

Initial Study and Mitigated Negative Declaration

for the

CalSun Solar Project

Submitted to

Alameda County Planning Department

Prepared for

Calpine Corporation



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JACOBS®

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Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
AADT	Average Annual Daily Traffic
AB	Assembly Bill
ac	acre
AC	Alternating Current
BAAQMD	Bay Area Air Quality Management District
BMP	best management practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CCA	Community Choice Aggregation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
COC	constituents of concern
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
DC	Direct Current
DPS	Distinct Population Segment
EACCS	East Alameda County Conservation Strategy
ECAP	East County Area Plan
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ft	feet
FSC	Federal species of concern
FT	Federally threatened
fps	feet per second
GHG	greenhouse gas
m	meters
mi	miles
MND	Mitigated Negative Declaration
NAAQS	National Ambient Air Quality Standards

ACRONYMS AND ABBREVIATIONS

NMFS	National Marine Fisheries Service
NOA	naturally occurring asbestos
NOAA	National Oceanic and Atmospheric Administration
NO ₂	nitrogen dioxide
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
PCE	passenger car equivalent
PG&E	Pacific Gas and Electric Company
PM10	particulate matter with aerodynamic diameter less than or equal to 10 microns
PM2.5	particulate matter with aerodynamic diameter less than or equal to 2.5 microns
PSD	Prevention of Significant Deterioration
SE	State Endangered
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO ₂	sulfur dioxide
SSC	Species of Special Concern
ST	State Threatened
SWPPP	stormwater pollution prevention plan
TAC	toxic air contaminants
USACE	U.S. Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	US Fish and Wildlife Service
USGS	U.S. Geological Survey
WAPA	Western Area Power Administration
WRCC	Western Regional Climate Center
yd ³	cubic yard

Project Information

1. Project Title

CalSun Solar Project

2. Lead Agency Name and Address

Albert Lopez, Planning Director
Alameda County Planning Department
224 West Winton Avenue, Room 111
Hayward, California 94544
510.670.5400
albert.lopez@acgov.org

3. Contact Person and Phone Number:

Andrew Young
Senior Planner
510.670.5400
andrew.young@acgov.org

4. Project Site and Location

The CalSun Solar Project (CalSun) site is in the northeastern corner of Alameda County, California on a single 112.8-acre parcel (see Figures 1-1 and 1-2 on pages 1-8 and -9, respectively), bearing Assessor's Parcel Number 99B-7100-3-1. The site is an irregular polygon bordered on the northeast by the Byron-Bethany Road (County Road J4, also known as Byron-Bethany Highway), and on the west by Mountain House Road (see Figure 1-3 on page 1-13). The Contra Costa County line also intersects with the northern tip of the project site. The portion of the site to be developed for the solar generation and energy storage facility is 89.1 acres in size. A 400-foot wide Western Area Power Administration (WAPA) transmission line right-of-way and high-tension power lines extends diagonally across the northern portion of the site from the southwest to the northeast, occupying an area of approximately 14.4 acres, effectively dividing the site between a northwestern 18-acre portion and an 80-acre, main southern portion. Additional acreage is occupied by easements for Pacific Gas and Electric Company (PG&E), Byron-Bethany Irrigation District, Pacific Coast Oil Company, and Standard Oil and Gasoline. Although the site has an unnumbered address in County records on Kelso Road, Kelso Road is 0.40 miles (2,000 feet) to the south. The site is in Township 1S, Range 2E, Mount Diablo Base and Meridian, Rancho Pescadero. The project site is owned in fee by Byron Highway Energy Center, LLC, a subsidiary of Calpine Corporation.

5. Project Sponsor Name and Address

Mitch Weinberg
Byron Highway Energy Center, LLC
c/o Calpine Corporation
4160 Dublin Corporate Way
Suite #100
Dublin, California 94568

6. General Plan Designation

The General Plan designation for the site is Large Parcel Agriculture.

7. Zoning

The zoning district is (A) Agriculture.

8. Description of Project

CalSun is proposed as a solar photovoltaic energy generation and storage project, consisting of single-axis tracking solar photovoltaic panel arrays capable of producing approximately 20 MW of electricity, and a battery system able to store approximately 20 MW of energy. The project will include solar PV tracking with solar panels mounted on axes oriented north-south in rows that are approximately 13.3 feet apart and that can rotate in a single east-west axis over 120 degrees to maintain efficient solar energy conversion throughout the day. The energy storage equipment will be located on a 5-acre portion of the project site. It will store solar and grid supplied energy and provide voltage support and energy to the grid by discharging during times of peak demand. The project will have 15,860 feet (3 miles) of service roads that provide access to the solar modules and other equipment for maintenance. It will be surrounded by a 11,798-foot-long (2.2-mile-long) 6-foot-high perimeter fence with tall, drought-tolerant, evergreen shrubs providing a visual screen at regular intervals. The project may interconnect via a line tap with the existing PG&E 70 kV Herdlyn-Tracy transmission line to convey power to the regional electrical grid through the Tracy Substation, or one or both of the 12 kV lines on either side of Byron-Bethany Road.

For a detailed project description, see Section 2, Project Description and Appendix A, Site Plans.

9. Site Features and Surrounding Land Uses and Setting

Project Site. The project site consists of mostly level land at the southeast corner of the intersection of Byron-Bethany Road with Mountain House Road (Figure 1-3). The site extends approximately 4,000 feet along Mountain House Road and approximately 2,260 feet along Byron-Bethany Road on a diagonal bearing. These two roads intersect at an approximately 50-degree angle, forming a triangular shape at the northwest corner of the site. The site's eastern boundary includes the northeast boundary along Byron-Bethany Road, a roughly 600-foot long boundary perpendicular to Byron-Bethany Road, and an approximately 2,150-foot line on a north-south alignment extending to the site's southeast corner. An unlined irrigation ditch runs the length of its eastern boundary extending south of Byron-Bethany Road. Concrete-lined irrigation ditches run east-west along the southern edge of the project site (about 1,320 feet) and along an unpaved road that crosses the middle of the site, that also separates the site into northern and southern segments.

The project site is open and used for field and row crops and some grazing. In recent years, it has been used for growing alfalfa and oats. The site slopes gently uphill to the south, at less than one percent grade. At the northwestern corner in a triangular-shaped area at the intersection of Byron-Bethany and Mountain House Roads, there is a small low-lying area (under a tenth of an acre) with ruderal vegetation where irrigation runoff from the site collects before draining into a culvert and off site.

The northern portion of the site is crossed by a 400-foot-wide transmission line right-of-way that runs diagonally through the site and contains two 230-kV lines and one 500-kV line. There is a set of three steel-lattice towers in rough alignment near the west side of this right-of-way. Along its west boundary, the site is bordered by PG&E's Tracy-Herdlyn 70-kV transmission line. This line is carried on wood poles along the eastern edge of Mountain House Road. In the area near Mountain House Road and adjacent to the transmission corridor, there is an approximately 300' by 380' area (approximately 2.6 acres) that

is not used for crops and is mostly covered with weedy vegetation. It contains an unused milking shed, beehives, and stored agricultural equipment.

Local Setting. Figure 1-1 shows the project site's location in its larger regional setting, Figure 1-2 shows the subregional setting, and Figure 1-3 focuses on the site and its immediate context (figures are at the back of the section). The site is in a portion of Alameda County that lies to the east of the Coastal Range and is a physiographic part of the San Joaquin Valley. Land near the project site is generally divided into large fields used for field crops, row crops, and in some cases, grazing. Across Mountain House Road, which borders the west side of the site, the project site borders part of the WAPA Tracy Substation. West of Mountain House Road is a parcel containing the right-of-way for the three high voltage transmission lines that tie into the substation's north side. Beyond this parcel is the Delta-Mendota Canal and its prominent levee. On the opposite side of Byron-Bethany Road is the parallel Union Pacific Railroad track line.

The project area contains several major infrastructure facilities, which are indicated on Figure 1-2. The project area is a critical transfer point on the California Department of Water Resources (DWR) California Water Project and on the U.S. Bureau of Reclamation's Central Valley Project. The DWR's Clifton Court Forebay, located approximately a mile north of the project site, is a shallow, 2,180-acre reservoir surrounded by a 14-foot-high dam that collects and stores water that the DWR releases from the Oroville Reservoir and transports to the Sacramento-San Joaquin Delta by way of the Feather and Sacramento rivers. From the Forebay, the water flows through the Skinner Fish Facility, the complex of structures at the edge of the Forebay approximately 1.9 miles north of the project site. From there, the water flows through a 138-foot-wide, 2-mile-long segment of the California Aqueduct to the Banks Pumping Plant, which is located 2.4 miles to the west of the project site. At the Banks facility, massive pumps raise the water up 244 feet to a short canal segment that transports it 1.2 miles to Bethany Reservoir, a 180-acre impoundment located approximately 2 miles southwest of the project site. From the Bethany Reservoir, pumps move the water into the South Bay and California Aqueducts for transport to urban and agricultural water users in Alameda and Santa Clara Counties, the San Joaquin Valley, the Central Coast, and Southern California.

The Central Valley Project's releases from Shasta Dam are transported to the Delta by way of the Sacramento River. Immediately southeast of Clifton Court Forebay, these waters are captured by a segment of the Delta-Mendota Canal that transports it to the Tracy Pumping Plant, which is located one-half mile to the southwest of the project site. As seen in Figure 1-4f, the steep-sided, grass-covered levee on the east side of the Delta-Mendota Canal is visible on the west side of Mountain House Road, directly opposite the project site. At the Tracy Pumping Plant, large pumps raise the water 200 feet into the Delta-Mendota Canal, which conveys the water along the foot of the Coastal Range to the Mendota Pool south of Fresno.

Operation of the pumping plants requires large amounts of electricity, and their presence accounts in part for this area's concentration of electrical facilities. The WAPA transmission lines were built to transport electricity produced at federal hydroelectric plants in the northern Sacramento Valley to the major substation developed next to the Tracy Pumping Plant to provide power for the operation of the facility's pumps. This substation is located across Mountain House Road from the southwest corner of the project site. The Tracy substation includes a 230-kV facility located along Kelso Road and a 500-kV switchyard that borders Mountain House Road in the area immediately southwest of the project site. The dense collections of equipment at the two substations, particularly the tall bus structures, are visible in views from Kelso and Mountain House roads (Figure 1-4c) and from the surrounding area. Three 500-kV circuits on two tall transmission structures and nine 230-kV circuits carried on five tall transmission structures radiate out of the substation complex. In addition, a pair of 500-kV lines passes through the area in a north-south direction approximately 1 mile west of the project site.

PG&E has developed a large gas compressor station in the foothill area at the northeast corner of Kelso Road and Bruns Avenue, 1.3 miles to the southwest of the project site. The newly developed Mariposa Energy Center natural gas-fired power plant with four large turbine housings and stacks is located on Bruns Road, approximately 1.5 miles southwest of the project site.

Large arrays of wind turbines are located in the foothill areas to the west and south of the project site within an area that has been designated by the State of California as the Altamont Pass Wind Resource Area. The wind turbines closest to the site are located approximately 2.5 miles to the southwest. Arrays of wind turbines are visible on the hills to the west and southwest of the project site.

Although the project area is primarily an area of large-scale infrastructure facilities and agricultural fields, it also includes residential uses, a school, and several areas with recreational activities. The residences closest to the project site are a small number of individual farm dwellings along Kelso and Mountain House Roads, one-third to one-half mile from the site. Mountain House School, a public elementary school serving approximately 50 students, is also located in this area along Mountain House Road, approximately 0.9 mile south of the project site; an unincorporated area of Alameda County. In the corridor along Kelso Road 0.75 miles west of the Tracy substation and the Tracy Pumping Plant and approximately 0.75 mile southwest of the site, there is a small cluster of residences. Most of these residences are located along the road, but there are also residences located on the small ridge to the north of the road and to the west of the Delta-Mendota Canal. Approximately a mile northeast of the project site, an area along a small slough located south of the intersection of the Old River and the Delta-Mendota Canal has a cluster of approximately 30 small residential structures known as the Livermore Yacht Club. The residences in this area, which are built immediately adjacent to the water and are oriented toward it, appear to have been built initially as second homes, but most now appear to be used as full-time residences.

The biggest concentration of residences in the area lies within the unincorporated community called Mountain House, which is located 1.1 mile to the southeast of the project site in San Joaquin County. This community is made up of the initial stages of a large planned new community project that has been under development for the past 15 years. At present, approximately 10,000 people live in this community. The town of Byron, which has a population of approximately 1,300, is located 5 miles to the northwest of the project site and the City of Tracy, which has a population of approximately 85,000 is 7 miles to the southeast. All of these communities are outside of Alameda County, in Contra Costa and San Joaquin Counties.

The nearest public recreational area is the Bethany Reservoir State Recreation Area, located 2 miles southwest of the site, operated by the California Department of Parks and Recreation. The 600-acre area includes a boat ramp, dock, and picnic and parking areas. In addition, the facility serves as a staging area for a bikeway that has been developed along the segment of the California Aqueduct that extends southward from the reservoir. At the eastern end of Clifton Court Road, approximately 2.3 miles northeast of the project site, portions of the shoreline of the Clifton Court Forebay and the California Aqueduct are open to the public for bank fishing and in season, waterfowl hunting. The Lazy M Marina, which is adjacent to this area, provides a boat ramp, berths, on-ground boat storage, a small restaurant, and cabins. Closer to the site (about 0.75 mile to the northeast of the site) are commercial recreational services at the Livermore Yacht Club, oriented toward boating and fishing on the slough and nearby Delta waterways. The Rivers End Marina in this vicinity provides a boat ramp, boat slips, and on-ground boat storage.

Figure 1-3 identifies the locations of the viewpoints from which the photos in Figures 1-4a through 1-4f were taken. Figure 1-4a is a view from the project site's southwest corner, looking north along Mountain House Road. The project site is the flat agricultural field to the right. The wood pole 70 kV Herdlyn-Tracy transmission line can be seen paralleling the road at the project site's western edge. The

three high voltage transmission lines on lattice steel towers can be seen in the distance crossing the site in a northeast-southwest direction. At the far-right side of the photograph, there are orchard trees located on the property to the east.

Figure 1-4b is a view from Mountain House Road under the high voltage transmission lines looking east into the project site. The small area of unfarmed land that exists in this area can be seen in the foreground. The structure to the right of the transmission tower is the former milking shed, which is the only building on the site.

Figure 1-4c is a view from Byron-Bethany Road at Mountain House Road, looking south. The project site is the flat, green field that occupies most of the view. Mountain House Road and the 70 kV Herdlyn-Tracy transmission line border the west side of the site. In the distance, to the right of Mountain House Road, the WAPA Tracy Substation can be seen.

Figure 1-4d is a view from Byron-Bethany Road at Mountain House Road, looking southeast, showing the site's frontage along Byron-Bethany Road. A set of railroad tracks owned by the Union Pacific Railroad can be seen on the berm that parallels the left side of Byron-Bethany Road. In the distance, at the end of the flat field, the orchard trees located on the parcel that borders the project site to the south and east can be seen.

Figure 1-4e is a view from the site's northeast corner, looking northwest along Byron-Bethany Road. The Union Pacific tracks can be seen on the right side of the road, and the project site on the left. In the distance, beyond the project site to the west, is the levee that borders the east side of the Delta-Mendota Canal.

Figure 1-4f is a photo taken from the same location as the photo in Figure 1-4e, but facing southwest. In the distance on the left side of the photo is the equipment at the north end of the Tracy Substation. In the middle area of the photo are the single 500-kV transmission tower and two 230-kV transmission towers located on the project site. On the ridgeline in the background to the left of the 500-kV transmission tower is Brushy Peak, and wind turbines can be seen on the right.

10. Public Agencies whose Approval Is Required

Participating agencies and their required authorizations will include the following:

Table 1-1. Summary of Anticipated Approvals and Permits

Agency	Permit/Approval	Notes
County of Alameda	Conditional Use Permit Site Development Review Building Permit Grading Permit	
Regional Water Quality Control Board (RWQCB)	Stormwater Pollution Prevention Plan (Section 402 of the Clean Water Act)	Notice of Intent to use the General Construction permit.

11. Compliance with Public Resources Code section 21080.3.1

Pursuant to Public Resources Code Section 21080.3.1, the County has contacted the California Native American tribes traditionally and culturally affiliated with the project area to inform them of the project and allow them to request consultation. No tribes have requested consultation pursuant to Public Resources Code section 21083.3.2.

12.0 Review Process

The California Environmental Quality Act (CEQA, 1970, as amended, commencing with Section 21000 of the California Public Resources Code), and the CEQA Guidelines require that an agency responsible for reviewing discretionary projects such as tract maps and conditional use permits make a determination as to the applicability of CEQA. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the environmental effects of proposed activities
- Involve the public in the decision-making process
- Identify ways that damage to the environment can be avoided, reduced, or prevented through the use of alternatives or mitigation measures

Following preliminary review, the lead agency (the County of Alameda Planning Department) is required to prepare an Initial Study to determine if the project may have a significant effect on the environment, and if an Environmental Impact Report (EIR) should be prepared. The Initial Study must address all phases of project planning, implementation and operational conditions, and may incorporate expert opinion supported by facts, technical studies or other substantial evidence to document its findings. An Initial Study is neither intended nor required to include the level of detail included in an EIR (CEQA Guidelines, Section 5063(a)). If the agency finds that there is substantial evidence that any aspect of a project, either individually or cumulatively, may have a significant effect on the environment, it should prepare an EIR. Alternatively, if there is no substantial evidence that the project or any of its aspects may have significant environmental impacts, the lead agency should prepare a Negative Declaration. Furthermore, if revisions in the project plans that have been agreed to by the project applicant would avoid significant environmental impacts, and there is no substantial evidence considering the whole record before the public agency that the project as revised may have a significant effect on the environment, a Mitigated Negative Declaration shall be prepared (CEQA Guidelines, Section 15064 (1)(2)).

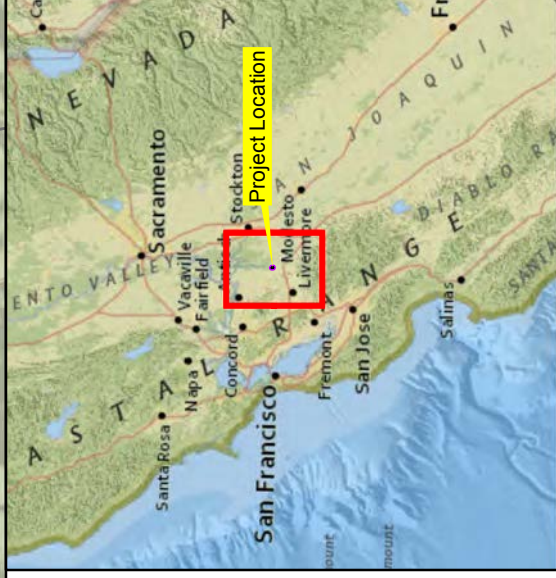
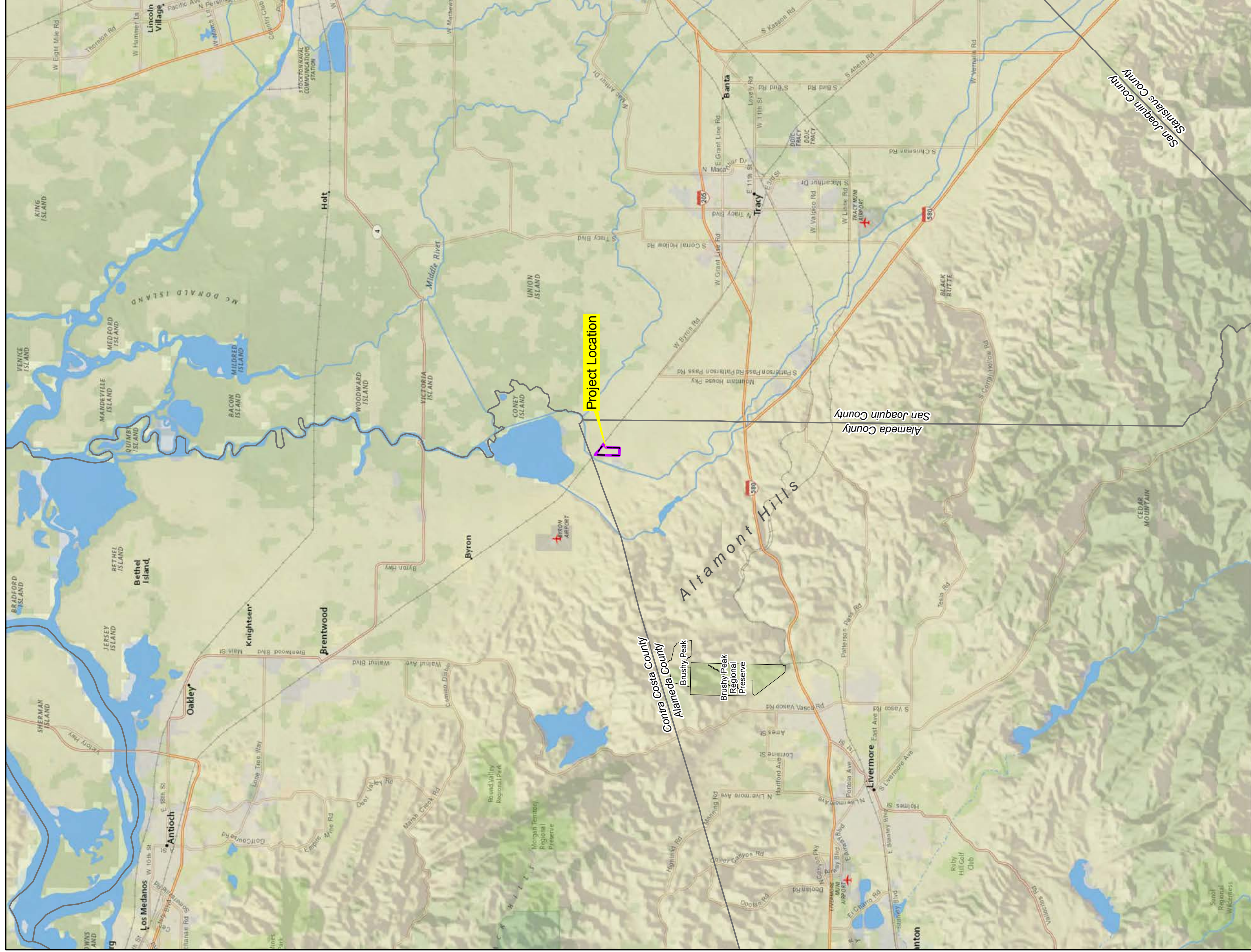
The purposes of the Initial Study are chiefly to provide the lead agency with information for determining whether to prepare an EIR or a Negative Declaration, focusing an EIR on the effects determined to be significant if significant effects are determined to be likely, explain reasons why it was determined that specific effects are not significant, and provide documentation of the factual basis for the finding that a project will not have a significant impact on the environment. This Initial Study has been prepared pursuant to CEQA, and is meant to provide an objective, impartial source of information to be used by the lead and responsible agencies, as well as the public, in their considerations regarding the project.


