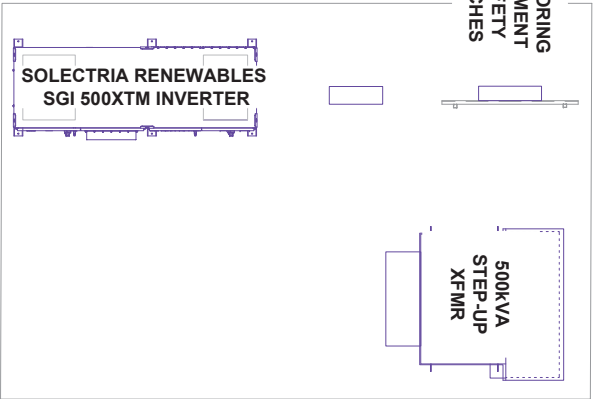
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DATE:	REV No. 1



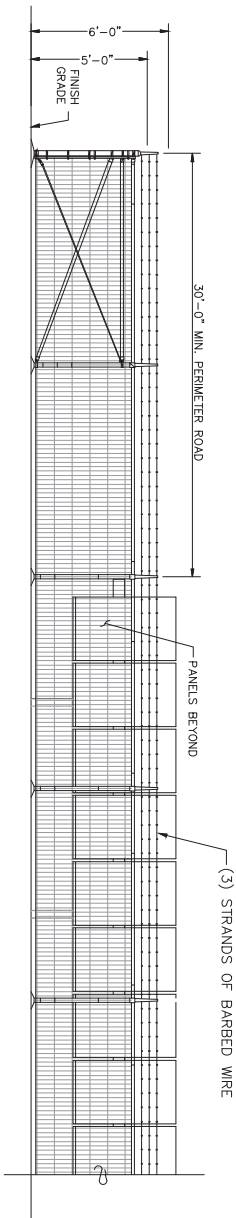
WRITTEN CONSENT OF ZGLOBAL, INC.