The analysis in the Initial Study concentrates on the aspects of the project that may have a significant adverse effect on the environment, and identifies reasonable and feasible measures to mitigate (i.e., reduce or avoid) these effects. The CEQA Guidelines define "significant effect on the environment" as "a substantial, or potentially substantial adverse change in any of the physical conditions within the area affected by the project ..."

This Initial Study will be circulated for a 30-day comment period. During this time, the public and responsible agencies and organizations may submit comments on the sufficiency or adequacy of the analysis in evaluating the environmental effects of the proposed project. A Public Hearing is scheduled following the 30-day review period in a location which is yet to be determined, and for which separate public notice will be provided. A final decision to approve or deny the project's Conditional Use Permit is expected but is not required to be made on that date. All persons interested in the matter may appear and be heard at this meeting, or may submit written comments on the Initial Study. All comments must be submitted to:

Andrew Young, Senior Planner
Alameda County Planning Department
224 West Winton Avenue, Room 111
Hayward, CA 94544
Telephone: (510) 670-5400

Responses to written comments received on the Initial Study will be prepared. The Initial Study with the responses to comments received on the Initial Study during the public review period, will comprise the complete CEQA documentation, and if adopted by the hearing body (the Alameda County East Board of Zoning Adjustments), the Mitigated Negative Declaration for the project. A Mitigation Monitoring and Reporting Program (MMRP) will also be prepared for adoption by the Board. Adoption of the Mitigated Negative Declaration as part of the record will be required prior to approval of the proposed project.



LEGEND
 Project Site

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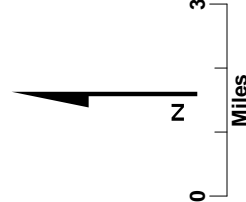
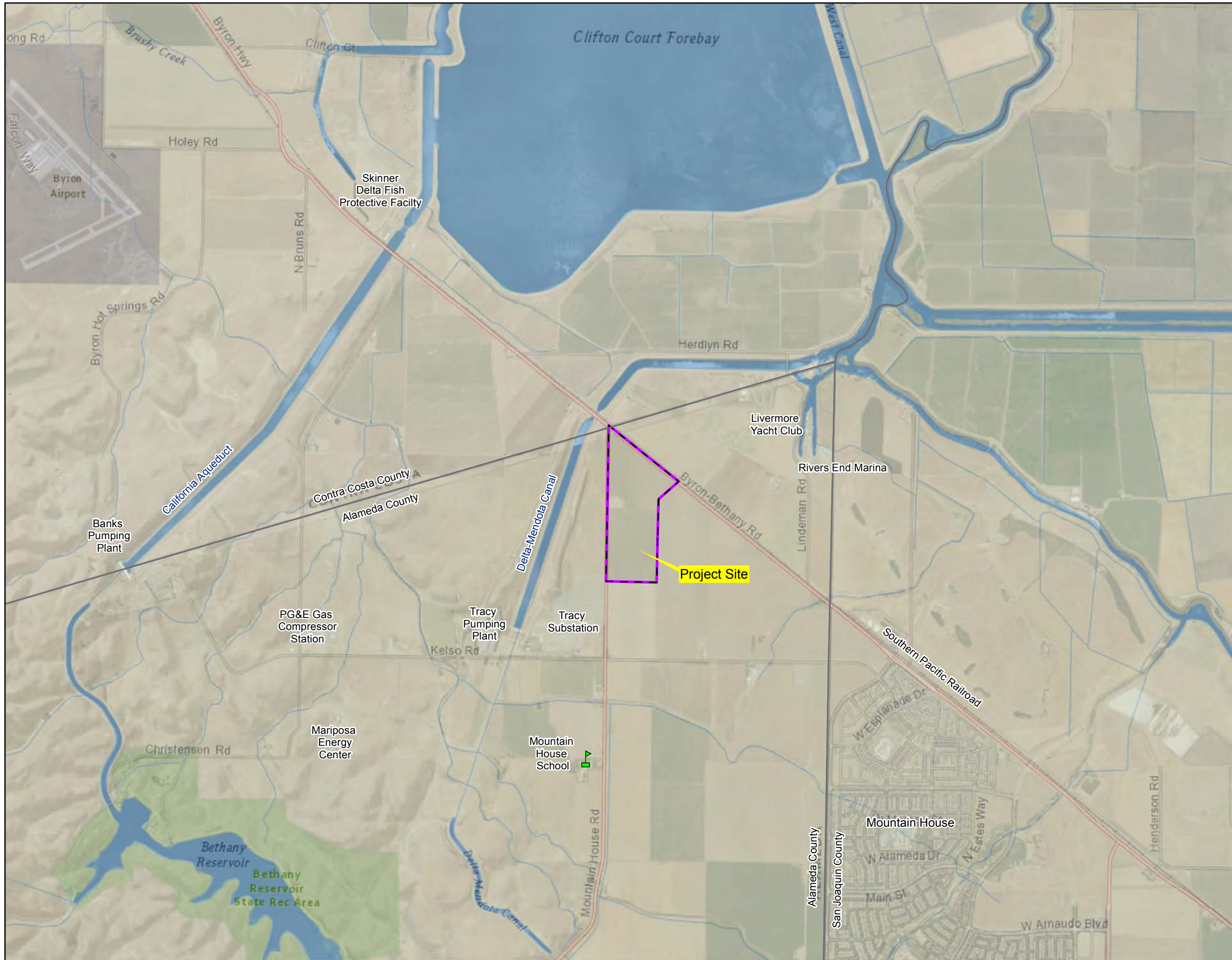



Figure 1-1
Regional Location
 CalSun Solar Photovoltaic Energy Project



LEGEND
 Project Site

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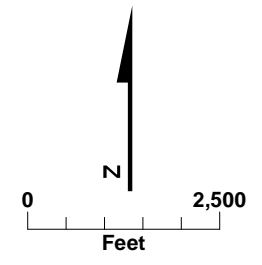
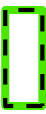






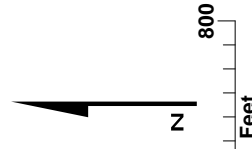
Figure 1-2
Project Site Location
 CalSun Solar Photovoltaic Energy Project



LEGEND

-  Project Site
-  County Boundary
-  Railroad
-  High-voltage Transmission Line
-  Viewpoint Locations

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**Figure 1-3
Project Site and Its Immediate Vicinity
With Locations of Photo Viewpoints**

CalSun Solar Photovoltaic Energy Project





a. View from the project site's southwest corner, looking north along Mountain House Road. The project site is the flat agricultural field to the right. The wood-pole 70 kV Herdlyn-Tracy transmission line parallels the road at the project site's western edge. In the distance, the three high voltage transmission lines carried on large lattice steel towers can be seen crossing the site in a northeasterly direction. At the far right side of the photograph, the 12 kV distribution line along the Byron Highway and the orchard trees located on the property to the east of the project site are visible.



b. View from Mountain House Road from under the high voltage transmission lines, looking east into the project site. The small area of unfarmed land that exists in this area can be seen in the foreground. The structure to the right of the transmission tower is the deteriorating former milking shed, which is the only building on the site.

Figure 1-4
Photos of Project Site and Vicinity
CalSun Solar Photovoltaic Energy Project
Alameda County, California



c. View from Byron-Bethany Road at Mountain House Road, looking south. The project site is the flat, green field that occupies most of the view. Mountain House Road and the 70 kV Herdlyn-Tracy transmission line border the west side of the site. In the distance, to the right of Mountain House Road, the large WAPA Tracy Substation can be seen.



d. View from Byron-Bethany Road at Mountain House Road, looking southeast, showing the site's frontage along Byron-Bethany Road. A set of railroad tracks owned by the Southern Pacific Railroad can be seen on the berm that parallels the left side of Byron-Bethany Road. In the distance, at the end of the flat field, the orchard trees located on the parcel that borders the project site to the south and east are visible.

Figure 1-4
Photos of Project Site and Vicinity
CalSun Solar Photovoltaic Energy Project
Alameda County, California





e. View from the site's northeast corner, looking northwest along Byron-Bethany Road. The Southern Pacific tracks can be seen on the right side of the road, and the project site on the left. In the distance, beyond the project site, the high berm that borders the east side of the Delta-Mendota Canal is visible.



f. View from the same location as the photo in Figure 1-4e, but oriented toward the southwest. In the distance on the left side of the photo, there is a glimpse of the equipment at the north end of the Tracy Substation. In the middle area of the photo, the single 500-kv transmission tower and two 230-kv transmission towers located on the project site can be seen. On the ridgeline in the background, Brushy Peak is visible to the left of the large 500-kv transmission structure, and wind turbines can be seen on the right.

Figure 1-4
Photos of Project Site and Vicinity
CalSun Solar Photovoltaic Energy Project
Alameda County, California



Project Description

2.1 Project Purpose and Scope

CalSun will use arrays of solar photovoltaic (PV) panels to provide clean, renewable energy that will assist California's utilities meet the renewable portfolio standard established by SB 350, specifically that utilities must deliver 50 percent of the electrical power they provide to their customers from renewable sources by 2030. The project's energy storage (battery) component will help to manage the intermittent nature of solar generation by storing energy during times of peak generation for release during times of peak use. In addition, power from CalSun may represent an energy resource for Alameda County's Community Choice Aggregation (CCA) program, formally known as East Bay Community Energy (EBCE), thereby providing a local source of renewable energy for that program. EBCE analyzed four different scenarios for renewable/conventional resource mix. These call for an increase in the percentage of renewable resources and one of them includes a local renewable generation requirement.

2.2 Project Elements

CalSun is a solar energy generation and storage project that would consist of tracking solar PV arrays with a nominal output of 20 MW and approximately 20 MW of energy storage capacity. The proposed project site arrangement is presented on the site plan in Appendix A. Key elements of the project are described below:

2.2.1 Solar Arrays

The project will use solar modules that are assembled into panels approximately 3 by 6 feet in size. These panels will be mounted on single-axis tracking pivots that will be aligned in a north-south direction in rows. The tracking pivots, approximately 4' high, rotate the panels from east to west during the day to maximize capture of solar energy and have a pivoting range of up to 120 degrees. Early and late in the day when the panels are rotated to their maximum, 60-degree positions, the bottoms of the panels will be 1 foot above the ground and the tops will be 6.8' above the ground surface. At night and at other times that the panels are not being used, the tracker will place the panels in a horizontal position roughly 4' above the ground surface.

The tracking pivots will be supported by posts consisting of wide-flange steel piers that will be driven directly into the ground, without a need for concrete foundations. The tracking equipment includes small and dedicated solar panels that provide the power for tracker operation. Consequently, electric lines will not be needed to provide power to the tracker motors.

The north-south rows of the trackers will be grouped into rectangular arrays that extend across the project site in an east-west direction. In some cases, these arrays will be separated by 20-foot-wide all-weather access roads as required by Alameda County for emergency access. The surface of the land under the solar arrays will be covered with grass and other low-growing vegetation that will be maintained by mowing and grazing. Sheep and goats will be periodically brought on site to reduce the vegetation. This may occur several times per year.

2.2.2 Inverters and Onsite Electric and Communication Lines

Inverters to convert the direct current (DC) power generated by the solar panels to alternating current (AC) power for delivery to the grid will be dispersed among the arrays. The inverters are enclosed in metal cases and mounted on concrete slabs.

The DC power generated by the solar arrays will be transmitted to the inverters by means of electric lines held in cable trays. The AC power from the inverters will then be transmitted to the on-site switch gear by underground lines. Because the equipment that controls the trackers communicates using wireless technology, there will be no need for overhead communications lines on the site.

2.2.3 Energy Storage

Approximately 5-acres on either the western or eastern property line will be used to site batteries to store solar energy generated by the project and to store energy from the grid during times of over-generation. The batteries will then discharge this energy back to the grid during times of peak demand. Lithium-ion batteries will be enclosed in metal cases that are approximately the size of a standard cargo container. The cases will be mounted on concrete pads and arranged in rows.

2.2.4 Substation and Transmission Line

The substation required to step up the power generated by the project to transmission voltage will be located on either the western or eastern property line depending on which lines are selected for electrical interconnection. The substation will occupy an area that will be approximately 80 feet by 140 feet in size. Transformers will be in a concrete lined basin that is designed to contain any fluid spills. The substation will be surrounded by a 6' high chain link fence topped with barbed wire, and its ground surface will be covered with gravel. Lighting will be installed in the substation for use at times when nighttime emergency repair work is required.

Because conductors will connect directly from the bus structure to the PG&E 70 kV Herdlyn-Tracy transmission line located along Mountain House Road adjacent to the site or to the 12kV lines located directly to the east along Byron Highway (see Figure 1-4a), the project will not require construction of a new transmission line.

2.2.5 Access Roads

The project will use 15,860 feet (3 miles) of 20-foot-wide, all-weather service roads to access the solar PV tracking modules and other equipment for maintenance and provide access for fire-fighting equipment. The locations of these roads are identified on the site plan (Appendix A).

Access to the site will take place by means of two driveways that enter the site from Mountain House Road. The driveway into the southern segment of the site will be located approximately 400 feet north of the site's southern property line. The driveway into the northern segment of the site will be located on the north side of the energy storage area at a point on Mountain House Road that is approximately 675 feet north of the WAPA transmission right of way. The driveways will comply with local emergency access regulations and site design is subject to review by the Alameda County Fire Department.

2.2.6 Fencing, Landscaping, Signage, and Lighting

The project site will be surrounded by a 6' high chain link fence. Landscaping consisting of drought-tolerant, evergreen shrubs will be planted in groups of 3 to 5 plants, spaced 20 meters apart, to break up the line and mass of the fencing and screen views of the solar panels.

The only lighting that will be installed on the site will be in the substation and energy storage area for use at times when nighttime repair activities may be required.

A sign will be provided near the intersection of Byron Bethany Road and Mountain House Road that identifies the project and project owner. Otherwise, signage on the site will be restricted to that which is necessary for site security and for safety.

2.2.7 Utilities and Infrastructure

There will be no office building on the site and any energy required to operate the solar trackers will be generated by the project. Therefore, beyond construction, the site will need electric power only for the emergency lighting system in the substation and in the energy storage area.

Water will be required for washing of the solar panels. This will consume about 50,000 gallons per washing. Panel washing is expected to take place up to 6 times per year. This water will be trucked to the panel rows from a connection on the property.

The water required for irrigation of the proposed landscaping during the first seasons when it is getting established will also be distributed by truck using an on-site connection.

Because no employees will be working on the site on a regular basis, there will be no indoor bathroom facilities.

2.2.8 Project Operations

Project operation will include periodic inspection, maintenance and repair of the solar arrays and battery facilities. The Applicant expects that, during project operation, one to two employees will be on-site intermittently every month (anticipated to be less than four trips a week) to perform maintenance duties.

Ongoing maintenance will include cleaning of the solar arrays to maintain performance and efficiency. To clean the arrays, the solar panels on both sides of the alleyways between the rows of solar panels will be tilted a full 60 degrees to face the alley. A tanker vehicle with a spray device will be driven down each of the alleys to spray-clean the panels.

As stated above, water will be required onsite for washing of the solar panels, up to 6 times per year. Wash trucks will be filled at the site via an on-site water connection. Excess water from the washing cycle will drip from the panels and will help to irrigate ground cover.

2.2.9 Construction

Pending the completion and approval of the CUP, interconnections requests and commercial power sales agreement, construction of CalSun is targeted to begin early 2019. Construction is expected to take approximately 6 months, with commercial operation expected late-2019.

Under the Alameda County Noise Ordinance (Section 6.60.070 of the Alameda County General Ordinance, 2005) construction activities that occur between 7:00 a.m. and 7:00 p.m. Monday through Friday, and between 8:00 a.m. and 5:00 p.m. on Saturday are exempt from noise level standards. No construction activities are proposed at any other time.

Construction activities will proceed as follows:

- **Site Preparation.** This will include excavation and grading to clear the site and maintain existing drainage patterns, and potential permeable soil amendment to insure adequate stability and drainage below the solar platforms, if necessary.
- **Installation of Fencing.** The permanent security fence will be installed around the perimeter of the project site.
- **Construction of Access Roads.** The all-weather access roads will be built to provide access to the site for construction activities.
- **Installation of the Solar Arrays and Inverters.** The solar trackers will be assembled and installed and the solar panels will be attached to them. Concrete slabs will be poured at the six inverter locations, and the inverter equipment will be put in place.
- **Electrical Work.** Installation of the underground electric lines to connect the solar arrays with the

inverters and the inverters to the substation.

- **Installation of the Substation and Transmission Interconnection.** The substation site will be fenced and covered in gravel and the substation equipment will be installed. The substation will then be connected directly to the grid.
- **Installation of the Energy Storage Units.** The concrete slabs required by the battery units will be poured, and the cabinets containing the batteries will be installed.

The only structure on the site, the former milking shed located at the southern edge of the WAPA transmission right-of-way, will be removed. The ruderal vegetation in the area around the milking shed in areas around the site's edges will be removed. Because the site is already flat and has a relatively even surface, on most of the site, minimum grading and filling will be required. The areas to be developed as access roads will need to be smoothed, compacted, and covered with gravel. Grading and compaction will also be required at the inverter sites, the substation site and in the 5-acre area to be developed for energy storage. In these areas, concrete slabs will be poured to provide stable bases for the installation of equipment.

2.2.9.1 Staging Areas

Temporary staging areas will be created on the site to store construction materials and construction equipment, and to provide parking for construction personnel.

2.2.9.2 Disposal of Construction Materials and Sanitation

The building contractor will arrange to have trash, construction recycling, and regular recycling bins delivered to the site in accordance with Alameda County Building Code regulations and guidelines. During construction, every effort will be made to minimize packaging and construction waste.

Construction recycling, regular recycling, and non-recyclable trash will be regularly picked up during the construction period. All project components will arrive by truck on pallets, which will be removed from the project site by the same truck.

During the construction period, portable toilets will be used and will be maintained by a private offsite company.

2.2.9.3 Construction Logistics/Transportation

During project construction, approximately 5 to 10 trucks per day will deliver loads to the site over a 3-month period. Construction workers on the site during project construction will range between 25 and 100 people.

2.2.9.4 Site Safety

Hazards and Hazardous Materials Compliance

To ensure minimum exposure of construction workers to hazardous materials (e.g., construction related fuels and paints), construction activities will comply with applicable worker protection laws and regulations, including the Occupational Safety and Health Act (OSHA), Title 9 of the Code of Federal Regulations (CFR), and Title 8 of the California Code of Regulations (CCR). The construction contractor selected for the project will be responsible for ensuring that construction workers are trained in accordance with local, state, and federal requirements for handling hazardous materials.

Worksite Safety Program

The Applicant will implement a Worker Health and Safety program and plan that will be tailor-made for the project site. Some plan elements will include: mandatory viewing of a safety video required for all

onsite workers, tailgate safety meetings, life safety, on-site fire extinguishers, and safety training specific to the trackers and solar modules.

Emergency Plan

The Applicant will comply with all required and endorsed activities to limit the risk of injury or accidents onsite. Emergency contact information will be posted outdoors in an easily visible place and its location will be shared with all contractors during the required initial safety training before any worker is allowed onsite.

Signage will be posted around the solar collection units, combiner boxes, disconnect switches and inverters, clarifying dangers and shock hazards. All National Electric Code regulations governing PV systems signage will be followed.

Fire Safety Plan

The solar collection modules are constructed of silica, glass and aluminum. In the case of an electrical fire, the only features associated with the solar collection units that are flammable are the wires. The inverter equipment and the transformer in the substation are large pieces of equipment that are also flammable. Fire extinguishers will be mounted on the inverter and transformer pads and regularly inspected.

The solar collectors will be arranged in a series of north-south rows, with an alley between each row. The rows are laid out in segments that are each approximately 300 feet long. The segments are separated by alleyways and 20-foot-wide all-weather roads to accommodate fire truck access.

In case of emergency, the entire solar power array would be shut off using a utility disconnect. The site utility disconnect will be located on the transformer pad and in an area that is accessible at all times. Master switch operation will require site access through the main gate only.

2.2.9.5 Construction Schedule

Construction of CalSun is targeted to begin early 2019. Construction is expected to take up to six months, with commercial operation expected late 2019.

Statement of Findings and Determination

Alameda County requires this Initial Study to evaluate the potential impacts of implementing the proposed project. Project-specific mitigation measures have been developed to fully mitigate potential impacts to a less than significant level. The proposed project has been designed to avoid or mitigate any potentially significant environmental effects identified; therefore, the preparation of an Environmental Impact Report is not required.

In light of the whole record, there is no substantial evidence that the proposed project would have a significant effect on the environment. If substantial changes alter the character or impacts of the proposed project, an additional environmental impact determination would be necessary. The proposed project will include measures to mitigate impacts on Aesthetic, Agricultural, Land Use, Cultural, and Biological Resources to a less than significant level.

Pursuant to Section 21082.1 of the California Environmental Quality Act (CEQA), Alameda County has independently reviewed and analyzed the Initial Study (IS) and Mitigated Negative Declaration (MND) for the proposed project and finds that these documents reflect the independent judgment of Alameda County. As lead agency, Alameda County confirms that the recommended mitigation measures detailed in these documents are feasible and would be implemented as stated in the MND.

Date of Draft Report: _____

Date of Final Report: _____

Approved by Alameda County:

Rodrigo Orduño
Assistant Planning Director

Environmental Impacts Analysis Checklist

4.1 Environmental Factors Potentially Affected

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

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

DETERMINATION: (To be completed by the lead agency)

On the basis of this initial evaluation:

- I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case, because revisions in the proposed project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MIGHT have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MIGHT 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 proposed project could have a significant effect on the environment, because potentially significant effects (1) have been analyzed adequately in an earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION pursuant to applicable standards, and (2) have been avoided or mitigated pursuant to that earlier ENVIRONMENTAL IMPACT REPORT or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed on the proposed project, nothing further is required.