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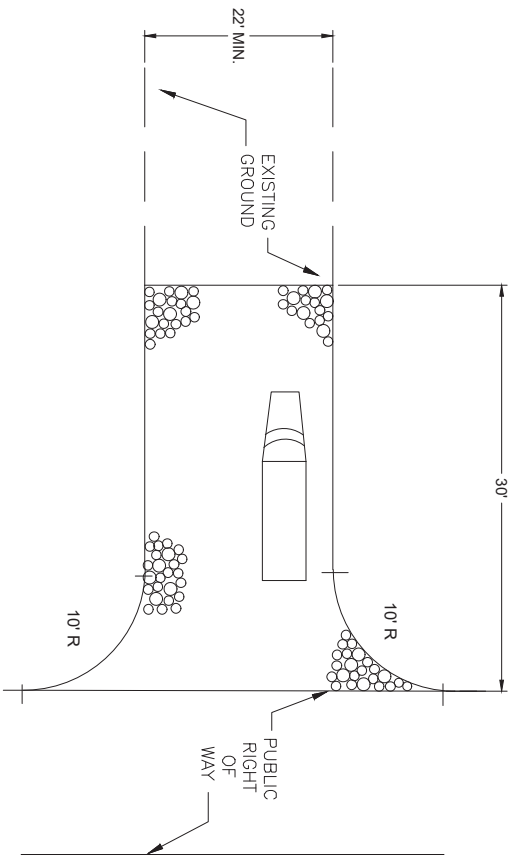
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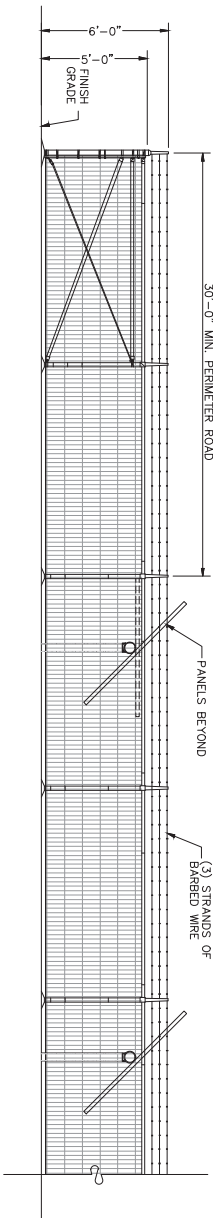
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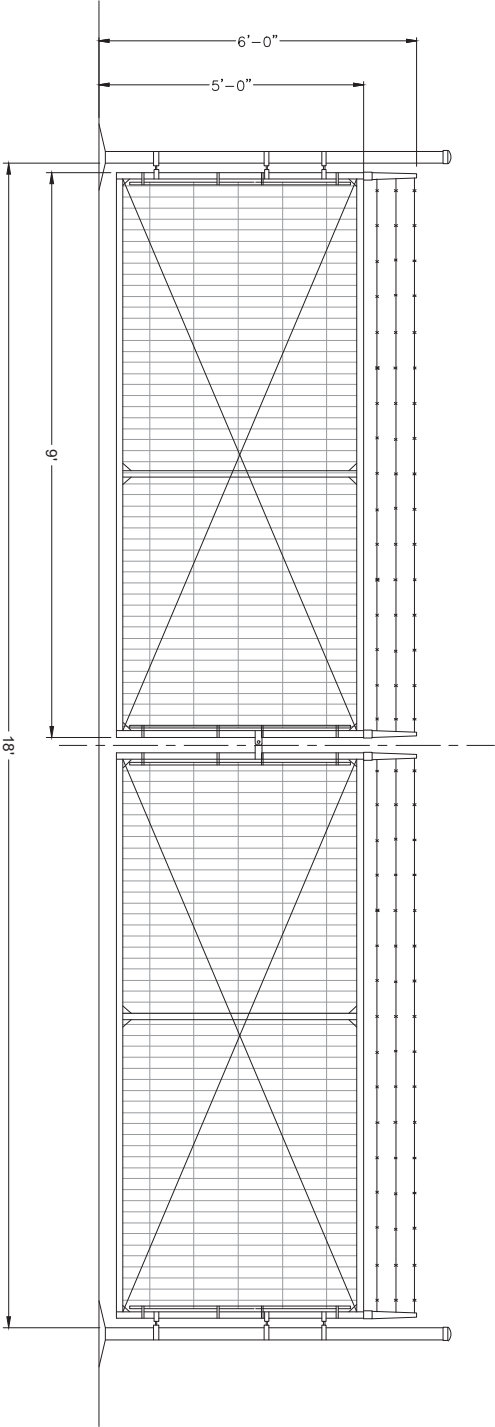
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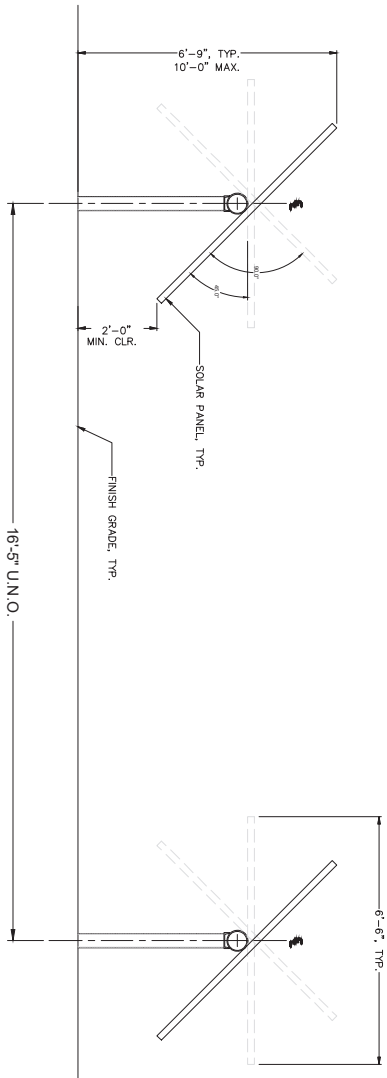
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N.T.S.



N.T.S.



ZGLOBAL
Power Engineering & Energy Solutions

504 SUTTER ST, STE 250
FOLSOM, CA 95630
Phone : 916.985.9461
Fax: 916.985.9467

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SCALE:	AS NOTED	
JOB NO:		S-100

DATE:

REV NO. 1