Rodrigo Orduño
Assistant Planning Director

4.2 Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (for example, the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (for example, the project will not expose sensitive receptors to pollutants, according to a project-specific screening analysis).
2. Answers must take into account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. After the lead agency has determined that a particular physical impact might occur, then the checklist answers must indicate whether the impact is “Potentially Significant,” “Less than Significant with Mitigation,” or “Less than Significant.” “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect might be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an environmental impact report is required.
4. “Negative Declaration: Less than Significant with Mitigation Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less than Significant Impact.” The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level.
5. Earlier analyses may be used where, pursuant to the tiering, program environmental impact report, or other CEQA process, an effect has been adequately analyzed in an earlier environmental impact report or negative declaration (Section 15063(c)(3)(D)). In this case, a brief discussion should identify the following:
 - a) Earlier Analysis Used. Identify and state where they are available for review.
 - b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards,

and state whether such effects were addressed by mitigation measures based on the earlier analysis.

- c) Mitigation Measures. For effects that are “Less than Significant with Mitigation Incorporation,” describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (for example, general plans and zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
 7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
 8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected.
 9. The explanation of each issue should identify the following:
 - a) The significance criteria or threshold, if any, used to evaluate each question
 - b) The mitigation measure identified, if any, to reduce the impact to less than significant

4.3 Initial Study/Environmental Impacts Checklist

I. Aesthetics				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 the site and its surroundings?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion:

This section begins by documenting the existing visual conditions in the project area and on the project site and identifying the viewers in the project area who will see the visual changes that would result from

project development. The policies in the Alameda County East County Area Plan and the Alameda County Scenic Route Element that have relevance for the project are also identified. Finally, there is an evaluation of the project's potential impacts in terms of the four aesthetics questions.

Project Location and Regional Landscape Setting

The proposed project is in the northeastern corner of Alameda County in the portion of the county that lies to the east of the Coastal Range. The site is in an area that is a part of the San Joaquin Valley landscape zone and is on the edge of the Sacramento-San Joaquin Delta. The project site's regional location is indicated on Figure 1-1. The site's sub-regional location and many of the features of its surrounding landscape context are indicated on Figure 1-2. Figure 1-3 is an aerial photo that provides a detailed view of the site and its immediate surroundings. This figure also indicates the locations of the photos presented in Figure 1-4 that provide views of the site from six different vantage points. The text in item 8 in Section 1 describes the site and the area around it.

As the maps, photos, and text in Section 1 indicate, the project site is a flat agricultural parcel now used for growing alfalfa and oats. The only structures on the site consist of an unused and deteriorating milking shed and three large steel lattice transmission towers located in an electric transmission corridor that cuts across the northern portion of the site. The site contains no features that would be considered to be scenic resources. The area around the site is one that has been heavily engineered to support large-scale agricultural production. In addition, the project area has an unusually large concentration of major water and energy infrastructure facilities, many of them of state-wide significance. Facilities visible in the immediate vicinity of the site include the Tracy Substation, located across Mountain House Road from the site's southwest corner (seen in the Figure 1-4c photo) and the levee along the Delta Mendota Canal located west of the project site (seen in the Figure 1-4a, e, and f photos).

At present, there are no sources of nighttime lighting on the project site itself. However, the Tracy Substation located across Mountain House Road from the site's southwest corner and the Tracy Pumping Plant adjacent to it are both well illuminated and are major sources of nighttime light in the area. In addition, nighttime lighting is present at the residences along Kelso Road and the segment of Mountain House Road to the south of it and at the Livermore Yacht Club residential and recreational area located to the northeast of the site. More distant sources of nighttime lighting include the lighting at the Mountain House community to the southeast of the site and the Banks Pumping Plant, the PG&E gas compressor station, and the Mariposa Energy Center, a natural gas-fired peaking power plant, to the west and southwest of the project site.

Views toward the Site, Viewers, and View Sensitivity

Viewer sensitivity is based on the appearance of visual resources in the landscape, proximity of viewers to them, relative elevation of viewers in relation to visual resources, frequency and duration of views, number of viewers, and types and expectations of individuals and viewer groups. Generally, the closer a visual resource is to the viewer, the more dominant it is and the greater its importance to the viewer.

Essentially, the only views into the project site are those from the adjacent roadways and from a small number of residences located along Mountain House Road at and to the south of Kelso Road. The project site is most readily visible from Byron-Bethany Road (County Road J4), which borders the site's northeastern boundary and from Mountain House Road, which borders the site's western boundary. Byron-Bethany Road is a major arterial which has an average daily traffic level of (ADT) level of 8,300 vehicles per day. Mountain House Road is less heavily traveled and has an estimated ADT of 3,366 vehicles per day (CalTrans 2015).

Both Byron Bethany Road and Mountain House Road, like most other county roads in eastern Alameda County, were designated as scenic routes in Alameda County's 1966 Scenic Routes Element. However, both

roads currently have a utilitarian character, the traffic on them travels at high speeds, and no actions appear to have been taken to capitalize on their scenic roadway status. Given these factors and that there are no features of notable visual interest on the site, the sensitivity of the views from these two roadways toward the site is moderate. The site is also visible from a short segment of Kelso Road just east of Mountain House Road, located 0.4-mile due south of site, from which the site is seen across an open agricultural field. Given the moderate to low level of traffic on this road, the viewing distance, and absence of notable visual resources in the view, the level of visual sensitivity is low. The site is also potentially visible from the residence at the northeast corner of Kelso Road and Mountain House Road and a residence on Mountain House Road south of Kelso Road. Because of the distance of these residences from the project site and the partial screening of views toward the project site provided by vegetation and outbuildings on these properties, the level of visual sensitivity is low. The project site is not visible from the Mountain House School located 0.9 mile south of the project site because of the screening provided by the trees in front of the school and along its northern property line.

In the corridor along Kelso Road to the west of Mountain House Road, views toward the project site from the road and from the residences along it are completely blocked by the Tracy Substation and the high levees along the Delta Mendota Canal. In the areas to the southeast, east and northeast of the project site, including the segment of Kelso Road that lies between a point 0.25 mile east of Mountain House Road and Great Valley Parkway, the Mountain House Community and the Livermore Yacht Club residential and recreational area, there are no views toward the project site because of the screening created by the orchards planted on the parcels that lie to the east of the project site and extend to Kelso Road. For the Mountain House Community located 1.1 mile southeast of the project site, additional layers of screening of views toward the project site are created by the community's perimeter walls and the rows of tall trees planted around the community's outer periphery. There are no views toward the project site from the north—the Clifton Court Forebay and the nearby marina located along the channel to the forebay called the Lazy M Marina—because of the view blockage created by the levees along the Delta-Mendota Canal.

County Plans and Policies Pertinent to Aesthetic Issues in the Project Area

East County Area Plan, Adopted 1994 and Amended 2000. The East County Area Plan, adopted in 1994 and amended by voter-initiative Measure in November 2000 and adopted May 2002, is the planning document that applies to the East County Area, and that establishes holding capacities and provides goals, policies, and programs for the area. This includes discussion of sensitive viewsheds and scenic highways.

The East County Area Plan's scenic viewshed goals include: preservation of unique visual resources and protection of sensitive viewsheds. While some of the ridgelines mentioned in the East County Area Plan as "visually-sensitive ridgelines" are visible from the project site, they are above the site and, as viewed from Byron-Bethany Road and Mountain House Road, the site will not result in any obstruction.

Scenic Route Element, Adopted 1966 and Amended 1994. The Scenic Route Element of the Alameda County General Plan, (adopted in May, 1966 and amended through 1994) designates all the interstate and state highways, and many local highways and routes throughout Alameda County as scenic routes. In the immediate project area, Mountain House Road and the Byron-Bethany Highway are considered as Scenic Rural-Recreational Routes. These are typically two-lane roads with light traffic through areas of "outstanding scenic quality" or are used for access to major recreational areas (such as the nearby Bethany Reservoir state recreation area). Scenic routes are defined as composed of three elements, including the right-of-way, the scenic corridor, and areas extending beyond the corridor. The corridor is defined as those properties along and up to 1,000 feet beyond the right-of-way, which should either be acquired for protection, or where development controls should be applied to preserve and enhance nearby views or maintain unobstructed distant views along the route in rural areas with high scenic qualities. The areas extending beyond scenic corridors also require development controls and, in the undeveloped parts of the

County, should address grading, removal of vegetation, streambeds, landscaping, utility and communication towers, poles and lines, and outdoor advertising signs or structures (Alameda County 1996).

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

From Byron-Bethany Road, a county-designated scenic route, there are views toward the west, across the project site toward the Altamont Hills and toward Brushy Peak (visible in Figure 1-4f) that could be considered scenic vistas. Because the fence around the site will be no more than 6 feet in height and will be open in appearance, with landscape screening shrubs to break up the mass of fencing, and because the solar panels will be no more than 6.8 feet in height during the brief periods of the day when they will be fully extended, they will not block views toward the ridgeline of the Altamont Hills or toward Brushy Peak. The impact would be less than significant with the implementation of Mitigation Measure AES-1, as defined in the Mitigation section, below.

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

The proposed project site is not located either adjacent to or near a state-designated scenic highway. Consequently, there would be no impact.

(c) Substantially degrade the existing visual character or quality of the site and its surroundings?

The proposed project will change the appearance of the project site from an area that is currently open and in agricultural production to an area that is developed with a concentration of solar collectors surrounded by a chain link fence with landscape screening. Although this change will represent a change in the visual character of the site, the site's new visual character will not be significantly contrasting with a landscape in which agricultural land is punctuated with very large infrastructure installations. The reduction of the aesthetic quality of views will be limited because the solar arrays will be limited in height and placed in neat, orderly blocks that align with the landscape's north-south east-west grid. Although the height of the solar arrays is relatively low (no more than 6.8 feet in height when solar panels are fully extended), they will be visually prominent features in the landscape and they have potential to block views toward more distant landscape features. This effect will be softened further by the planting of evergreen screening shrubs along the perimeter fence to break up the visual mass of the fence and solar panels.

As indicated in the discussion of visual sensitivity above, the site has limited to zero visibility from residences and recreational areas in the vicinity. The primary viewers of concern are motorists using the segments of Byron-Bethany Highway and Mountain House Road that border the site. The proposed project will be visible from Mountain House Road along the project's entire west side, but from Byron-Bethany Road, the project will be visible only from the 2,260-foot segment of the project boundary that borders the road. The segment of the road to the south of the project site's northeast corner is bordered by a parcel that is planted with an orchard and blocks views into the project site. Although traffic levels are moderate on Byron-Bethany Road and low on Mountain House Road, the views from these roads into the site can be considered to be sensitive because of the status of these roads as county-designated scenic routes. Although the level of visual impact on the views from these road segments will be moderate, given the sensitivity of views from these roads because of their status as county-designated scenic roadways, the project may have a potentially significant impact on the visual character or quality of these views. With the implementation of Mitigation Measure AES-1 defined in the Mitigation section below, however, changes to the visual character or quality of these views would be reduced to a less than significant level.

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

During the approximately 6-month construction period, construction activities will be limited to the period between 7:00 AM and 7:00 PM. Consequently, there will be a limited need for nighttime lighting to support

construction activities. In addition to any need for lighting to illuminate construction activities, there may be a need for operational and security lighting at the two laydown areas. To the extent that any nighttime lighting is required during the construction period, it will be the minimum required to meet operational needs and to conform to safety requirements, will be directed toward the areas where it will be required, and will be properly shielded to prevent light spill into the sky or areas outside the site.

During facility operation, there will be a limited need for lighting at the site. At most, this may include lighting at the two entrances to the site and at the five inverters, the substation, and in the energy storage area. This lighting can be designed to be operated using switches and/or motion sensors so that it turns on only when it is required for nighttime access or maintenance activities.

Given that the project site is in an area where there is already considerable nighttime lighting and that the lighting associated with the brief construction period will be moderate at most and that relatively little lighting will be required during project operation, the impacts of the project on nighttime lighting conditions will be less than significant.

The project will not create a substantial new source of daytime glare. Glare is a phenomenon that exists when there is a very high degree of contrast between bright and dark areas in a field of view that makes it difficult for the human eye to adjust to differences in brightness. For example, glare could be created if the filament of an unshielded light were visible at close range in an otherwise dark setting. The Illuminating Engineering Society of North America Outdoor Environment Lighting Committee (IESNA) defines glare as “the sensation produced by luminance in the visual field that is sufficiently greater than the luminance to which the eye has adapted to cause annoyance, discomfort, or loss of visual performance and visibility” (IESNA, 1999). The IESNA defines three categories of glare:

- Disability glare—the effect of stray light on the eye whereby visibility and visual performance are reduced. A direct glare source that produces discomfort may also produce disability glare by introducing a measurable amount of stray light to the eye.
- Discomfort glare—glare producing discomfort that does not necessarily interfere with visual performance or visibility.
- Nuisance glare—glare that causes complaints.

Photovoltaic collector panels are designed to absorb as much of the sun’s energy as possible to generate electricity, and the panes that protect the collectors’ surfaces are usually made of a specially formulated glass that permits 90 percent of the light to reach the collectors and to reflect only 10 percent of the light that falls on them. Consequently, solar collector panels are not as reflective as normal glass surfaces. An additional factor to consider in evaluating the effect of any reflectivity of light from the panels is that the energy of light decreases at a rate that is the square of the distance, and therefore the energy of any light reflecting off the collectors will drop off rapidly with distance. For travelers passing the project site on Byron-Bethany Road and Mountain House Road, the visibility of any light that may be reflected from the solar panels will be further limited by the screening landscaping that will be installed along the project perimeters under Mitigation Measure AES-1.

With implementation of Mitigation Measure AES-1, the nighttime and daytime light and glare impacts of the project will be less than significant.

Cumulative:

No substantial cumulative impacts on aesthetics are anticipated with this project.

Mitigation:

Mitigation Measure AES-1: *Prepare and Implement a Project Landscape Plan.* The Applicant shall prepare and implement a landscape plan for the site’s perimeters along Byron-Bethany Road and

Mountain House Road to provide partial screening of views into the site from the adjacent portions of the roadway, and to visually integrate the development on the site into the area’s larger landscape pattern. The landscaping plans shall be prepared by a licensed landscape architect and shall be submitted to the County for review and approval by the Planning Director prior to issuance of the building permit(s). The landscape plan shall include specifications for lighting consistent with Alameda County standards and policies for outdoor lighting.

II. Agriculture and Forestry Resources				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) 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))?	<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"/>
(e) Involve other changes in the existing environment which, because of their location or nature, could result in conversion of Farmland, to nonagricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

The 2006 Important Farmland Maps prepared under the State Farmland Mapping and Monitoring Program for Alameda County classifies the project site as Prime Farmland (California Department of Conservation, Division of Land Resource Protection 2006). The California Division of Land Resource Protection defines prime farmland as land that: (1) has been in production of irrigated crops at some time during the four years prior and (2) features soils that meet the physical and chemical criteria for Prime Farmland or Farmland of Statewide Importance as determined by the United States Department of Agriculture Natural Resources Conservation Service (California Department of Conservation, Division of Land Resource Protection 2004).

The site has been in continuous use for cultivated crop production since the 1930s and, for the last decade, has been subject to a routine regimen of monthly flood irrigation, crop cultivation, and tilling. (Holck 2016). In recent years, the site has been used for production of alfalfa and grains for horse feed.

The site is zoned Agricultural District (A-District) by the County Zoning Ordinance, which has as its intent the promotion and implementation of "general plan land use proposals for agricultural and other non-urban uses, to conserve and protect existing agricultural uses, and to provide space for and encourage such uses in places where more intensive development is not desirable or necessary." Permitted uses (i.e., those uses for which no permit is required) include a variety of agricultural and agricultural support uses, including crop, vine and tree farms, truck gardens, plant nurseries, greenhouses, aviaries and apiaries, etc. Conditionally permitted uses (those which require a permit from the County), include (among a few of the many listed) public and quasi-public uses, solid waste landfills, quarries, windfarms, utility corridors, and similar compatible uses.

To approve a conditional use, the County's board of zoning adjustments must make specific findings that there is:

(A) a public need; (B) a proper relationship to other land uses, transportation and service facilities in the vicinity; (C) certainty that the use under its specific circumstances and conditions will not materially affect adversely the health or safety of person residing or working in the vicinity, or be materially detrimental to the public welfare or injurious to property or improvements in the neighborhood; *and* (D) the use will not be contrary to the specific intent clauses or performance standards established for the zone district in which it is located.

The project is consistent with these findings. A permit for those uses that are listed explicitly or by reference as conditionally permitted uses requires an application be submitted in accordance with specific procedures.

To construct the project, a conditional use permit from the County will be required. Although a solar energy production field is not a specifically or explicitly allowed or conditionally permitted use in the A District, this use is likely to be allowable by reference because it will be like many of the other conditionally permitted uses that are explicitly mentioned in the ordinance, including a "wind farm" of privately-owned electric generators, and other quasi-public facilities such as public utility buildings and uses, and oil or gas drilling facilities. In addition, the project is consistent with the development of a County CCA, East Bay Community Energy, and fills a public need in this regard.

(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 nonagricultural use?

Development of the project site with a solar PV farm will convert the approximately 89.1 acres of Prime Farmland within the proposed project site's fence line to non-agricultural use. The approximately 14.4 acres of the project site that lies within the WAPA transmission line corridor will be left undeveloped through the life of the project.

In the long term, the site may no longer be needed for energy production, and the panels, pylons and gravel roads could be removed and the entirety of the site returned to agricultural production. In the interim, water use at the parcel will be significantly reduced due to the cessation of irrigation. In its current farming use, approximately 300 to 400 acre-feet of water are used annually to produce alfalfa crops. This equates to the annual water usage of approximately 650 to 850 households per year. The site is provided water from the Byron-Bethany Irrigation District (BBID). Water use for the solar farm will be 50,000 gallons

per wash and there will be approximately 6 washes per year, totaling only 0.921 acre-feet of water and amounting to about 1/400th of the current use.

Agricultural use of the project site will also continue during the lifetime of the solar energy facility. Sheep and goats will be brought to the site to graze periodically for vegetation control in the solar panel field and farming can continue on the portions of the project site not being used for solar panels or storage, such as the transmission corridor under the transmission lines.

To reduce the impact of conversion of agricultural uses to energy production uses to a level that is less than significant, Mitigation Measure AG-1: Agricultural Restoration, is proposed. Implementation of this measure ensures that the land on the project site could be restored to full agricultural use at the end of the project's life. Implementation of this measure would reduce the project's impacts related to conversion of Prime Farmland to a level that is less than significant.

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

The proposed solar energy land use, although not specifically listed as a conditionally permitted use in the Agricultural District, would be like a "wind farm" of privately-owned electric generators and other quasi-public uses, public utility buildings and uses, and also comparable in various ways to oil or gas drilling facilities, wineries and olive mills, barns, coops, apiaries, and other accessory uses which do not alter the essential characteristics of the principal use of the lot. If granted a conditional use permit by the County on this basis, implementation of the proposed project would therefore not result in a conflict with the County's existing zoning for agricultural use.

The site is not under an existing Williamson Contract and, therefore, there would be no impacts related to conflict with a Williamson Act contract.

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

The project site and surrounding area are in agricultural use and there is no forested land on the site or land zoned for forest (as defined by Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104 (g)). The project will have no impact related to timberland zoning.

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

The area within and surrounding the proposed project does not hold any forest land. Therefore, the development of the project site for solar energy will have no impact related to the loss of forest land or the conversion of forest land to non-forest use.

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

The project will not involve other changes on the project site or in its surrounding area that because of their location or nature could result in the conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use.

Cumulative:

No cumulative impacts on agriculture and forestry resources are anticipated with this project.

Mitigation:

Mitigation Measure AG-1: Agricultural Retention and Restoration. To ensure that the conversion of the project site a reduced level of agricultural use is temporary, the Applicant shall, upon cessation of solar energy activities on the site, return the solar field area to its pre-existing condition such that it can be fully cultivated. This shall entail removing all solar collection equipment inverters, inverter pads, battery modules and battery pads, the project substation and project roads. It shall also include restoration of irrigation-related infrastructure. Implementation of this mitigation measure would reduce impacts related to conversion of Prime Farmland to a level that is less than significant.

III. Air Quality				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone [O ₃] precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

The project will use solar photovoltaic (PV) panels to provide clean, renewable energy that will help California's utilities meet the renewable portfolio standard per Senate Bill (SB) 350. Under SB 350, California utilities must use renewable resources to deliver 50 percent of the electrical power provided to customers by 2030. The project will also include an energy storage component to help manage the intermittent nature of solar generation by storing excess energy during times of peak generation for release during times of peak use. Construction of this project is expected to include grading, trenching to accommodate underground electric work, and installation of PV racking, modules, and electrical equipment. Construction is expected to last 6 months, beginning in 2019.

This section describes existing conditions, potential project-related impacts, and best management practices (BMPs) for air quality and climate change issues in the project area. Federal, state, and regional regulations are discussed, followed by BMPs and an evaluation of impacts, organized by each of the

significance criteria identified. With the implementation of BMPs, the project will result in less-than-significant air quality impacts, including less-than-significant greenhouse gas (GHG) impacts (See Section VII for a discussion of GHGs).

Methodology

The California Environmental Quality Act (CEQA) checklist questions were used to evaluate the impacts of the project. Impacts were quantitatively assessed using the following:

- Construction equipment horsepower, load factors, and emission factors from the *California Emissions Estimator Model (CalEEMod) User's Guide* (Environ International Corporation [Environ], 2016)
- Vehicle emission factors from EMFAC2014 software, consistent with CalEEMod methodology and regional climate data from *CT-EMFAC: A Computer Model to Estimate Transportation Project Emissions* (Wu, Bai, Eisinger, and Niemeier, 2007)
- Fugitive dust emission factors for grading, bulldozing, truck loading/dumping, and paved road travel from the *CalEEMod User's Guide* (Environ, 2016), which incorporates portions of AP-42 (U.S. Environmental Protection Agency [EPA], 2011)
- Fugitive dust emission factors for unpaved road travel from AP-42 (EPA, 2006)
- Fugitive dust control efficiencies from the South Coast Air Quality Management District's *CEQA Air Quality Analysis Handbook* (SCAQMD, 2007).

Appendix B contains the air quality emission calculations.

Regulatory Context

Federal. Federal air quality policies are regulated through the federal Clean Air Act (CAA). Pursuant to the CAA, EPA has established National Ambient Air Quality Standards (NAAQS) for the following air pollutants (called "criteria" pollutants): carbon monoxide (CO), ozone, nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter less than 10 microns in aerodynamic diameter (PM₁₀), particulate matter less than 2.5 microns in aerodynamic diameter (PM_{2.5}), and lead. The NAAQS represent levels established to avoid specific adverse health and welfare effects associated with each pollutant with a margin of safety. Table 4-1 summarizes the NAAQS.

Table 4-1. Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS ^a	NAAQS ^b	
			Primary ^c	Secondary ^d
Ozone ^e	1-hour	0.09 ppm	--	--
	8-hour	0.070 ppm	0.070 ppm	0.070 ppm
PM ₁₀	24-hour	50 µg/m ³	150 µg/m ³	150 µg/m ³
	Annual Arithmetic Mean	20 µg/m ³	--	--
PM _{2.5}	24-hour	--	35 µg/m ³	35 µg/m ³
	Annual Arithmetic Mean	12 µg/m ³	12 µg/m ^{3f}	15 µg/m ³
CO	1-hour	20 ppm	35 ppm	--
	8-hour	9.0 ppm	9 ppm	--
NO ₂	1-hour	0.18 ppm	0.100 ppm ^g	--
	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	0.053 ppm
SO ₂	1-hour	0.25 ppm	0.075 ppm ^h	--

Table 4-1. Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS ^a	NAAQS ^b	
			Primary ^c	Secondary ^d
Lead ⁱ	3-hour	--	--	0.5 ppm
	24-hour	0.04 ppm	0.14 ppm	--
	Annual Arithmetic Mean	--	0.030 ppm	--
	30-day Average	1.5 µg/m ³	--	--
	Calendar Quarter	--	1.5 µg/m ³	1.5 µg/m ³
	Rolling 3-month Average	--	0.15 µg/m ³	0.15 µg/m ³
Visibility-reducing Particles	8-hour	j	--	--
Sulfates	24-hour	25 µg/m ³	--	--
Hydrogen Sulfide	1-hour	0.03 ppm	--	--
Vinyl Chloride ⁱ	24-hour	0.01 ppm	--	--

Notes:

-- = No standard has been adopted for this averaging time

µg/m³ = micrograms per cubic meter

CAAQS = California Ambient Air Quality Standards

ppm = parts per million (by volume)

^a CAAQS for ozone, CO, SO₂ (1- and 24-hour), NO₂, PM₁₀, PM_{2.5}, and Visibility-reducing Particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

^b NAAQS (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard. For PM₁₀, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than 1. For PM_{2.5}, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

^c Primary standards: the levels of air quality necessary, with an adequate margin of safety, to protect the public health.

^d Secondary standards: the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

^e The national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm on October 1, 2015.

^f The EPA finalized an update to its annual NAAQS for PM_{2.5} on December 14, 2012.

^g To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 0.100 ppm.

^h To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 0.075 ppm.

ⁱ The California Air Resources Board (CARB) has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

^j Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: CARB, 2016

The EPA has designated counties in California as either in "attainment" or "nonattainment" for each NAAQS. A region that is meeting the air quality standard for a given pollutant is designated as being in "attainment" for that pollutant. If the region is not meeting the air quality standard, then the region is designated as being in "nonattainment" for that pollutant. If a region is designated as nonattainment for a

NAAQS, the CAA requires the state to develop a State Implementation Plan (SIP) to demonstrate how the standard would be attained, including the establishment of specific requirements for review and approval of new or modified stationary sources of air pollution. The federal attainment status for the project area, located in Alameda County, is listed in Table 4-2.

Table 4-2. Federal and California Air Quality Attainment Status for Alameda County

Pollutant	Averaging Period	California Status	Federal Status
Ozone	1-hour	Nonattainment	--
	8-hour	Nonattainment	Nonattainment
PM ₁₀	24-hour	Nonattainment	Unclassified/Attainment
	Annual Arithmetic Mean	Nonattainment	--
PM _{2.5}	24-hour	--	Nonattainment
	Annual Arithmetic Mean	Nonattainment	Unclassified/Attainment
CO	1-hour	Attainment	Attainment
	8-hour	Attainment	Attainment
NO ₂	1-hour	Attainment	Unclassified ^a
	Annual Arithmetic Mean	Attainment	Attainment
SO ₂	1-hour	Attainment	Unclassified ^a
	3-hour	--	--
	24-hour	Attainment	Attainment
	Annual Arithmetic Mean	--	Attainment
Lead	30-day Average	Attainment	--
	Calendar Quarter	--	Attainment
	Rolling 3-month Average	--	Attainment
Visibility-reducing Particles	8-hour	Unclassified	--
Sulfates	24-hour	Attainment	--
Hydrogen Sulfide	1-hour	Unclassified	--
Vinyl Chloride	24-hour	Unclassified	--

Notes:

-- = No standard has been adopted for this averaging time

^a The EPA is expected to make a designation for the San Francisco Bay Area by the end of 2017.

Sources: CARB, 2017b; Bay Area Air Quality Management District (BAAQMD), 2017a

State. The California Air Resources Board (CARB) oversees California air quality policies. The California CAA was approved in 1988 and, as amended in 1992, established the California Ambient Air Quality Standards (CAAQS). These standards, summarized in Table 4-1, are generally more stringent and list more pollutants than the NAAQS. Similar to the EPA, CARB designates counties in California as being in “attainment” or “nonattainment” for CAAQS. The state attainment status for Alameda County is listed in Table 4-2.

CARB has the primary responsibility for producing the SIP for nonattainment pollutants. However, CARB relies on and oversees the efforts of local air districts to adopt and implement air quality regulations and plans, including CARB-suggested control measures and additional emission reduction strategies for sources under their jurisdiction. CARB consolidates statewide implementation plan requirements for mobile sources and consumer products with locally adopted district plans and submits the completed SIP to the EPA. The SIP consists of the emissions standards for vehicular sources and consumer products set by CARB, as well as attainment plans adopted by the air districts and approved by CARB.

Local. The project is in the San Francisco Bay Area Air Basin, which is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). BAAQMD is the agency charged with preparing, adopting, and implementing emission control measures and standards for mobile, stationary, and area sources of air pollution in the San Francisco Bay Area Air Basin. Geographically, the project site is also on the margins of the San Joaquin Valley and air emissions from the project would affect the San Joaquin Valley Air Basin as well.

Meteorology

The project is in the northeastern corner of Alameda County, which is bordered on the east by the San Joaquin Valley and on the west by 1,000- to 1,500-foot-high hills. The climate of northeastern Alameda County is predominantly affected by its proximity to the San Joaquin Valley, which is a Mediterranean climate zone. Mediterranean climate zones are characterized by sparse rainfall, which occurs mainly in winter, and hot and dry summers (San Joaquin Valley Air Pollution Control District [SJVAPCD], 2015).

Winds in northeastern Alameda County typically blow from the northwest. These breezes from San Francisco Bay cool the air during warm weather, and warm the air during cold weather, effectively pushing cool air onshore during the day and drawing air offshore at night (BAAQMD, 2010b). This effect moderates air temperatures in the region, with average minimum winter temperatures ranging from high-30 degrees Fahrenheit (°F) to mid-40°F and average maximum summer temperatures ranging from high-80°F to low-90°F (Western Regional Climate Center [WRCC], 2017). Wind speeds are moderate in this region, with annual average wind speeds of approximately 6 miles per hour (Weather Underground, 2017).

Pollution potential is relatively high in northeastern Alameda County during the spring, summer, and fall. When high pressure dominates, low mixing depths and wind patterns can concentrate and carry pollutants from other cities to this area, adding to the locally emitted pollutant mix. In the wintertime, the air pollution potential in northeastern Alameda County is moderate (BAAQMD, 2010b).

The primary pollutants of concern in the project area are ozone, PM₁₀, and PM_{2.5} because Alameda County is designated nonattainment for these pollutants by EPA and/or CARB. Six ambient air monitoring stations operate in Alameda County, but all are located west of the mountain range directly bordering the project site. As a result, data from the Tracy Airport ambient air monitoring station located in San Joaquin County were used to best represent the project's current conditions. Tables 4-3a, b, and c summarize the ambient air monitoring data for the most recent 3-year period.

Table 4-3a. Number of Days State 1-Hour and 8-Hour and Federal 8-Hour Ozone Standards Were Exceeded, and Maximum Ozone Concentrations Measured, in the Project Area^a (2014 to 2016)

Year	% of Days Monitored ^b	Number of Days Ozone Standard Was Exceeded		Maximum Measured 1-hr and 8-hr Ozone Concentrations (ppm)	
		State Standards (Number of Days > 1-Hr; > 8-Hr State Standard)	Federal 8-Hr Standards (Number of Days >1997; >2008; >2015 Standards)	1-Hr High	8-Hr High
2016 ^c	98	4; 19	1; 7; 19	0.109	0.092
2015 ^c	96	4; 21	2; 5; 19	0.107	0.091
2014 ^c	91	1; 17	0; 8; 16	0.097	0.084

^a Data from the monitoring station located at 5749 S. Tracy Boulevard, Tracy, San Joaquin County, California. Although this monitoring station is not located within Alameda County, it was the closest monitoring station to the project site.

^bBased on 1-Hour Year Coverage.

Notes:

California 1-hour Ozone Standard = 0.09 ppm (CARB, 2012g).

California 8-hour Ozone Standard = 0.070 ppm (CARB, 2012g). Effective May 17, 2006.

Federal 8-hour Ozone Standard (1997) = 0.08 ppm; the Federal 8-hour Standard was reduced to 0.075 ppm in March 2008 (USEPA, 2008), and further reduced to 0.070 ppm on October 1, 2015 (CARB, 2012g).

The national 1-hour ozone standard was revoked in June 2005 and is no longer in effect.

Source: CARB, 2017f

Table 4-3b. Number of Days State Federal PM₁₀ Standards Were Exceeded, and Maximum PM₁₀ Concentrations Measured, in the Project Area^a (2014 to 2016)

Year	Number of Days PM ₁₀ Standard Was Exceeded		Maximum 24-Hr PM ₁₀ Concentration (µg/m ³)		Annual Average PM ₁₀ Concentration (µg/m ³)	
	State 24-Hr	Federal 24-Hr	State	Federal	State	Federal ^b
2016	c	0	c	53.0	c	18.7
2015	c	c	c	58.3	c	20.9
2014	c	0	c	67.7	c	20.2

^a Data from the monitoring station located at 5749 S. Tracy Boulevard, Tracy, San Joaquin County, California. Although this monitoring station is not located within Alameda County, it was the closest monitoring station to the project site.

^bThe national annual PM₁₀ standard was revoked in December 2006, and is no longer in effect. The statistic shown here applies only to that standard and is included only for retrospective use.

^cThere were insufficient (or no) data available to determine the value.

Notes:

California 24-hour PM₁₀ Standard = 50 µg/m³ (CARB, 2012g).

California Annual Arithmetic Mean Standard = 20 µg/m³ (CARB, 2012g).

Federal 24-hour PM₁₀ Standard = 150 µg/m³ (CARB, 2012g).

Source: CARB, 2017f

^a Data from the monitoring station located at 5749 S. Tracy Boulevard, Tracy, San Joaquin County, California. Although this monitoring station is not located within Alameda County, it was the closest monitoring station to the project site.

^b There were insufficient (or no) data available to determine the value.

Table 4-3c. Number of Days State Federal PM_{2.5} Standards Were Exceeded, and Maximum PM_{2.5} Concentrations Measured, in the Project Area^a (2014 to 2016)

Year	Number of Days PM _{2.5} Standard Was Exceeded		Maximum 24-Hr PM _{2.5} Concentration (µg/m ³)		Annual Average PM _{2.5} Concentration (µg/m ³)	
	State 24-Hr	Federal 24-Hr	State	Federal	State	Federal ^b
2016	b	b	28.5	b	b	b
2015	b	b	39.0	b	b	b
2014	b	b	36.8	b	7.7	b

Notes:

California 24-hour PM₁₀ Standard = 50 µg/m³ (CARB, 2012g).

California Annual Arithmetic Mean Standard = 20 µg/m³ (CARB, 2012g).

Federal 24-hour PM₁₀ Standard = 150 µg/m³ (CARB, 2012g).

Source: CARB, 2017f

Monitored concentrations of ozone exceeded the state 1-hour standard and state and federal 8-hour standards during 2013, 2014, and 2015. Monitored concentrations of PM₁₀ exceeded the state 24-hour and annual average standards during 2013, 2014, and 2015. Monitored concentrations of PM₁₀ did not exceed the federal 24-hour standard during the period 2013 through 2015. Monitored concentrations of PM_{2.5} exceeded the federal 24-hour standard during 2013, 2014, and 2015. Monitored concentrations of PM_{2.5} did not exceed the state and federal annual average standards during the period 2013 through 2015.

Best Management Practices

CEQA criteria require the consideration of regional, state, and federal plans, policies, and regulations when evaluating potential project impacts and developing avoidance and minimization measures. BMPs were identified to address some state and regional plans, policies, and requirements and are considered part of the project.

The following BMPs will be incorporated into the project and implemented to help minimize the project's air emissions:

- Water trucks shall be present and in use at the construction site. All portions of the site subject to blowing dust shall be watered as often as deemed necessary by the client/inspector to ensure proper control of blowing dust for the duration of the project.
- All public streets and medians soiled or littered due to this construction activity shall be cleaned and swept daily during the work week, or as often as deemed necessary by the client/inspector, or to the satisfaction of Alameda County's Department of Public Works.
- All trucks hauling soil, sand, and other loose materials shall be covered with tarpaulins or other effective covers.
- The contractor is solely responsible for dust control measures and for obtaining all required permits and approvals.

Construction Impacts

The following section addresses the responses to the CEQA checklist questions for air quality and climate change impacts. With incorporation of the above BMPs into the project design, potential impacts from project construction will be less than significant.

Operations Impacts

As the facility will not have permanent staff on site and the only emissions during operation will be from periodic maintenance and panel wash trucks, emissions are de minimis for operation and not significant and were not quantified.

Significance Criteria

The BAAQMD Board of Directors adopted thresholds of significance and the *Draft 2010 CEQA Air Quality Guidelines* in June 2010. Following a March 2012 judicial action, BAAQMD stopped recommending the use of these thresholds. Though the First District Court of Appeals reinstated the *Draft 2010 CEQA Air Quality Guidelines* in August 2013, the matter has since been appealed to the California Supreme Court and is still pending (BAAQMD, 2017e).

In the interim, the BAAQMD recommends use of the significance thresholds in the *1999 BAAQMD CEQA Guidelines* (BAAQMD, 1999). Per the *1999 BAAQMD CEQA Guidelines*, significance of construction impacts should be determined based on control measures implemented, as opposed to quantification of emissions and comparison to numerical thresholds. Construction of a project would be considered to have a less-than-significant impact if all the following control measures, taken from Table 2 of the *1999 BAAQMD CEQA Guidelines*, would be implemented, as appropriate (BAAQMD, 1999).

Control Measures

Basic Control Measures. The following controls should be implemented at all construction sites:

- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard.
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking, and staging areas at construction sites.
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

Enhanced Control Measures. The following measures should be implemented at construction sites greater than four acres in area:

- All “Basic” control measures listed above.
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
- Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.

Applicable control measures have been included as part of the project BMPs noted previously.

The *1999 BAAQMD CEQA Guidelines* do allow for the quantification of construction emissions as part of the project analysis and impact discussion. In the absence of approved quantitative thresholds of significance

for construction emissions, the thresholds of significance in the *Draft 2010 CEQA Air Quality Guidelines* have been presented for comparative purposes only.

For criteria pollutants, the 2010 thresholds are as follows (BAAQMD, 2010b):

- 54 pounds per day (lbs/day) of reactive organic gases (ROG) or volatile organic compounds (VOCs)
- 54 lbs/day of nitrogen oxides (NO_x)
- 82 lbs/day of PM₁₀ from exhaust
- 54 lbs/day of PM_{2.5} from exhaust

For PM₁₀ and PM_{2.5} related to construction fugitive dust, the *Draft 2010 CEQA Air Quality Guidelines* also indicate that projects should include BMPs rather than achieve specific emissions thresholds.

The *1999 BAAQMD CEQA Guidelines* provide thresholds for analysis of health risk impacts from project operation, but not construction. BAAQMD's *Draft 2010 CEQA Air Quality Guidelines* (BAAQMD, 2010b) include the following health risk thresholds:

- Increased cancer risk of greater than 10 in a million
- Increased chronic or acute risk of greater than 1
- Increased ambient PM_{2.5} concentration of greater than 0.3 µg/m³ annual average

Although BAAQMD recommends the same thresholds to evaluate construction- and operation-related health risk impacts in the *Draft 2010 CEQA Air Quality Guidelines*, BAAQMD suggests that construction-related impacts be addressed on a case-by-case basis. Health risk impacts from the project will be evaluated qualitatively based on the construction schedule and location of sensitive receptors, in accordance with the *BAAQMD CEQA Guidelines: Risk and Hazard Screening Analysis Process Flowchart* (BAAQMD, 2012a).

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

Because the project will not include any stationary sources, the stationary control measures identified in the *2001 Ozone Attainment Plan* are not applicable. However, the mobile source control measures pertaining to heavy-duty, off-road equipment are applicable. The project's construction emissions from heavy-duty, off-road equipment are expected to result in short-term and temporary less-than-significant air quality impacts. The project will be consistent with the renewable energy initiatives of the *2010 Clean Air Plan* because it promotes incorporation of renewable energy sources into the existing electricity grid. The project will not be directly consistent with the mobile source control measures of the *2010 Clean Air Plan*, but consistency is not warranted given the project's low emissions. Therefore, the project's construction activities would neither conflict with nor obstruct implementation of the applicable air quality plan and no impacts would occur.

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

Potential short-term impacts from the project may result from construction activities. In nonattainment areas, construction equipment exhaust emissions of ozone precursors (NO_x and VOCs), PM₁₀, and PM_{2.5}, and soil-disturbing activities may temporarily impact air quality. These short-term impacts are summarized in Table 4-4 and detailed in Appendix A.

Table 4-4. Construction Emissions with BMPs ^a

Construction Period	VOC	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}
Average Daily Emissions (lbs/day) ^b	3.61	24.5	38.1	0.06	5.12	2.81
Project Emissions (tons/year)	0.33	2.21	3.43	0.01	0.46	0.25
BAAQMD Thresholds (Average lbs/day) ^c	54	--	54	--	82	54

Notes:

-- = No threshold of significance exists for this pollutant

^a BMPs for dust control have been proposed as part of the project.

^b It was assumed that all construction equipment and vehicles could operate simultaneously on any given day during the project. Average daily emissions were determined per BAAQMD guidance by dividing total project emissions by the overall construction duration of 180 days.

^c BAAQMD Thresholds taken from Table 2-1 of the *Draft 2010 CEQA Air Quality Guidelines* (BAAQMD, 2010b).

According to the *1999 BAAQMD CEQA Guidelines*, implementation of the measures identified in Table 2 of the guidelines, incorporated into the project's BMPs, would reduce emissions during construction to a less-than-significant level (BAAQMD, 1999). Naturally occurring asbestos (NOA) is unlikely to be present in the project vicinity; therefore, there will be no NOA-related impacts associated with construction. Table 4-4 shows the construction emissions with implementation of BMPs, as well as the 2010 thresholds for comparison purposes. Construction emissions, with implementation of the BMPs, would cause a less-than-significant impact on air quality and are not expected to violate an air quality standard.

Additionally, consistent with the *BAAQMD CEQA Guidelines: Risk and Hazard Screening Analysis Process Flowchart* (BAAQMD, 2012a), there are no BAAQMD-permitted sources adjacent to the project site. The nearest permitted source is located two miles from the project site. Therefore, it is reasonable to assume that the project would not result in any significant impact for health risks.

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

Construction of the project would result in emissions of ozone precursors (NO_x and VOCs), PM₁₀, and PM_{2.5}. However, these emissions will be temporary and will not result in a cumulatively considerable net increase in ozone, PM₁₀, or PM_{2.5} concentrations. Additionally, implementation of BMPs for dust control will further reduce PM₁₀ and PM_{2.5} emissions during construction. Therefore, the cumulative impact to air quality will be less than significant.

(d) Would the project expose sensitive receptors to substantial pollutant concentrations?

Sensitive receptors are defined as facilities or land uses that include people who are particularly susceptible to the effects of air pollution (e.g., children, elderly, and people with illnesses). Schools, hospitals, daycare centers, and nursing homes are all examples of sensitive receptors (BAAQMD, 2010b). Based on a review of aerial imagery, no sensitive receptors were identified within 1,000 feet of the project area.

The emissions of potential air toxics (particularly diesel particulate matter) associated with construction activities are expected to be low and would be transient, temporary, and occur in varying locations within the project site. For these reasons, the project is not expected to expose sensitive receptors to high-level concentrations of air toxics, such that no impacts would occur.

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

Emissions from construction motor exhaust may result mildly objectionable odors from combustion engine fumes. These would occur in concentrations that would not affect a substantial number of people due to the distance between the project area and occupied areas and would not be noticed by a substantial number of people. Therefore, there would be no impact in terms of objectionable odors.

Cumulative:

Given the small amount of emissions anticipated for the proposed project and that the project would only temporarily increase air emissions, the project, combined with other reasonably foreseeable projects, would not create a significant cumulative impact on air quality.

Mitigation:

No mitigation will be required.

IV. Biological Resources				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Interfere substantially with the movement of any native resident, migratory fish, or wildlife species; with established native resident or migratory wildlife corridors; or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>

IV. Biological Resources				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(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"/>

Discussion:

A field reconnaissance of the project study area was conducted to assess the habitat occurring on the site and to determine the potential for presence of special-status species. Appendix C is the report of this survey. The survey determined that the site selected for the proposed project is a highly disturbed agricultural parcel. Industrial and agricultural developments bordering the project site including orchard and row crop parcels, networks of concrete lined aqueducts and irrigation canals, an electrical substation and pumping plants, public roadways, and railroads reduce the likelihood of individuals belonging to sensitive or special status species that are located elsewhere dispersing to the site. The project site lacks suitable aquatic habitat for special-status aquatic species.

The field survey was preceded by a literature and on-line database searches of the California Natural Diversity Database (CNDDDB), California Native Plant Society (CNPS) online database, and the species list provided by the Sacramento Fish and Wildlife office of the United States Fish and Wildlife Service (USFWS) to find records of previously recorded special-status species located on or near the project site. The literature search also included a review of habitat descriptions and species lists contained in reports conducted for previous project proposals at or near the project site.

A site reconnaissance for sensitive biological resources was conducted by CH2M biologist Todd Ellwood along the entire project area, including general floristic and wildlife observations. In addition, a search for areas potentially under USACE, RWQCB, and/or CDFW jurisdiction as waters of the U.S. and/or waters of the state including wetlands, and stream and riparian areas was conducted during the survey. The study area is composed of the location of solar arrays, onsite access roads, an onsite energy storage area and electrical substation and onsite staging/laydown areas.

Project Area Description

The general project region has a Mediterranean climate and supports a mosaic of pastures, dairies, alfalfa fields, hay, row crops, orchards, annual grasslands, and residential communities. An irrigation ditch runs the length of the eastern boundary of the project site and, according to the current tenant, the ditch may have historically been a natural drainage feature (Holck, 2016). The ditch generally lacks any wetland characteristics due to the level of agricultural disturbance indicative of the area. The entirety of the site has been in agricultural production since the 1930s and, for the last decade, has been subject to a routine regimen of monthly flood irrigation, crop cultivation, and tilling (Holck, 2016). Forage crops such as alfalfa and grain crops such as oats have been grown on the parcel in recent years.

Principal agricultural land uses in the region include row and field crops, orchards, and vineyards. These land uses remain prevalent in the county although housing and industrial land uses are becoming more common. Alfalfa fields border the site to the south and an orchard to the east. To the west of the project site along the Delta-Mendota Canal is a disked grassy field. To the north of the project site are the Byron

Highway and Union Pacific Railroad. Further north of the railroad are similar agricultural developments. Habitat types potentially affected in the project area are limited to agricultural ones.

The following sections describe the potentially affected environment of the project site, with respect to habitat, wildlife, and sensitive species that use or that could potentially use the project site and adjacent areas. See Appendix C for mapping of vegetation communities within the project area and representative photographs and a list of plant and wildlife species observed during the field visit and a list of sensitive species known or potentially could exist onsite.

Agriculture. The project site is dominated by agricultural uses, consisting currently of an alfalfa-oats rotation. In addition to cultivated crops, the edges of the site support patches of ruderal vegetation along dirt access roads. Slender oat grass (*Avena barbata*), thistle (*Salsola* sp.) and prickly sow thistle (*Sonchus asper*) are the dominated weed species. The parcel has been under cultivation for many years, and the site is essentially flat, with no trees and no significant topographic features, though the site is crossed by concrete-lined irrigation ditches. According to the current tenant, the surrounding ditches hold water only when irrigation water is being applied and dry quickly in a matter of a few days. California ground squirrels (*Spermophilus beechyii*) are controlled onsite with pesticides or other means in order to minimize damage to agricultural equipment (Holck, 2016). Similar agricultural uses dominate surrounding properties.

Irrigation. The project site is bordered on the east side by an irrigation ditch that runs north to south. The length of the irrigation ditch appears to be periodically bladed clean of vegetation, based on the smooth appearance of the banks and the discontinuous vegetation along the watercourse. A single small willow (*Salix* sp.) exists along the irrigation ditch.

Predominant surface water features in the project vicinity are the Delta-Mendota Canal, California Aqueduct, Old River, Clifton Court Forebay, Canal 45 (operated by Byron Bethany Irrigation District), and Mountain House Creek, which drains the foothills approximately 4 miles southwest of the project site. Several unnamed drainages run parallel to Mountain House Creek and drain the foothills west of the site. Some of these drainages and portions of Canal 45 support patchy stands of bullrush and cattails that are small, but functional emergent marsh habitats. Between the California Aqueduct and Delta-Mendota Canal, an unnamed drainage pools on the shallow hardpan soils, creating numerous ephemeral ponds and wet areas that could be characterized as vernal pools. Most agricultural fields and some pastures are crossed by irrigation ditches and drains that may also be considered wetlands. Finally, farm ponds occur on several properties in the vicinity, including one behind the Mountain House School, located approximately 1 mile south of the project site. These man-made wetlands are highly modified and maintained, and generally lack substantial riparian or marsh type vegetation. However, federal law protects all wetlands as sensitive and limited habitats.

Industrial. The project site is surrounded on three sides by two-lane paved highways. To the west, the Tracy Substation has been cleared and landscaped with redwoods, oleanders, juniper, and non-native shrubs and trees. An abandoned milking shed as well as commercial bee hives are currently present on the project site. High tension transmission lines and supporting lattice tower structures traverse through the middle of the project site. Overall vegetation on the project site comprises agricultural crop species that are widely distributed and relatively common.

Wildlife Habitat

Wildlife that use agricultural habitat tend to occur across all habitat types rather than only a single habitat. Species that commonly use the patchwork of changing crops include vole (*Microtus californicus*), mouse (*Mus musculus*), coyote (*Canis latrans*), red fox (*Vulpes fulva*), opossum (*Didelphis virginianus*), striped skunk (*Mephitis mephitis*), killdeer (*Charadrius vociferus*), and great egret (*Ardea alba*). Typical raptors include turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), and American kestrel (*Falco sparverius*). Reptiles and amphibians that are likely to occur include

gopher snake (*Pituophis melanoleucus*), racer (*Coluber constrictor*), Western fence lizard (*Sceloporus occidentalis*), and Pacific tree frog (*Hyla regilla*).

The habitat onsite is highly disturbed, thus most of the species in this area occur widely and are relatively common. Some sensitive and potentially rare species could also use this habitat opportunistically or infrequently, and they are discussed individually below. The more general habitat community, however, is not rare or limited in distribution. The location of the proposed project does not demonstrate any unique habitat features that are likely to support unique species or communities.

(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 CDFW or USFWS?

Special-status species are those species identified by resource agencies as rare, threatened, endangered, or otherwise of concern because of declines in their populations, ranges, and/or habitats. For animals, this includes species that are:

- Listed or proposed for listing under the federal Endangered Species Act (ESA)
- Listed or candidates for listing under the California ESA
- Animals designated as “Fully Protected” under the California Fish and Game Code
- Animals designated as “Species of Special Concern” by the CDFW
- Animals designated as “Covered Species” by the East Alameda County Conservation Strategy (EACCS)

The potential for special-status species to occur near the project was determined by assessing whether the study area is found within a species’ known or expected geographic range, and whether its known or expected habitat is found within the study area. The likelihood of occurrence (low, moderate, high) is based on presence of suitable habitat requirements (for example, substrate, hydrology, vegetation type, and disturbance factors) and range, applied by using the following general guidelines:

- **None:** Habitat within the study area does not satisfy the species’ requirements and/or the project is not within the known or expected range of the species. No known occurrences have been reported from the study area. The species’ presence within the study area is not expected.
- **Low:** Habitat within the project area satisfies very few of the species’ requirements and/or the known or expected range of the species is within 5 miles of the project area. In addition, no known occurrences have been reported from the project area. The species’ presence within the project area is unlikely.
- **Moderate:** Habitat within the project area meets some of the species’ requirements and known locations for the species are found in the project region of East Alameda County. Presence of the species within the project area is moderately likely.
- **High:** Habitat within the project area meets most or all the species’ requirements and known locations for the species are found within 5 miles of the project. Presence of the species within the project area is highly likely.
- **Detected:** Occurrences observed during the August 2016 site reconnaissance of the project area or have been previously recorded in the project area by other published report findings such as, but not limited to, the CNDDDB and EACCS.

Using these criteria, one special-status wildlife species was detected during the site reconnaissance (northern harrier) and nine have been previously recorded in the region of the proposed project (vernal pool fairy shrimp, California red-legged frog, California tiger salamander, western pond turtle, loggerhead shrike, western burrowing owl, Swainson’s hawk, San Joaquin kit fox, and American badger). One special-status wildlife species has a high potential to occur within onsite (western burrowing owl), and three

special-status species have a moderate potential to occur onsite (loggerhead shrike, Swainson's hawk, and white-tailed kite).

A complete list of special-status wildlife evaluated for this assessment is included in Appendix B. Figures in the Appendix show occurrences of listed plants and animals and known CNDDDB occurrences of special-status species within 10 miles and 2 miles of the proposed project. Most of the occurring species are associated with upland grassland habitats, with a few being associated with aquatic habitats. Special-status species discussed below have known populations near the project area.

Special-status species such as San Joaquin kit fox (*Vulpes macrotis mutica*), California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), Swainson's hawk (*Buteo swainsoni*), and vernal pool fairy shrimp (*Branchinecta lynchi*) are known from the region, particularly west of the site where the valley floor transitions from agriculture to California annual grassland.

Plants

A total of 50 special-status plant species were determined by the literature review to potentially occur within the project site. Their habitat description, status, and potential for occurrence are provided in Appendix B. Potential for occurrence was based on habitat, elevation, and proximity to known recorded occurrences of a species. Currently, the project area is in agricultural production and thus rare botanical species are not expected to occur onsite. In addition, many of the special-status species are associated with marshes, wetlands, and/or vernal pools, which are also lacking from within the project site.

Wildlife

This section discusses individually the special-status species that are known from the project vicinity with a low likelihood of occurrence onsite. The agricultural land cover on site presents the primary limiting habitat for these species, which are known to occur in the annual grassland pasturelands that occur in eastern Alameda County to the west of the project site in the lower slopes of the Coast Range hills. A list of wildlife species observed during the site reconnaissance is provided in Appendix B.

Northern Harrier (*Circus cyaneus*). This species is a California species of concern. This raptor inhabits meadows, grasslands, open rangelands, desert sinks, and emergent wetlands, and prefers tall grasses and forbs for cover. The northern harrier nests on the ground in shrubby vegetation and in grasslands. This species was observed in the project area during the reconnaissance survey, and only suitable foraging habitat is present.

Vernal pool fairy shrimp. This crustacean is a federally threatened species that typically inhabits small to large pools with clear, tea-colored or muddy water, most commonly in grass- or mud-bottomed swales or basalt flow depression pools in unplowed grasslands, but sometimes in sandstone rock outcrops and alkaline vernal pools (58 Federal Register 48136). Vernal pool crustaceans are sporadically distributed within vernal pool complexes (58 [180] Federal Register 48136), where some or many of the pools in a complex may not be inhabited during any one year. Historically, vernal pool crustaceans might have dispersed via large-scale flood events that allowed the species to colonize different individual pools or pool complexes. Urban development and the construction of dams, levees, and other flood-control measures have limited this dispersal method. Waterfowl and shorebirds can transport vernal pool crustaceans by ingesting diapaused eggs without compromising the eggs' capacity to hatch once they have passed through the bird's digestive system. Birds can also transport eggs to new habitats while attached to their feet, legs or feathers. Eggs may also be dispersed and transported on the legs and hooves of cattle and on other grazing livestock (Eriksen and Belk, 1999).

Based on field observations conducted on August 18, 2016, the level of agricultural disturbance onsite likely precludes appropriate sub-surface hardpan that provides the requisite pooling necessary to complete the vernal pool crustacean life cycle. This species is known from within 1 mile of the project area.

California red-legged frog. This species is federally-listed threatened and a California species of concern. It is the largest native frog in the western United States, and was once abundant in much of California. Adults need dense, shrubby, or emergent riparian vegetation closely associated with deep (greater than 2 feet) still or slow-moving water. Well-vegetated terrestrial areas within the riparian corridor may provide important sheltering habitat during winter. California red-legged frogs aestivate during summer or dry weather in small mammal burrows and moist leaf litter. They have been found up to 100 feet from water in adjacent dense riparian vegetation and can travel more than 2 miles overland during dispersal to adjacent breeding sites (USFWS, 2002).

This species is known west of the proposed project in California annual grassland habitat along Bruns Road where numerous breeding ponds exist. The nearest red-legged frog critical habitat unit to the project site (CCS-2b) does not overlap with the project area and the network of aqueducts and irrigation canals, public roadways, railroads, and agricultural and industrial developments surrounding the proposed project likely precludes the presence of this species onsite. This species is known from within 1.5 miles of the project area.

California tiger salamander. This species is a federally-listed and a state-listed threatened species. It is a large, stocky, terrestrial salamander distinguished from other Ambystomids by having a dark body covered with pale yellow or white spots. The California tiger salamander is restricted to grasslands and low (typically below 2,000 feet) foothill regions where aquatic sites are available for breeding. They prefer to breed in natural ephemeral pools, including vernal pools and seasonal ponds such as stock ponds, and spend most of the year in adjacent grassland communities. Tiger salamanders will aestivate underground in small mammal burrows or cracks during the summer dry months. They have been reported to move up to 1.3 miles from a breeding pond, with most reported within 2,200 feet of a breeding pond.

This species is known west of the proposed project in California annual grassland habitat along Bruns Road where numerous breeding ponds exist. The network of aqueducts and irrigation canals, public roadways, railroads, and agricultural and industrial developments surrounding the proposed project likely precludes the presence of this species onsite. This species is known from within 1.5 miles of the project area.

Western burrowing owl (*Athene cunicularia*). This species is a California species of concern. This small owl inhabits open, dry grassland and nests in old burrows of California ground squirrels or other small fossorial mammals, but has also been known to nest in storm drains or other manmade structures. Although this owl prefers to nest in burrows located in flat or rolling annual grasslands; or bare terrain adjacent to agriculture and waterways, they often use burrows located on levees, berms, and other earthen structures. Burrowing owls are year-long resident of dry California grasslands, and forage on insects, reptiles, birds, small mammals, and carrion.

Potentially suitable burrow sites existing along the irrigation canal that borders the eastern project boundary. During the reconnaissance survey, no individual burrowing owls were observed, including their sign (white wash, prey remains, scat). This species is known from within 1 mile of the project area.

Loggerhead shrike (*Lanius ludovicianus*). This species is a California species of concern. This species is typically associated within open grassland habitats providing perch sites such as trees, shrubs, posts, fences, or utility lines. This small bird feeds mostly on large insects, but will also take fish, amphibians, reptiles, other small birds, mammals, and carrion. Loggerhead shrikes usually nest in native shrubs. This species was not observed during the reconnaissance surveys but is known to nest in the project region. This species is known from within 2 miles of the project area.

Swainson's Hawk. This raptor is a California threatened species that uses the upper canopy of medium-sized to large trees in the Central Valley and other regions of northern California for nesting activities during the North American summer and the flies to Argentina for the winter (summer in the southern hemisphere). Appropriate tree species for nesting were not observed within project area during the

reconnaissance survey. Although this species most likely would not nest within the project area, it is known to occur on a seasonal basis throughout the greater vicinity of the project area. Swainson's hawks may forage within the project area limits. This species is known from within 1 mile of the project area.

White-tailed kite (*Elanus leucurus*). This medium-sized raptor is a California fully-protected species. This species is known for hovering at low elevation while searching the ground for prey. Rodents provide much of their diet. The white-tailed kite is known for breeding in a variety of habitat types including oak woodland and open stages of riparian forest and scrub, generally in the tops of trees near open areas. White-tailed kites may forage within the project area limits. This species is known from within 2 miles of the project area.

San Joaquin kit fox. This is a federally endangered and state threatened species. The San Joaquin kit fox lives in grasslands or grassy open areas with scattered shrubs or scrub. This species dens in small animal burrows or in man-made structures including culverts. They use several different dens within an area, and prefer open, level areas with loose-textured soils. Kit fox prey on small mammals, primarily kangaroo rats, ground squirrels, rabbits, birds and insects. This species ranges up to nine miles in search of prey, and usually has a home range between one and two square miles, although its home range may be as large as twelve square miles.

Ground squirrels and their burrows are generally lacking from the project area due to agriculture and, therefore, there are no potential dens sites for the San Joaquin kit fox onsite. Adjacent land uses are similarly disturbed, including the grassy parcel immediately west of the project area where routine disking occurs along the eastern flank of the Delta-Mendota Canal. This species is known from within 2 miles of the project area.

Conclusion

In summary, the site selected for the proposed project is a highly disturbed agricultural parcel. Special-status species such as San Joaquin kit fox (*Vulpes macrotis mutica*), California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), Swainson's hawk (*Buteo swainsoni*), and vernal pool fairy shrimp (*Branchinecta lynchi*) are known to occur in the general area of the project, but these known locations occur mainly west of the site among California annual grassland habitats used for grazing along the lower slopes and hills of the Coast Range, not in the flat cultivated lands and associated habitats of the San Joaquin Valley where the project site is located. Industrial and agricultural developments bordering the project site including orchard and row crop parcels, networks of concrete lined aqueducts and irrigation canals, an electrical substation and pumping plants, public roadways, and railroads reduce the likelihood of dispersing individuals to the site. The project site lacks suitable aquatic habitat for special-status aquatic species.

It is recommended that the Applicant conduct pre-construction surveys for nesting birds and special-status species such as San Joaquin kit fox and burrowing owls to determine if these species are nesting or burrowing/denning at or near the project site and implement avoidance measures if they are. With this measure (BIO-1) in place, the project would not have a significant impact on listed species.

(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 CDFW or USFWS?

The habitat onsite is highly disturbed and most of the species in this area occur widely and are relatively common. The more general habitat community, in addition, is not rare or limited in distribution. The location of the proposed project does not demonstrate any unique habitat features that are likely to support unique species or communities. The entire project site is in agricultural production. There will be no project impact in terms of riparian habitat and sensitive natural communities.

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

The project site is highly disturbed, routinely impacted cropland, and supports no natural wetlands or potential wetlands. It is bordered on the east side by an irrigation ditch that drains farm fields from the south toward the Old River. The ditch within the project area has been scraped of vegetation, is maintained frequently, and lacks riparian or wetland vegetation. According to the current tenant, the ditch may have historically been a natural drainage feature, realigned and channelized for agricultural purposes (Holck, 2016). The project site is crossed by three irrigation ditches, two of which are concrete lined. These ditches are seasonally dry and support no wetland vegetation.

The drainage canal onsite will be identified and avoided by project construction, or an appropriate permit for alteration will be secured from USACE, CDFW, and/or RWQCB as appropriate. Therefore, the proposed project will not have an impact on federally protected wetlands as defined by Section 404 of the Clean Water Act. There will be no loss of Waters of the U.S. because of the proposed project.

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

Installation of solar photovoltaic energy panels and access roads in the project site would not substantially interfere with the movement of native resident, migratory fish, or wildlife species and would not obstruct wildlife corridors of movement or impeded the use of native wildlife nursery sites. The project site will add perimeter fencing to an area that has many existing barriers to wildlife, including the Delta-Mendota Canal and fences around the Tracy Substation. The project would therefore not interfere substantially with wildlife movement. This impact would not be significant.

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

The project will not conflict with local policies and ordinances protecting wildlife resources. No trees will be removed because of the project. The site is currently in agricultural production. There would be no impact in terms of conflict with local policies or ordinances.

(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?

Applicable planning documents are the following:

- **East County Area Plan.** Land use planning in the eastern portion of Alameda County is governed by the East County Area Plan (ECAP). In November 2000, the Alameda County electorate approved Measure D, the Save Agriculture and Open Space Lands Initiative, which amended portions of the County's General Plan, including the ECAP, to limit urban development on agricultural lands. The Open Space Element of the ECAP addresses sensitive lands and regionally significant open space, including biological resources.
- **East Alameda County Conservation Strategy¹.** The EACCS is a collaborative effort among several local, state, and federal agencies intended to provide an effective voluntary framework to protect, enhance, and restore natural resources in eastern Alameda County, while improving and streamlining the environmental permitting process for impacts resulting from infrastructure and development projects. The EACCS is intended to identify and provide a means to avoid, minimize and compensate for impacts

¹ East Alameda County Conservation Strategy (EACCS) prepared for East Alameda County Conservation Strategy Steering Committee, dated 2010, can be accessed at: <http://www.eastalco-conservation.org/>

on biological resources such as endangered and other special-status species, and sensitive habitat types (e.g., wetlands, riparian corridors, rare upland communities). The EACCS provides a framework of comprehensive conservation goals and objectives, and facilitates implementation using consistent and standardized mitigation requirements. By implementing the EACCS, local agencies would be able to more easily address the legal requirements relevant to these species. The project site is in EACCS Conservation Zone 7.

The project would not conflict with policies of either of these plans and there would be no impact.

Cumulative:

Although there would be minor reductions in foraging habitat with this project, foraging area would remain in the solar field and so these reductions would not be significant cumulatively on biological resources.

Mitigation:

Mitigation Measure BIO-1: Conduct a Preconstruction Survey. Applicant shall conduct pre-construction surveys for nesting birds and other indications of listed species and implement impact avoidance measures if nesting birds or listed species are present.

V. Cultural Resources				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 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 Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion:

A Cultural Resources Inventory Report is incorporated as Appendix D and has been submitted separately with a request for confidentiality. The report includes a summary of the history, prehistory, and ethnography of the project area and provides a detailed account of previous cultural resources surveys within and surrounding the project site. The following summarizes the results of the report.

Literature Search

CH2M requested a literature search of the California Historical Resources Information System at the Northwest Information Center (NWIC), located in Sonoma State University, Rohnert Park, California on September 22, 2016 and the results were provided by the NWIC on October 13, 2016. The records search included a review of all recorded prehistoric and historic archaeological sites and historic architectural

resources, as well as all known cultural resource survey and excavation reports of the study area that consisted of the Project and a one-half-mile radius around the Project area. Additionally, the National Register of Historic Places (NRHP), the California Register of Historic Resources (CRHR), California Historical Landmarks, and California Points of Historic Interest were all examined.

The following historical maps were reviewed to identify known historical land uses pertinent to the Project area:

- 1916 United States Geological Survey (USGS) Byron Quadrangle topographic map
- 1940 United States Geological Survey (USGS) Byron Quadrangle topographic map

Review of the mapped data provided by the NWIC revealed that eight previous studies have been conducted within the project site boundary and an additional nine previous studies have been conducted within 0.5 mile of the project site (NWIC 2016). The majority of these studies are cultural resources assessments which included archaeological pedestrian surveys. Table 4-5 lists all previous investigations conducted within the study area, which is composed of the APE and a 0.5-mile radius.

The previous surveys covered all the CalSun project area except for the extreme northern tip of the property and a triangle of land on the eastern boundary along Byron-Bethany highway.

Table 4-5. Literature Search Results, Cultural Resources Reports

Authors and Date	Report Name	CHRIS Catalogue NADB Numbers
Within the project area		
Pastron, Allen G., 1989	Cultural Resources Evaluation of the Proposed Mountain House Planned Community, Alameda and San Joaquin Counties, California	S-18762
Anonymous – 1996	Cultural Resources Technical Report, Contra Costa Water District, Los Vaqueros Resource Management Plan	S-43313
Meyer, Jack, 2002	Preliminary Geoarchaeological Assessment of the East Altamont Energy Center Site and “Linears”, Alameda, Contra costa, and San Joaquin Counties, California	S-43932
Bard, James, Robin McClintock, James Sharp, and Robert Harmon	A Cultural Resource Assessment of the Proposed East Altamont Energy Center, Alameda Contra Costa and San Joaquin Counties, California	S-24271
Torres, Dorothy and Gary Reinoehl, 2002	Historic Resources Survey for East Altamont Energy Center	S-43312
Hatoff, Brian, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente, 1995	An Archaeological Field Reconnaissance of the Moller Property, Near Byron, Alameda and Contra Costa Counties, California.	S-17993
Martin, Leigh, Aimee Arrigoni, and William Self, 2006	Historic Property Survey Report, Byron Highway Shoulder Improvement Project, Contra Costa County, California, EA 964100, STP-5928-1	S-33643

Table 4-5. Literature Search Results, Cultural Resources Reports

Authors and Date	Report Name	CHRIS Catalogue NADB Numbers
Siskin, Barb, Cassidy DeBaker, Thomas Martin, Beatrice Cox, and Jennifer Lang, 2010	Cultural Resources Inventory for the San Joaquin Valley Right of Way Maintenance Environmental Assessment Project	S-43685
Within 0.5 mile of the project		
Bramlette, Allan, Mary Praetzellis, Adrian Praetzellis, Margaret Purser, and David A. Fredrickson, 1990	Archaeological and Historical Resources Inventory for the Vasco Road and Utility Relocation Project, Contra Costa and Alameda Counties	S-12800
Peak, Melinda A. and Robert Gerry, 2002	An Evaluation of Historic Features, East Altamont Energy Center Project, Alameda County, California	S-28673
Nickels, Adam, and BranDee Bruce, 2009	Class III Cultural Resources Inventory for the Tracy Fish Facility, Abandoned Intake Rehabilitation and Development Contra Costa County, California	S-35794
St. Claire-Jerman, Michelle, 2011	Cultural Resources Report for the Cool Earth Altamont Solar Energy Center Project, Alameda County	S-46102
Scantlebury, Meg, 2013	Addendum 1 to the Built Historical Resources Evaluation Report for the Bay Delta Conservation Plan Project, Sacramento, Yolo, Solano, San Joaquin, Contra Costa, and Alameda Counties, California	S-46749
West, G. James, 1982	Class II Archaeological Survey, Kellogg Unit Reformulation, Contra Costa County, California	S-10508
Gilberti, Joseph, 2002	A Cultural Resources Reconnaissance Survey of Proposed Removal of the Tracy-Contra Costa-Ygnacio 69kV Transmission Line, Contra Costa and Alameda Counties, California	S-27445
Killam, William R., 1978	Cultural Resources Investigations and Intensive Survey for the Lawrence Livermore Direct Service 230 kV Transmission Line	S-9119
Werner, Roger H., 1988	Cultural Resource Survey for the Proposed Delta Mendota Canal, California Aqueduct, Intertie, Alameda County, California	S-11647

Source: NWIC 2016

Two historical resources, both transmission lines, are located within the project parcel, but not within the project fence line. Several historic resources have previously been recorded within a half-mile of the project site, including the Tracy Pumping Plant and a segment of the Delta-Mendota Canal including its intake, which was found to meet the criteria for listing in the National Register of Historic Places. Other historic resources in the area such as the Tracy Substation, have been evaluated and found not eligible for the National Register.

Table 4-6 lists all the previously recorded sites within the study area. Further details regarding resources in the project are provided below.

Table 4-6. Literature Search Results, Cultural Resources Sites

Site Number	Site Type	Site Description	Evaluation CRHR/NRHP Year
P-01-10449	Historic	Segment of the Hurley-Tracy Transmission Line (No. 4)	Not eligible, 2001
P-01-10446	Historic	Segment of PG&E Distribution Line (No. 7)	Not eligible, 2001

Two transmission lines of the historic era and that are in operation are within the larger project parcel but not within the project site boundary because they are within the transmission line easement that runs through the property diagonally. These properties have been found not eligible for the NRHP.

P-01-10446. This resource is a segment of the PG&E Distribution Line (No. 7) which was originally constructed by Stanislaus Electric in 1909. This is a single wood pole line and was associated with early hydroelectric plants in California. The line was a 60 kV line connected with the main transmission line of Stanislaus Electric Company's system which connected the Stanislaus Powerhouse on the Middle Fork of the Stanislaus River to Oakland. In 1914, this line is denoted as a Sierra and San Francisco Power Company line and in 1917, it is denoted as a Pacific Gas and Electric line. This segment was recommended as not eligible for the NRHP in 2001. As of its recording in 2001, this line was still in use (Bakic and Baker, 2001a).

P-01-10449. This resource is a segment of the Hurley-Tracy Transmission Line (No. 4). This line was constructed in 1951 by the US Bureau of Reclamation as part of the Central Valley Project. The Shasta Dam was constructed as part of the Central Valley Project to collect water from the southern Cascade Mountain range and then transport it down the Sacramento Valley via the Sacramento River. The Tracy Pumping Plant then pumps the water nearly 200 feet up from the river to the Delta Mendota Canal. This canal moves water to the San Joaquin Valley where it is used for crop irrigation. The Hurley-Tracy line is one of three transmission lines constructed to bring electricity from the hydropower generators at Shasta Dam to the Tracy Pumping Station. This resource was recommended as not eligible in 2001 for the NRHP or the CRHR (Bakic and Baker, 2001b).

Pedestrian Archaeological Survey

All but 12 acres of the property has experienced intensive archaeological survey under eight previous surveys. A survey of this remaining acreage was conducted on May 9, 2017 by cultural resources specialist Kurt Lambert. The survey was conducted under the supervision of CH2M archaeologist Gloriella Cardenas M.A., RPA, who meets the qualifications for Principal Investigator in the Secretary of the Interior's standards and guidelines for archaeology and historic preservation (National Park Service 1983). The survey covered the previously unsurveyed areas using pedestrian linear transects spaced at a minimum of 15 meters apart. A structure associated with agriculture, possibly a milking shed, was identified in the energy storage area and was recorded on California Department of Parks and Recreation Form DPR-523. The structure is the only remaining one of a grouping of farm-related structures visible on aerial photos from 1939 in this location. The structure is badly deteriorated and, as it does not retain integrity of materials or association, was found to be not eligible for listing in the California Register of Historical Resources or National Register of Historic Places. A report of this survey is found in Appendix D (submitted separately under confidential cover).

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

(b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?**(c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

Historical, archaeological, and paleontological resources have not previously been recorded within the boundaries of the project site other than segments of two transmission lines found not eligible for listing in the National Register of Historic Places. For these reasons, the project will not have a significant adverse effect on known historic, archaeological, Tribal, or paleontological resources. The possibility remains that buried archaeological resources could be encountered during site grading or drilling for solar PV panel pylons. Mitigation Measure CUL-1 would reduce this potential impact to a level below significance.

(d) Disturb any human remains, including those interred outside of formal cemeteries?

There are no known cemeteries located on the project site. If human remains or Native American Tribal cultural resources or archaeological sites were inadvertently encountered during construction, Applicant will comply with California Health and Safety Code 7050.5, and contact the county coroner. If the coroner determines that the find is Native American, the coroner is required to contact the Native American Heritage Commission in Sacramento. Impacts would be less than significant.

Cumulative:

No cumulative impacts on cultural resources are anticipated with this project.

Mitigation:

Mitigation Measure CUL-1: Emergency Discovery Procedures. If previously unrecorded archaeological properties are discovered in the project area during construction, the Applicant shall conduct archaeological investigations to confirm/document presence of such resources, and shall conduct on-site monitoring when project activities are taking place near a cultural resources site to ensure that impacts to cultural resources are avoided.

VI. Geology and Soils				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) Expose people or structures to 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 type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input type="checkbox"/>

VI. Geology and Soils				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(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 proposed project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(d) 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?	<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 wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

The project site is in the northeastern-most corner of Alameda County near the western edge of the San Joaquin Valley and near the border of the Coast Range and the Great Valley geomorphic provinces (Figure 1-1). The Coast Range is a series of valleys and mountains along the West Coast of California that extend from Oregon to the Santa Ynez River near Santa Barbara. The Great Valley is a 400-mile-long, northwest-southeast trending structural basin that extends along the center of the state from the Klamath Range in the north to the Tehachapi Mountains in the south. The proposed generating facility site is relatively flat (average elevation 50 feet) and is underlain by Quaternary alluvial deposits. Rincon Clay Loam is the primary soil type covering the project site. This well-drained soil is formed in alluvium from sandstone and shale on nearly level valleys and fans.

Based on a review of the relevant literature, the following assessments can be made about the potential geologic hazards might be present on the project site:

Surface Fault Rupture—No active faults cross the project site (Bortugno et al., 1991).

Earthquake Ground-Shaking—The most significant geologic hazard in the project area is the possibility of strong ground-shaking due to an earthquake. Mualchin (1996) estimated that the ground-shaking of a magnitude 6.75 earthquake along the Midway-San Joaquin Fault would produce peak ground gravity (g) acceleration of up to 0.45g in the project site's vicinity.

Liquefaction—During strong ground-shaking, loose, saturated, cohesionless soils can experience a temporary loss of shear strength. This phenomenon is known as liquefaction. Liquefaction of soils is

dependent on grain size distribution, relative density of the soils, degree of saturation, and intensity and duration of the earthquake. The potential hazard associated with liquefaction is seismically induced settlement. Evidence of liquefaction has been reported in the vicinity, especially near creeks and rivers. The southeastern-most corner of Contra Costa County has been designated as having a “Generally High” liquefaction potential by the Contra Costa General Plan (Contra Costa County, 1996). Since the project site is less than one mile from the county line, there may be a potential that similar conditions could exist at the project site.

Slope Stability—Slope instability depends on steepness of the slope, underlying geology, surface soil strength, and moisture in the soil. Were significant excavating, grading, or fill work to be required during construction, slope stability hazards could be introduced at the site. Because the project site itself is flat and more than 1 mile from the nearest hill of any size, and no significant excavation is planned during site construction, there would be no potential for direct impact from landslides at the site.

Subsidence—Subsidence can be caused by natural phenomena during tectonic movement, consolidation, hydro-compaction, or rapid sedimentation. Subsidence can also result from human activities, such as withdrawal of water or hydrocarbons in the subsurface soils. No known subsidence problems exist in the project area.

Expansive Soils—Expansive soils shrink and swell with wetting and drying. The shrink-swell capacity of expansive soils can result in differential movement beneath foundations. The Rincon Clay Loam found on the surface of the project site has a moderate to high shrink-swell potential.

Soil Erosion—Although the potential for soil erosion from water on the flat project site is low, the area is subject to moderate winds that could contribute to erosion of loose soils during the grading and excavation activities that will occur during the construction period.

(a)(i) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map?

The project site is not located within an Alquist-Priolo Earthquake Fault Zone and no active faults pass through the site. As a result, the risk of fault rupture is low, and the impact is less than significant.

(a)(ii) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

Strong ground shaking from an earthquake is a possibility at the site. As indicated above, Mualchin (1996) estimated that the ground-shaking of a magnitude 6.75 earthquake along the Midway-San Joaquin Fault would produce peak ground gravity (g) acceleration of up to 0.45g in the project area. The proposed project facilities will be designed in accordance with the California Building Code and other design standards. Furthermore, the project site will be unoccupied and the project would not otherwise expose people or property to damage from strong ground shaking, were it to occur.

(a)(iii) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Given the documented existence of potential liquefaction issues in nearby areas of Contra Costa County as described above, and the shallow depth of groundwater on the site, seismic-related ground failure, particularly liquefaction, is a possibility on the site. The proposed project facilities will be designed to take this potential for liquefaction into account in accordance with existing building codes. In addition, project site would be unstaffed. These factors result in the potential for impact due to liquefaction to be less than significant.

(a)(iv) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

The project site is flat and construction and operation activities are not anticipated to include major excavation or grading. Therefore, there would be no impact in relation to landsliding.

(b) Result in substantial soil erosion or the loss of topsoil?

The project will entail minor excavation for grading for access roads and installation of concrete slabs for the inverters, energy storage modules, and substation equipment. There is a low potential for soil erosion or loss of topsoil related to these activities. This will be managed below the level of significance by following standard procedures and practices as required by County Permits and the National Pollution Discharge Elimination System General Construction Permit through the Stormwater Pollution Prevention Plan filed with the State Water Resources Control Board.

(c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the proposed project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?

Although there may be some potential for liquefaction on the project site, the potential for the project to result in on-or offsite landslides, lateral spreading, subsidence, or collapse are low. The geological unit on which the project is located would not become unstable because of the project. Given that the project site will be constructed in accordance with the applicable building codes, this impact would not be significant.

(d) 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?

Project site soils are of moderate to high shrink-swell potential. Given that the project will be designed and constructed to meet County and state Building Codes and will be unoccupied, this impact would not be significant.

(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 wastewater?

The proposed project will not include the installation of septic tanks or other on-site wastewater disposal systems. Consequently, there would be no impact.

Cumulative:

No substantial cumulative impacts on geology and soils are anticipated with this project because impacts associated with this resource area would be less than significant.

Mitigation:

No mitigation is required.

VII. Greenhouse Gas Emissions				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) Generate greenhouse gas (GHG) 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 GHGs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Discussion:

On December 7, 2009, the EPA Administrator signed two findings regarding GHGs. The first finds that the current and projected concentrations of the six key well-mixed GHGs in the atmosphere (CO₂, methane [CH₄], nitrous oxide [N₂O], hydrofluorocarbons [HFCs], PFCs, and SF₆) threaten the public health and welfare of current and future generations. The second finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare (EPA, 2017a). While these findings do not themselves impose requirements on industry or other entities, the EPA is developing vehicle emission standards under the CAA as a result of these findings.

The framework for regulating GHG emissions in California falls under the implementation requirements of the Global Warming Solutions Act of 2006 (referred to as Assembly Bill [AB] 32), which was signed into law by the California State Legislature in 2006. AB 32 requires CARB to design and implement emission limits, regulations, and other measures such that statewide GHG emissions are reduced in a technologically feasible and cost-effective manner to 1990 levels by 2020. The statewide 2020 emissions limit is 431 million metric tons CO₂e; CO₂ emissions account for approximately 90 percent of this value (CARB, 2017c).

In December 2007, CARB adopted the first regulation pursuant to AB 32, which requires mandatory reporting of GHG emissions from large emitting facilities, suppliers, and electricity providers. This regulation was significantly revised to better align with EPA's Mandatory Reporting Rule; the revised regulation became effective January 1, 2013. The current regulation, which includes additional minor revisions to accommodate the Cap-and-Trade Program, became effective January 1, 2015 (CARB, 2017e). CARB adopted the California Cap-and-Trade Program on October 20, 2011. Under the California Cap-and-Trade Program, most covered entities have had an obligation to hold GHG allowances since 2013; fuel suppliers have had an obligation to hold GHG allowances since 2015 (CARB, 2017d).

BAAQMD periodically prepares GHG emissions inventories, which include direct and indirect GHG emissions due to human activities, to support BAAQMD's climate protection activities. Table 4-7 presents the 2011 GHG emissions inventory for the Bay Area, which is the most recently available inventory. In the Bay Area, CO₂, CH₄, and N₂O emissions represented about 90.3 percent, 3.0 percent, and 1.7 percent of the total GHG emissions in 2011, respectively. Emissions from high global warming potential gases, such as HFCs, PFCs, and SF₆, made up about 4.9 percent of the total GHG emissions in 2011 (BAAQMD, 2015).

Table 4-7. Bay Area 2011 GHG Emissions Inventory

End-use Sector	Percent of Total Emissions	CO ₂ e Emissions (million metric tons/year)
Industrial/Commercial	35.7	31.0
Residential Fuel Usage	7.7	6.6
Electricity/Cogeneration	14.0	12.1
Off-road Equipment	1.5	1.3
Transportation	39.7	34.3
Agriculture/Farming	1.5	1.3

Table 4-7. Bay Area 2011 GHG Emissions Inventory

End-use Sector	Percent of Total Emissions	CO ₂ e Emissions (million metric tons/year)
Total	100	86.6

Source: BAAQMD, 2015

CARB developed statewide interim thresholds of significance for GHGs in 2008. AB32 mandates a mandatory reporting threshold of 25,000 metric tons of CO₂e per year for stationary sources. This threshold was used to evaluate the project's construction-related climate change impacts because there is no BAAQMD-recommended threshold of significance for GHG emissions during construction. Project GHG emissions were estimated in accordance with BAAQMD's *GHG Plan Level Guidance* (BAAQMD, 2012b).

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

GHG emissions directly generated during construction would result in a less-than-significant, short-term impact to climate change. As summarized in Table 4-8 and detailed in Appendix B, the GHG emissions from the construction phase of the project would be well below CARB's proposed threshold of 7,000 metric tons of CO₂e per year and less than 0.0006 percent of annual emissions in the Bay Area. GHG impacts from the project would be less than significant.

Table 4-8. GHG Construction Emissions

Construction Period	CO ₂	CO ₂ e ^a
Project Emissions (metric tons/year) ^b	484	508
CARB Thresholds of Significance (metric tons/year)^c	--	7,000

Notes:

-- = No threshold of significance exists for this pollutant

^a Only CO₂ emission factors were available for all types of construction equipment used for this project. Emissions of CH₄ and N₂O from combustion sources are expected to be much lower than emissions of CO₂, contributing in the range of 2 to 4 percent of the total CO₂e emissions (CARB, 2017e). Therefore, the CO₂ emissions were conservatively increased by 5 percent to calculate CO₂e emissions, accounting for the potential CH₄ and N₂O emissions associated with construction activities.

^b It was assumed that all construction equipment and vehicles could operate simultaneously on any given day during the project.

^c CARB Thresholds of Significance taken as the statewide interim thresholds of significance for GHGs (CARB, 2008).

(b) Would the project conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

The project would not conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions. The minimal short-term construction GHG emissions would not interfere with the long-term goal of AB 32 to reduce GHG emissions to 1990 levels by 2020. Therefore, no conflicts with GHG plans, policies, or regulations, and thus no impacts, would occur.

Cumulative:

No cumulative impacts in terms of GHG emissions are anticipated with this project.

Mitigation:

No mitigation is required.

VIII. Hazards and Hazardous Materials				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Emit hazardous emissions, handle hazardous or acutely hazardous materials, substances, or waste within 0.25 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 that 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 for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) For a project located within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

(a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

At typical construction sites, onsite materials that could be considered hazardous include fuels, motor oil, grease, various lubricants, solvents, soldering equipment, and glues. Fuel replenishment would be required daily for most of the heavy equipment.

Hazardous materials that will be present on site during operation will include materials in the batteries and the substation transformers. Hazardous materials handling and transportation for the proposed project is regulated and controlled by numerous state, federal, and local agencies. Modern engineering designs for containment and proven BMPs and standards of care will minimize any potential release of hazardous waste to within the project boundary. All hazardous materials will be handled and stored in accordance with applicable codes and regulations. Applicant will comply with standard control methods; therefore, this potential impact would be less than significant.

(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?

A hazardous materials business plan is required by *California Code of Regulations* Title 19 and the Health and Safety Code (Section 25504) for the site. The hazardous materials business plan includes an inventory and location map of hazardous materials onsite and an emergency response plan for hazardous materials incidents. Specific topics in the plan include the following:

- Facility identification
- Emergency contacts
- Chemical inventory information (for every hazardous material above threshold limits)
- Site map
- Emergency notification data
- Procedures to control actual or threatened releases
- Emergency response procedures
- Training procedures
- Certification

In accordance with emergency response procedures specified in the hazardous materials business plan, designated personnel will be trained as members of a plant hazardous material response team, and team members will receive first responder and hazardous material technical training to be developed in the hazardous materials business plan. In the event of a chemical emergency, plant personnel would defer to the Alameda County Fire Department HAZMAT Team.

Overall impacts from hazardous materials would not be significant given the level of preparation, control, and regulation that exists at the site for these types of materials.

(c) Emit hazardous emissions, handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

There are no known or proposed schools within 0.25 mile of the project site. The nearest school, Mountain House Elementary School, is 0.9 miles from the site. There would be no impact.

(d) Be located on a site that 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?

The proposed project is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. There would be no impact

(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 for people residing or working in the project area?

The proposed project is more than 2.6 miles from the nearest public airport (Byron/FAA C83) and would not result in a hazard to construction workers onsite. There would be no impact.

(f) For a project located within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

There are no known private airstrips in the project vicinity. There would be no impact.

(g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The access route for the proposed project would not involve a use or activity that could interfere with emergency response or emergency evacuation plans for the area. There would be no impact.

(h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. The project does not involve installation of residential uses near wildlands. There would be no impact.

Cumulative:

Because of the extensive measures listed above for handling hazardous materials on this active site, no substantial cumulative hazards and hazardous materials impacts are anticipated.

Mitigation:

No mitigation would be required.

IX. Hydrology and Water Quality				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
(a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, causing a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IX. Hydrology and Water Quality				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
river, in a manner that would result in substantial erosion or siltation on- or offsite?				
(d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Create or contribute runoff water that 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 type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map, or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

(a) Violate any water quality standards or waste discharge requirements?

(f) Otherwise substantially degrade water quality?

The project will use a small amount of water for periodic washing of the solar panels. This water will be trucked to the site and run-off the panels to evaporate in place. Panel washing water would not result in discharge to adjacent or on-site waters and would not violate water quality standards. There would be no impact.

(b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, causing a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

The proposed project will not require the use of groundwater wells or require any groundwater pumping; therefore, no impacts on groundwater would occur because of the proposed project. There would be no impact.

(c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or offsite?

(d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

(e) Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

(c, d, e) The project will not affect local drainage patterns or alter a stream or river and would not cause erosion or siltation. The site will be graded only as necessary to install the access roads and solar panel pylons. There would be no impact.

(g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map, or other flood hazard delineation map?

(h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?

(g, h) No housing or other buildings will be constructed as part of the proposed project. There would be no impact.

(i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

The proposed project would not expose people or structures to a significant risk of loss, injury, or death involving flooding, nor would the proposed project result in the failure of a levee or dam. There would be no impact.

(j) Inundation by seiche, tsunami, or mudflow?

The project would not cause mudflow, or expose people or property to hazards resulting from tsunami or seiche. There would be no impact.

Cumulative:

No cumulative impacts on hydrology and water quality are anticipated with this project.

Mitigation:

No mitigation would be required.

X. Land Use and Planning				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	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) Conflict with any applicable land use plan, policy, or regulation of an agency with	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

X. Land Use and Planning				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
jurisdiction over the proposed project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				
(c) Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

The project site is in a rural agricultural area in an unincorporated area of Alameda County, about two miles from the residential community of Mountain House (which is in San Joaquin County), and several miles from Byron and Tracy (also outside Alameda County). The existing land use pattern in the project area is a mix of agricultural uses and major water and power infrastructure facilities. In sum, the project site is a large, flat, open parcel currently used for irrigated field crops that is surrounded by similar parcels used for field crops and orchards (see Figures 1-3 and 1-4).

The project site and the nearby areas located within Alameda County are subject to Alameda County’s East County Area Plan (ECAP, adopted 1994, Amended November 2000 by Initiative Measure D and adopted by the Alameda County Board of Supervisors May 2002). The ECAP designates the parcel that make up the project site as "Large Parcel Agriculture", (Table 4-9). Under the Alameda County Zoning Ordinance, the site is in the A (Agriculture) Zone District.

Table 4-9. Land Use and Zoning Designations and Definitions for the Project Site

Designation	Definition/Permitted Uses
Large Parcel Agriculture - General Plan Land Use Designation	The Large Parcel Agriculture designation allows for a minimum parcel size of 100 acres and a maximum building intensity of 0.02 Floor Area Ratio except in areas supporting greenhouse where a maximum intensity of 0.1 is allowed. One single family home per parcel is allowed provided that all other County standards are met for adequate road access, sewer, and water facilities, building envelope location, visual compatibility, and public services. Additional residential units may be allowed if they are occupied by farm employees required to reside on-site. This designation provides for low intensity agricultural uses (such as row crops and vineyards), agricultural processing facilities, limited agricultural support service uses (such as barns, animal feed facilities, silos, stables, fruit stands, and feed stores), secondary residential units, visitor-serving commercial facilities (such as wineries, bed and breakfast inns), recreational uses, public and quasi-public uses, solid waste landfills, quarries, windfarms, utility corridors, and similar compatible uses.
A District - Zoning Designation	Agricultural districts (A districts) are established to promote implementation of general plan land uses proposals for agricultural and other nonurban uses, to conserve and protect existing agricultural uses, and to provide space for and encourage uses in places where more intensive development is not desirable or necessary for the general welfare (17.06.010).

Designation	Definition/Permitted Uses
	Conditional uses under A districts (if approved by the board of zoning adjustments, as provided in sections 17.54.130 and 17.06.010) include: <ul style="list-style-type: none"> J. Public utility buildings or uses, excluding such uses as a business office, storage yard, repair shop, or corporation yard N. Privately owned wind-electric generators
Sources: East County Area Plan (2002) and Alameda County General Ordinance (Chapter 17.06 A-Districts)	

The ECAP, as amended in 2000, established an Urban Growth Boundary, which is defined in its Policy I, to separate areas suitable for urban development from areas outside the Boundary that are suitable for long-term protection of natural resources, agriculture, public health and safety, and community buffers.

Relevant specific goals and policies are:

- *Urban and Rural Development Goal:* To achieve a balanced sub-region featuring compact communities, a diverse economic base, affordable housing and a full complement of public facilities and amenities.
- *Urban and Rural Development Policy 13:* The County shall not provide or authorize public facilities or other infrastructure in excess of that needed for permissible development consistent with the Initiative (Measure D). This policy shall not bar 1) new, expanded or replacement infrastructure necessary to create adequate service for the East County... 3) infrastructure such as pipelines, canals, and power transmission lines which have no excessive growth-inducing effect on the East County area ... "Infrastructure" shall include public facilities, community facilities, and all structures and development necessary to the provision of public services and utilities.
- *General Open Space Goal:* To protect regionally significant open space and agricultural land from development. (p. 18)
- *General Open Space Policy 52:* The County shall preserve open space areas for the protection of public health and safety, provision of recreational opportunities, production of natural resources (e.g., agriculture, wind power, and mineral extraction), protection of sensitive viewsheds, preservation of biological resources, and the physical separation between neighboring communities. (p. 18)
- *General Open Space Policy 54:* The County shall approve only open space, park, recreational, agricultural, limited infrastructure, public facilities (e.g. limited infrastructure, hospitals, research facilities, landfill sites, jails, etc.) and other similar and compatible uses outside the Urban Growth Boundary. (p. 18)
- *Agriculture Goal:* To maximize the long-term productivity of East County's agricultural resources. (p. 22)
- *Agriculture Policy 71:* The County shall conserve prime soils (Class I and Class II, as defined by the USDA (United States Department of Agriculture) Soil Conservation Service Land Capability Classification) and Farmland of Statewide Importance and Unique Farmland (as defined by the California Department of Conservation Farmland Mapping and Monitoring Program) outside the Urban Growth Boundary. (p. 22)
- *Agriculture Policy 72:* The County shall preserve the Mountain House area for intensive agricultural use. (p. 22)
- *Windfarms Goal:* To maximize the production of wind generated energy. (p. 43)
- *Windfarms Policy 168:* The County shall recognize the importance of wind power as a clean, renewable source of energy.

Several other policies are included in the ECAP with regard to windfarms, such as allowing for new development and expansion of existing and planned facilities, to the extent limited by environmental constraints.

- *General Services and Facilities* - Infrastructure and Services Goal: To provide infrastructure and services necessary to accommodate EastCounty holding capacities in a logical, cost-effective, and timely manner. (p. 59)
- *Infrastructure and Services Policy 218*: The County shall allow development and expansion of public facilities (e.g. parks and recreational facilities, schools, child care facilities, police, fire and emergency medical facilities, solid waste... utilities, etc.) in appropriate locations inside and outside the Urban Growth Boundary consistent with the policies and Land Use Diagram of the East County Area Plan. (p. 59)
- *Utilities Policy 285*: The County shall facilitate the provision of adequate gas and electric service and facilities to serve existing and future needs while minimizing noise, electromagnetic, and visual impacts on existing and future residents. (p. 68)

(a) Physically divide an established community?

The proposed project will not have the potential to physically divide an established community. As described earlier, the project site consists of open agricultural parcels that are adjacent to other agricultural parcels. It is bordered by Byron-Bethany Road on its northeast boundary and Mountain House Road on its western boundary and it is near the Tracy Substation and Pumping Plant, the Delta-Mendota Canal and the Union Pacific Rail line (Figures 1-2 and 1-3). The site lies well outside of established communities. The closest community, the Mountain House development in an unincorporated area of San Joaquin County, lies 1.1 miles to the southeast of the project site. The next closest community, the town of Byron, lies 5 miles to the northeast of the project site, and the City of Tracy lies 7 miles to the site's southeast. Development of a solar field at the site will not physically divide any of the communities in the project area and, furthermore, will not restrict movement through or around the area surrounding the project.

(b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the proposed project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

As described above, the project site is in unincorporated Alameda County and is subject to the East County Area Plan (ECAP). The land use designation of the site under the ECAP is Large Parcel Agriculture, and it is also located outside the Urban Growth Boundary defined in the ECAP as amended in 2000. Consistent with the Large Parcel Agriculture designation, the project will constitute a quasi-public use that is a 'similar compatible use' comparable to landfills, quarries, windfarms and utility corridors.

The project will serve the Urban and Rural Development Goal of the ECAP by contributing to the full complement of public facilities (energy production, from an alternative, renewable source), and related Policy 13 as a type of infrastructure that will improve electrical service to Central California without providing excess supply needed for permissible development in the East County. The solar energy facility will represent new infrastructure for which there is a local, regional and statewide need, but which would have no growth-inducing effects because it will primarily serve to reduce the use of existing non-renewable energy resources. With respect to the Open Space Goal and related Policies 52 and 54, the existing open space on the site is not being developed with permanent urban or industrial development, but with allowable production of natural resources akin to both wind power and mineral (including oil) extraction.

The proposed solar array project is similar in effect to wind generated energy—a clean, renewable, and local source of power. Solar-generated energy is comparable to wind-generated energy in this regard, such that the ECAP's Windfarms goal and Policy 168 regarding wind-generated energy—or its substantial and important benefits of providing a source of clean, renewable energy—would be served by the project. The project also represents the development of a valuable quasi-public facility, which includes utilities and related infrastructure in a location outside the Urban Growth Boundary, consistent with the Infrastructure and Services Goal, and with Policy 218. Finally, the project serves Policy 285 by contributing new electrical services without any increase in noise or electromagnetic impacts, and the mitigation measures that will be incorporated into the project (AES-1) will reduce visual impacts to a less than significant level.

Regarding the designation of the site in the A (Agriculture) Zone District, the proposed solar energy land use should be allowable by reference, because it would be similar to a wind farm of privately-owned electric generators, public utility buildings and uses, and comparable in various ways to oil or gas drilling facilities, and other uses which do not alter the essential characteristics of the principal use of the lot.

As discussed under the heading of Agriculture (Section II, above), the project will use approximately 89 acres of Prime Farmland as defined by the 2006 Important Farmland Maps for Alameda County (prepared under the State Farmland Mapping and Monitoring Program) for limited term non-agricultural use. With implementation of Mitigation Measure AG-1: *Agricultural Retention and Restoration*, all the land on the project parcel will be restored to full agricultural use at the end of the project's operational period. Therefore, the potential for conflicts with policies 71 and 72 would be less than significant with mitigation.

The construction of a solar generation facility on the site, with incorporation of Mitigation Measures AES-1 and AG-1 will not conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Thus, with incorporation of Mitigation Measures AES-1 and AG-1, impacts related to conflict with any applicable land use plan, policy, or regulations would be less than significant.

(c) Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan?

The project site is not located within the boundaries of any Habitat Conservation Plan or Natural Community Conservation Plan area and, therefore, would not conflict with the implementation and management of any HCP or NCCP. The project is located within the boundaries of the EACCS, a similar type of document, but with avoidance and mitigation measures including Measure BIO-1 incorporated into the project description would not have adverse effects on special-status species and would not otherwise conflict with the goals of the EACCS. Thus, there would be no impact related to conflict with a HCP or NCCP, and no mitigation is necessary (see also the Biology section).

Cumulative:

No cumulative impacts on land use and planning are anticipated with this project.

Mitigation:

Measures AES-1, AG-1 and BIO-1 are described in the Aesthetics (AES-1) and Agriculture (AG-1) and Biological Resources (BIO-1) sections and are applicable to Land Use.

XI. Mineral Resources				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<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"/>

Discussion:

There are neither known mineral resources of value to the region nor known locally important mineral resources located within the project area. There would be no impact.

Cumulative:

No cumulative impacts on mineral resources are anticipated with this project.

Mitigation:

No mitigation would be required.

XII. Noise				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) Expose persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Expose persons to or generation of excessive ground-borne vibration or ground-borne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the proposed project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the proposed project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 expose	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

XII. Noise				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
people residing or working in the project area to excessive noise levels?				
(f) For a project within the vicinity of a private airstrip, 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"/>

Discussion:

Construction of the project will be typical of other solar photovoltaic plants in terms of schedule, equipment used, and other types of activities. The noise level will vary during the construction period, depending on the construction phase. The EPA Office of Noise Abatement and Control and the Empire State Electric Energy Research Company have extensively studied noise from individual pieces of construction equipment, as well as from construction sites (EPA, 1971; Barnes et al., 1976). Use of these data, which are more than 40 years old, is conservative because the evolution of construction equipment has been toward quieter designs to protect operators from exposure to high noise levels.

The loudest equipment types generally operating at a site during each phase of construction are presented in Table 4-10. The composite average or equivalent site noise level, representing noise from all equipment, also is presented for each phase.

Table 4-10. Construction Equipment and Composite Site Noise Levels

Construction Phase	Loudest Construction Equipment	Equipment Noise Level (dBA) at 50 feet	Composite Site Noise Level (dBA) at 50 feet
Site Clearing, and preparation	Dump Truck	91	89
	Backhoe, Compactor, Scraper	85	
Mechanical and electrical	Forklift, Pile driver	88	87
		86	
Cleanup	Rock Drill Truck	98	89
		91	

Source: EPA, 1971; Barnes et al., 1976.

Average or equivalent construction noise levels projected at various distances from the site are presented in Table 4-11. These results are conservative because the only attenuating mechanism considered was divergence of the sound waves in open air. The noisiest construction activities will be confined to the daytime hours. Table 4-12 presents noise levels from common construction equipment at various distances.

Table 4-11. Average Construction Noise Levels at Various Distances

Construction Phase	Sound Pressure Level (dBA)		
	375 feet	1,500 feet	3,000 feet
Demolition, Site Clearing, and Excavation	71	59	53
Steel Erection	69	57	51
Mechanical	69	57	51
Clean-Up	71	59	53

Table 4-12. Noise Levels from Common Construction Equipment at Various Distances

Construction Equipment	Typical Sound Pressure Level at 50 feet (dBA)	Typical Sound Pressure Level at 375 feet (dBA)	Typical Sound Pressure Level at 1,500 feet (dBA)
Pile Drivers (20,000-32,000 ft-lbs/blow)	104	86	74
Dozer (250-700 hp)	88	70	58
Front End Loader (6-15 cubic yards)	88	70	58
Trucks (200-400 hp)	86	68	56
Grader (13 to 16 feet blade)	85	67	55
Shovels (2-5 cubic yards)	84	66	54
Portable Generators (50-200 kW)	84	66	54
Mobile Crane (11-20 tons)	83	65	53
Tractor (3/4 to 2 cubic yards)	80	62	50

ft-lbs/blow = foot pounds per blow

Construction vibrations can be divided into three classes, based on the wave form and its source (see Table 4-13). If pile driving were required, it would be limited to normal construction hours (during the daytime) and would be of short duration.

Table 4-13. Construction Vibrations

Wave Form	Example Source
Impact	Impact pile driver or blasting
Steady state	Vibratory pile driver
Pseudo steady state	Double acting pile hammer

(a) Expose persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

(b) Expose persons to or generation of excessive ground-borne vibration or ground-borne noise levels?

(c) Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the proposed project?

(d) Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the proposed project?

(a, b, c, d) Worker exposure levels during construction of the project would vary depending on the phase of the construction and the proximity of the workers to the noise-generating activities. The project will develop a Hearing Protection Plan, which complies with Cal-OSHA requirements. This Hearing Protection Plan will be incorporated into the construction Health and Safety Plan. The plan will require appropriate hearing protection for workers and visitors throughout the duration of the construction period.

Construction would occur between 7:00 a.m. and 7:00 p.m. Monday through Friday, and between 8:00 a.m. and 5:00 p.m. on Saturday. Per the Alameda County Noise Ordinance Section 6.60.070, construction during these hours is exempt from noise level standards that would otherwise apply. Project construction would entirely occur within these hours.

Project construction and operation would not cause excessive ground-borne vibration or ground-borne noise levels that would extend off the site. There would be no impact in terms of ground-born vibration or noise.

The nearest residential area is the Mountain House Community, approximately 1.1 miles southeast of the nearest location at the project site. Other sensitive noise receptors near the site consist of scattered farmsteads. Noise levels from construction equipment with reach a maximum of 74 dB at 1,500 feet, from driving the PV tracker supports. Construction noise would be a temporary impact lasting approximately 6 months, and would not be a substantial impact above ambient levels. This impact would not be significant.

Noise from project operation will consist of very low level sounds of the electric motors moving the panels to track the sun. This movement is solar-powered and will be a negligible contributor to local ambient noise. This impact would not be significant

(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 expose people residing or working in the project area to excessive noise levels?

(f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

(e, f) The proposed project is more than 2 miles from the nearest public airport, and there are no known private airstrips near the project site. Airport operations would not expose people residing or working in the project site to excessive noise levels. There would be no impact.

Cumulative:

No substantial cumulative impacts in terms of noise are anticipated with this project.

Mitigation:

No mitigation would be required.

XIII. Population and Housing				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) 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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

(a) The proposed project would not induce population growth. It would not involve extending road or infrastructure and does not involve construction of new housing.

(b, c) The proposed project would not displace housing or people. No replacement housing would be required.

Cumulative:

No cumulative impacts on population and housing are anticipated with this project.

Mitigation:

No mitigation would be required.

XIV. Public Services				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	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 following public services:				
(i) Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

XIV. Public Services				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(ii) Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(iii) Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(iv) Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(v) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

The proposed project would not require new fire or police protection, schools, parks, or other public facilities; nor would the proposed project alter existing fire or police protection, schools, parks, or other public facilities. Fire services would be accommodated by adhering to applicable design standards for width of access roads, entry-way turnaround, and available water to fight fires, among others. There would be no impact on these public services from the project.

Cumulative:

The project would not create a cumulatively considerable impact on public services.

Mitigation:

No mitigation would be required.

XV. Recreation				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<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 that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

The proposed project would not result in the accelerated deterioration of nearby park facilities, nor would the proposed project require new facilities to be constructed.

Cumulative:

No cumulative impacts on recreation are anticipated with this project.

Mitigation:

No mitigation would be required.

XVI. Transportation and Traffic				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit /and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths and mass transits?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location those results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Substantially increase hazards due to a design feature (such as sharp curves or dangerous intersections) or incompatible uses (such as farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

The project is in unincorporated Alameda County, within the East County Plan Area of the County's General Plan. The surrounding regional and local roadway networks are shown in Figures 1-1 and 1-2. Regional access to the site is provided from Interstate 580 (I-580), I-205, and Byron Highway (also known as Byron-

Bethany Road and County Road J4). Locally, the site can be accessed via the I-580/West Grant Line Road interchange, north on West Grant Road to Mountain House Road or from Mountain House Road via Byron Highway. The project is located on the southeast corner of Mountain House Road and Bryon Highway. Construction workers traveling to the site would use the roadways described below.

I-580 is the major east-west truck travel route and main throughway in eastern Alameda County that connects to the Sacramento and San Joaquin Valleys. It also provides a major connection to I-5. I-580, near the CalSun site is a four-to-eight -lane, divided freeway that serves east-west travel through the region. Access to and from I-580 to the project site is provided at the existing interchange at West Grant Line Road. Annual average daily traffic (AADT) volumes on I-580 are 148,000 vehicles per day west of Grant Line Road and 149,000 vehicles per day east of Grant Line Road (Caltrans, 2015). Trucks represent approximately 12.5 percent of all traffic on this section of the highway.

I-205 is a six to eight-lane east-west freeway between the Alameda-San Joaquin County Line and 11th Street within the City of Tracy. AADT volumes on I-205 are 117,000 vehicles per day near its junction with I-580 (Caltrans, 2015). Trucks represent approximately 12 percent of all traffic on this highway.

Byron Highway/Byron-Bethany Road/J4/West Byron Road, located north of the project site, is an arterial that extends from its intersection with Marsh Creek Road/Camino Diablo in Contra Costa County to the city of Tracy (San Joaquin County, 2016). Near the project site, Byron Highway has one lane in each direction. Byron Highway carries 8,300 average daily trips (ADT) near the project site (San Joaquin County, 2016). Depending on the county, Byron Highway is also named J4 (in Contra Costa County), Byron-Bethany Road (in Alameda County), or West Byron Road (in San Joaquin County). Contra Costa County classifies Byron Highway as an arterial and a designated Regional Route of Significance; in Alameda County, the East County Area Plan (ECAP) does not show Byron-Bethany Road as an arterial, but rather focuses on the Tri-Valley area (Alameda County, 2000). In the San Joaquin County General Plan (San Joaquin County, 2016), the road is classified as a minor arterial within the study area.

Mountain House Road is a north-south local road that begins at Byron Highway and ends at its intersection with West Grant Line Road, approximately five miles south of the site. Mountain House Road is a two-lane roadway.

West Grant Line Road is primarily an east-west roadway that begins south of I-580 (connecting to I-580 via a diamond interchange) and ends at Byron Highway. West Grant Line Road is a two-lane, rural roadway..

Existing Level of Service. Level of Service (LOS) is a qualitative measure used to describe the condition of traffic flow, ranging from excellent (free-flow) conditions at LOS A to overloaded (forced-flow) conditions at LOS F. Table 4-14 provides a description of LOS operating conditions for roadway segments.

Table 4-14. Level of Service Definitions

LOS	Traffic Flow Characteristics
A	Free flow; insignificant delays
B	Stable operation; minimal delays
C	Stable operation; acceptable delays
D	Approaching unstable flow; queues develop rapidly but no excessive delays
E	Unstable operation; significant delays
F	Over-capacity; forced flow

Source: Transportation Research Board. 2010. Highway Capacity Manual

In Alameda County, the ECAP states that LOS D shall be achieved on major arterial segments within unincorporated areas; Congestion Management Program- designated roadways such as I-580 should not operate beyond LOS E in unincorporated areas (Alameda County, 2000). The LOS standard for local roadways in San Joaquin County is LOS C (San Joaquin, 2016). Byron Highway in Contra Costa County has a minimum standard of LOS D (Contra Costa County, 2000). To the extent feasible, the City of Tracy strives to maintain LOS D on all streets and intersections (City of Tracy, 2011).

The Circulation Elements for Alameda and Contra Costa counties do not identify specific roadway capacity thresholds. For the purposes of this analysis, the San Joaquin County thresholds have been used to evaluate the study roadways and are considered representative of the capacities of the roadways given the proximity of the counties' jurisdictions and similarities in roadway conditions. Therefore, traffic operations for the local study roadways were evaluated by comparing the daily volumes to the San Joaquin County's AADT threshold capacities, which are based on the County's local roadway functional classification relative to the total number of lanes (for both directions) of the roadway. As a conservative analysis, the county roadways were evaluated using the threshold capacity volume corresponding to LOS C consistent with the San Joaquin County standard, as summarized in Table 4-15.

Table 4-15. ADT Capacity Threshold (LOS C)

Roadway Classification	Through Lanes	AADT Capacity Threshold
Major Arterial	2	15,000
	4	35,000
	6	45,000
Minor Arterial	2	12,500
	4	25,000

Source: San Joaquin County, 2016

Table 4-16 is a summary of the daily traffic volumes for the local study roadways. Daily traffic volumes were obtained from the San Joaquin County Transportation and Circulation Background Report (San Joaquin County, 2016) and the Mariposa Energy Project Application for Certification (CH2M, 2009). As shown in Table 4-16 all the study roadways have daily volumes that are below the AADT capacity threshold.

Table 4-16. Existing Average Daily Traffic

Roadway	From	To	Jurisdiction	Lanes	Designation	ADT	AADT Capacity Threshold (LOS C)
Byron Highway	N. Bruns Rd.	Bruns Rd.	Contra Costa	2	Major Arterial	13,261	15,000
	San Joaquin County line	Mt. House Pkwy	San Joaquin	2	Minor Arterial	8,300	12,500
	Hansen Rd.	Reeve Rd.	San Joaquin	2	Minor Arterial	10,500	12,500
	Von Sosten Rd.	Tracy City limit	San Joaquin	2	Minor Arterial	3,400	12,500

Table 4-16. Existing Average Daily Traffic

Roadway	From	To	Jurisdiction	Lanes	Designation	ADT	AADT Capacity Threshold (LOS C)
Mountain House Rd.	Byron Bethany Rd.	W. Grant Line Rd.	Alameda	2	Minor Arterial	3,366	12,500
W. Grant Line Rd.	Mountain House Rd.	Alameda/San Joaquin County line	Alameda	2	Minor Arterial	8,365	12,500

Source: San Joaquin County, 2016 and CH2M, 2009

Project Construction Trip Generation. The project's peak construction trip estimates are presented in Table 4-17. Estimates of the project's peak construction traffic during the onsite construction period were developed based on the projected size of the CalSun construction workforce. The estimated peak number of construction workers is 100, resulting in 200 daily one-way trips (100 workers x 2 trips per worker = 200 total trips) for approximately six months. It was conservatively assumed that none of the construction workers would carpool. The project would also require approximately 5 to 10 delivery trucks per day for three months. Truck trips were converted to passenger car equivalents (PCE) units at a ratio of 1.5 passenger cars for each truck, consistent with the 2010 Highway Capacity Manual guidelines.

Table 4-17. Peak Construction Trip Generation

Trip Type	ADT	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Delivery/Haul Trucks ¹	20	0	0	0	0	0	0
Delivery/Haul Trucks PCE (1.5)	30	0	0	0	0	0	0
Workers ²	200	100	0	100	0	100	100
Total Construction Traffic in PCE	230	100	0	100	0	100	100

NOTES:

1. Construction will require 5-10 trucks per day for up to three months. Assumes one incoming and one outgoing trip per truck. Truck trips will occur outside of peak hours.

2. Conservatively assumes all construction workers arrive and depart during peak hours. Assumes one incoming and one outgoing trip per worker.

Construction Traffic Distribution. Given the location of the project site, surrounding transportation facilities, and socioeconomic characteristics of the construction labor pool, the following assumptions were used to distribute construction traffic over the study area network for the traffic analysis. Construction traffic will originate from:

- Contra Costa County via Bryon highway – 20 percent
- Tracy and points east via Bryon highway – 20 percent
- Alameda County/San Francisco Bay Area via I-580 – 30 percent
- San Joaquin County/Central Valley via I-580 – 30 percent

The daily traffic volumes generated during the CalSun peak construction period were added to the existing traffic volumes on each roadway segment as summarized in Table 4-18. The existing plus project daily roadway volumes will continue to be below the AADT capacity thresholds for all the study roadways.

Table 4-18. Existing Plus Construction Average Daily Traffic

Roadway	From	To	ADT	Project Trips	Existing + Project ADT	AADT Capacity Threshold	Below Threshold?
Byron Highway	N. Bruns Road	Bruns Road	13,261	46	13,307	15,000	Yes
	San Joaquin County line	Mt. House Parkway	8,300	46	8,346	12,500	Yes
	Hansen Road	Reeve Road	10,500	46	10,546	12,500	Yes
	Von Sosten Road	Tracy City limit	3,400	46	3,446	12,500	Yes
Mountain House Rd.	Byron Highway	W. Grant Line Road	3,366	230	3,596	12,500	Yes
W. Grant Line Rd.	Mountain House Road	Alameda/San Joaquin County line	8,365	138	8,503	12,500	Yes

Project impacts on transportation and traffic were evaluated against the CEQA significance criteria and are discussed below. The impact analysis evaluates potential project impacts during the construction phase. Potential operation and maintenance impacts are not expected because there will be no onsite personnel and thus no increase in traffic. Per standard County regulations, the project owner will create a video record of the condition of the adjacent roadways both before and after construction and will repair construction-caused damage to public roadways.

(a) Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

The project-added trips represent a minimal increase in traffic compared to the existing highway volumes on I-580 and I-205 (less than 0.2 percent for both highways) and no changes to the existing LOS are anticipated. The existing plus project daily roadway volumes (as shown in Table 5) will continue to be below the roadway capacity thresholds for all the study roadways. Impacts would be less than significant.

All the construction activities will occur outside of the public ROW and no road closures are expected. There will be no impact to transit and non-motorized travel.

Applicable county, state, and federal regulation, ordinances, and restrictions will be complied with prior to and during construction. The construction contractor will obtain all necessary road permits prior to construction and will comply with all the applicable conditions of approval. Therefore, construction-related traffic will not conflict with any applicable traffic plans, ordinances, or policies that establish measures of effectiveness for the performance of the circulation system, considering all modes of transportation. Impacts would be less than significant.

(b) Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

As described above, construction of the project would result in a minimal and short-term increase in local traffic because of construction-related workforce traffic and material deliveries. The project-added trips represent a negligible increase in traffic compared to the existing highway volumes and no changes to the existing LOS are anticipated. The existing plus project daily roadway volumes would continue to be below the roadway capacity thresholds for all the study roadways. Therefore, the project would not conflict with an applicable congestion management program, or other standards, for designated roads or highways. Impacts would be less than significant.

(c) Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

The proposed project will not involve a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks. There would be no impact to air traffic.

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

The proposed project will not involve any physical changes to the access routes at or near the project site during either construction or project operations. Access to the site will be provided from an existing driveway on Mountain House Road.

Project construction will occur entirely onsite and will not alter any public roadways or intersections, nor will it introduce a design feature or incompatible uses to the project area. The project is introducing a new land use to the area; however, once constructed, there will be no traffic generated to the site. There would be no impact.

(e) Would the project result in inadequate emergency access?

Construction of the project would not result in inadequate emergency access. Emergency access routes will be maintained to and around the project construction area for the duration of project construction. The proposed project will not involve any physical changes to the access routes at or near the project site during either construction or project operations. Emergency access to the site will continue to be provided from the existing site driveway and emergency access will be maintained at all times. Therefore, the proposed project is not expected to affect emergency access or result in inadequate emergency access. There would be no impact.

(f) Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

As an industrial development, the proposed project would not be expected to conflict with adopted policies, plans, or programs supporting alternative transportation, as there would be no changes related to alternative transportation. Construction and operation of the proposed project will occur entirely onsite and will not affect transit, bicycle facilities or other forms of alternative transportation. No realignment of streets is proposed, and no street closures or changes in circulation patterns will occur. Furthermore, the project is in a predominately rural area with no sidewalks or bicycle facilities provided near the site. Therefore, no impacts to adopted policies, plans, or programs supporting alternative transportation would occur. There would be no impact.

Cumulative:

Cumulative traffic impacts may occur when more than one project has an overlapping construction schedule that generates excessive construction-related traffic. By itself, the project would have a less-than-significant effect on traffic in the immediate vicinity of the project site. The project added traffic would not exceed the roadway capacity thresholds for any of the study roadways. Project construction is anticipated to take six months to complete and given the rural nature of the area it is very unlikely that the peak construction periods of multiple projects would coincide with the project’s travel on these roadways. The proposed project is unlikely, therefore, to result in cumulative impacts on traffic in combination with other closely related past, present, and reasonably foreseeable future projects. There would not be a cumulatively considerable increase to traffic because of the proposed project.

Mitigation:

The addition of project-related construction or operations-related traffic would not result in any significant traffic impacts. No mitigation is required.

XVII. Tribal Cultural Resources				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
(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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

There are no identified sites, features, places, objects, or landscapes with cultural value to California Native American Tribes, pursuant to AB52. There would be no impact.

Cumulative:

No cumulative impacts on tribal cultural resources are anticipated with this project.

Mitigation:

No mitigation would be required.

XVII. Utilities and Service Systems				
Would the proposed project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
(a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(b) Require or result in the construction of new water or wastewater treatment facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(d) Have sufficient water supplies available to serve the proposed project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Result in a determination by the wastewater treatment provider that serves or may serve the proposed project that it has adequate capacity to serve the project's projected demand in addition to the providers existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion:

(a, b) No impacts on wastewater treatment, water usage, or other utilities and service systems will result from this project. The project will not have any waste water discharges. Panel wash water will run off the panels and on to the ground and evaporate.

(c) The project would not require the construction of new stormwater drainage facilities.

(f)(g) Operation of the project will not generate solid waste requiring landfill disposal.

Cumulative:

No cumulative impacts on utilities and service systems are anticipated with this project.

Mitigation:

No mitigation would be required.

XVIII. Mandatory Findings of Significance				
	Potentially Significant Impact	Less than Significant with Mitigation Incorporation	Less than Significant Impact	No Impact
(a) Does the proposed 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Does the proposed 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?)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Does the proposed project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion:

As identified in Sections I through XVI, potential impacts will be less than significant given implementation of proposed mitigation (see Table 5-1 in Section 5).

Summary of Project Impacts and Mitigation Measures

Table 5-1 lists impacts, identified in Section 4 of this Initial Study as requiring mitigation, and lists the associated mitigation measures required to assure identified impacts are reduced to a less than significant level. Measures presented in Table 5-1 will be implemented during the proposed project.

Table 5-1. Summary of Project Impacts and Mitigation Measures

Impact	CEQA Checklist Item Requiring Mitigation	Mitigation	Level of Significance after Mitigation
Aesthetics			
<p>The facility may degrade the existing visual character or quality of the site and its surroundings.</p> <p>Facility may be a new source of light and glare.</p>	I (c, d)	<p>AES-1. The Applicant will prepare and implement a landscape plan for the site's perimeters along Byron-Bethany Road and Mountain House Road to provide partial screening of views into the site from the adjacent portions of the roadway, and to visually integrate the development on the site into the area's larger landscape pattern. The landscaping plans shall be prepared by a licensed landscape architect and shall be submitted to the County for review and approval by the Planning Director prior to issuance of the building permit(s).</p>	Less than significant
Agriculture and Forestry			
<p>The facility will temporarily remove Prime Farmland from full agricultural production.</p>	II (a-b)	<p>AG-1. To ensure that the conversion of the project site a reduced level of agricultural use is temporary, the Applicant shall, upon cessation of solar energy activities on the site, return the solar field area to its pre-existing condition such that it can be fully cultivated. This shall entail removing all solar collection equipment inverters, inverter pads, battery modules and battery pads, the project substation and project roads. It shall also include restoration of irrigation-related infrastructure.</p>	Less than significant
Biological Resources			
<p>Construction of the facility may impact listed species or nesting birds</p>	III (a)	<p>BIO-1. Applicant shall conduct pre-construction surveys for nesting birds and other indications of listed species and implement impact avoidance</p>	Less than significant

Table 5-1. Summary of Project Impacts and Mitigation Measures

Impact	CEQA Checklist Item Requiring Mitigation	Mitigation	Level of Significance after Mitigation
measures if nesting birds or listed species are present.			
Cultural Resources			
The facility may impact previously unrecorded cultural resources or previously recorded resources located near project operations.	V (a-d)	CUL-1. If such properties are located near project features, archaeological investigations to confirm/document presence of such resources, and on-site monitoring when project activities are taking place near a cultural resources site to ensure that impacts to cultural resources are avoided.	Less than significant

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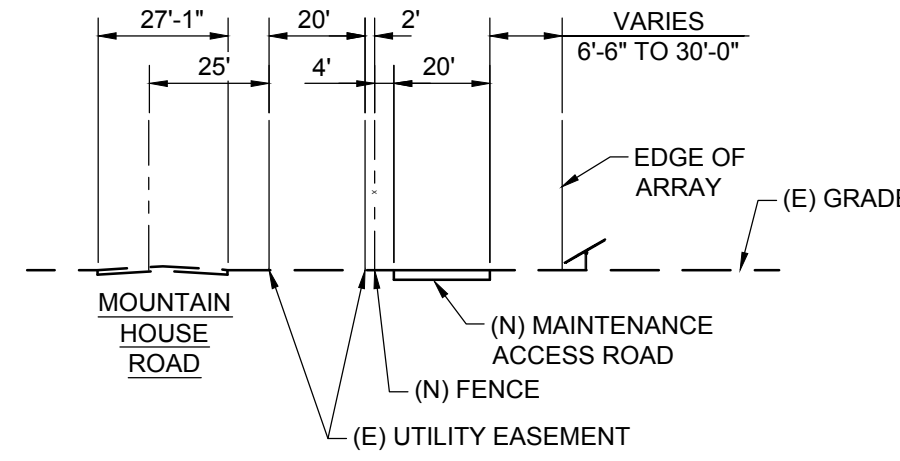
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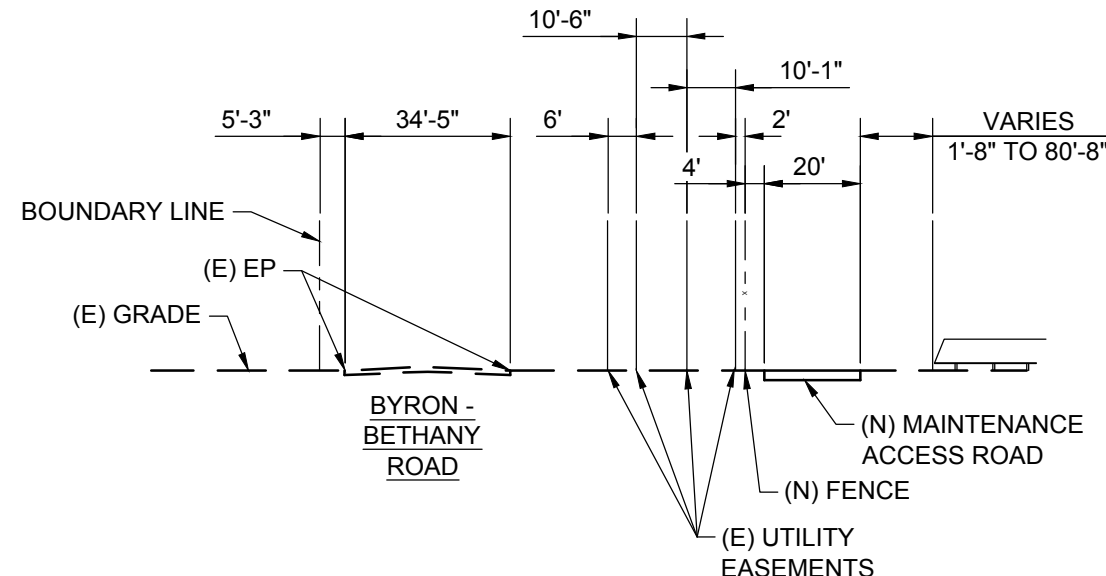
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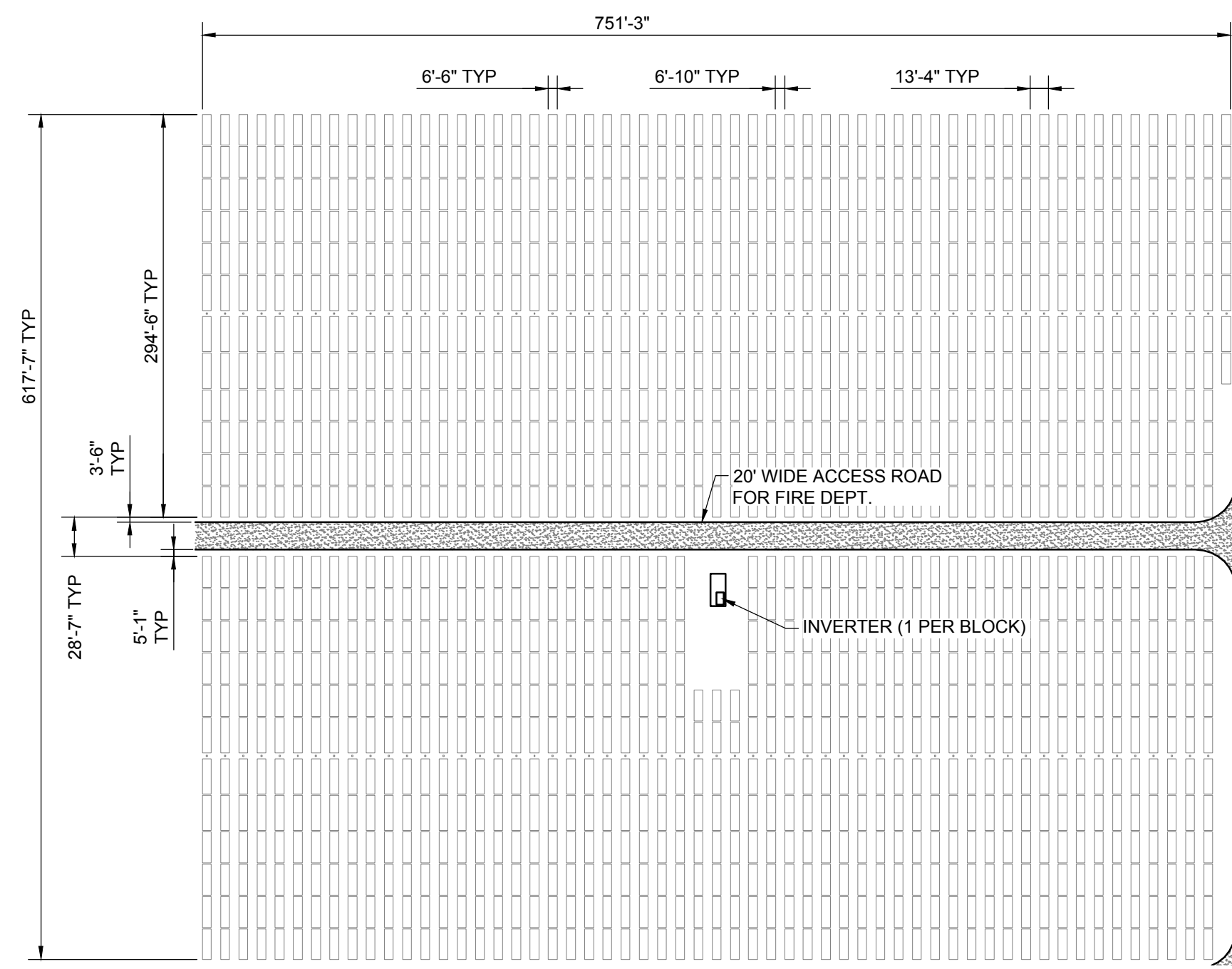
Appendix A
Plan Drawings



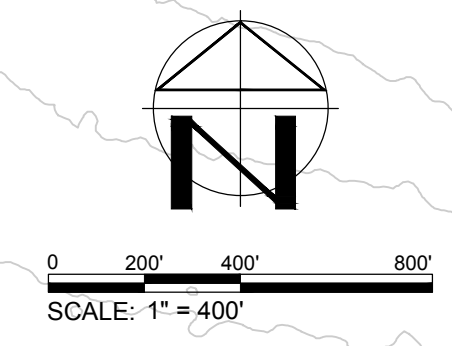
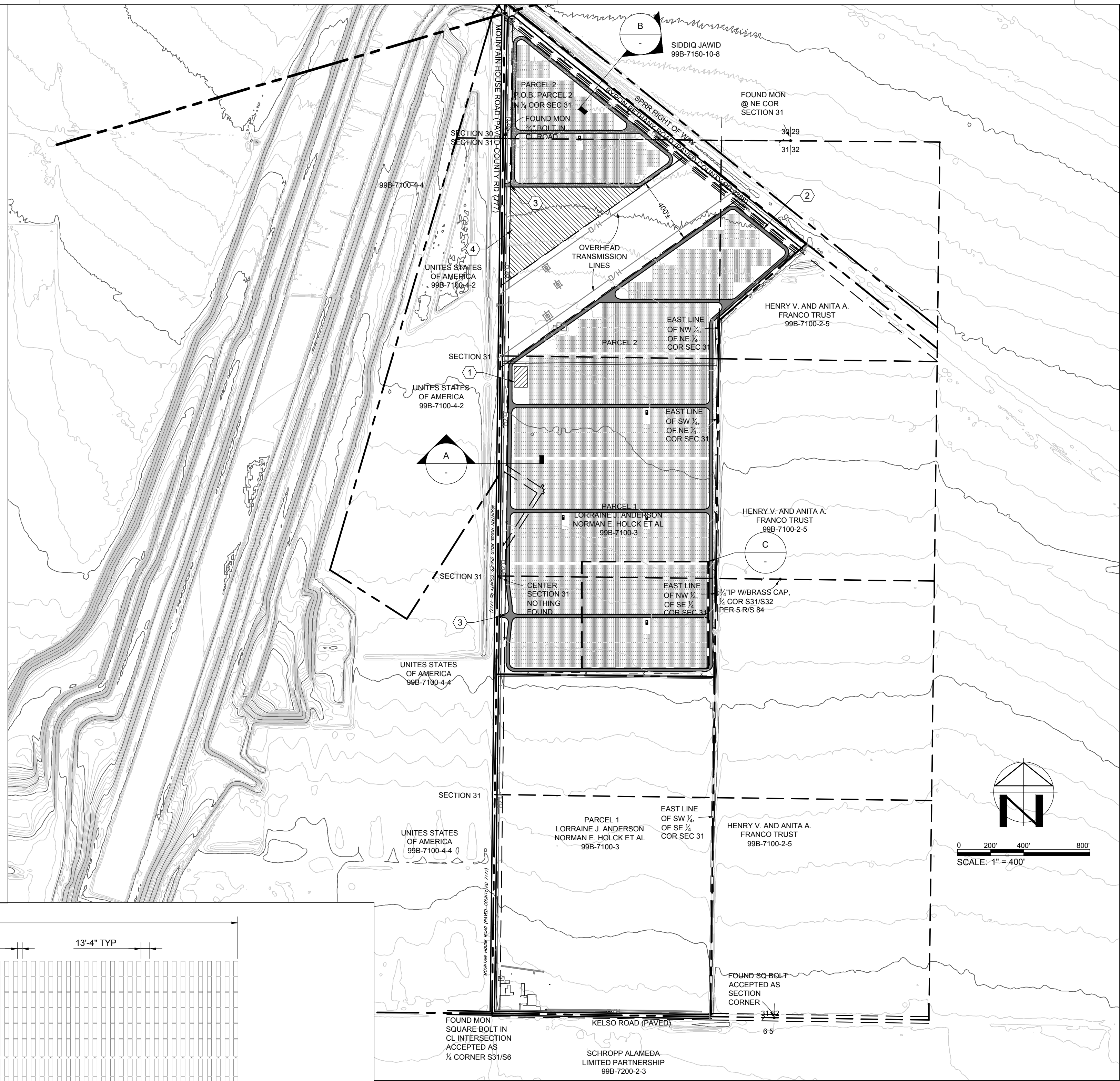
A SECTION ALONG MOUNTAIN HOUSE ROAD
SCALE: NTS



B SECTION ALONG BYRON - BETHANY ROAD
SCALE: NTS



C TYPICAL 2.2 MW INVERTER BLOCK
SCALE: 1" = 100'



LEGEND

	PROPERTY LINE
	EASEMENT
	(N) CHAIN LINK FENCE
	(N) MAINTENANCE ACCESS ROAD

- KEY NOTES:**
- (N) SOLAR FACILITY SUBSTATION. SUBSTATION DRAWINGS WILL BE PROVIDED SEPARATELY AT A FUTURE DATE.
 - (N) ACCESS MAINTENANCE ROAD (TYP).
 - (N) GATED ENTRANCE.
 - (N) 5 ACRE AREA RESERVED FOR BATTERY STORAGE.

PROPOSED LAND USE:	SOLAR FACILITY
TOTAL DC SYSTEM SIZE:	24. MW
TOTAL AC SYSTEM SIZE:	20.0 MVA

VICINITY MAP:

APPROX. NORTH

BLUE OAK ENERGY
1560 Drew Avenue
Davis, CA 95618
www.blueoakenergy.com
530.747.2026

CLIENT:

CALPINE
CORPORATION
717 TEXAS STREET
HUSTON, TX 77002

**PRELIMINARY
NOT FOR CONSTRUCTION**

- INTERNAL USE ONLY -

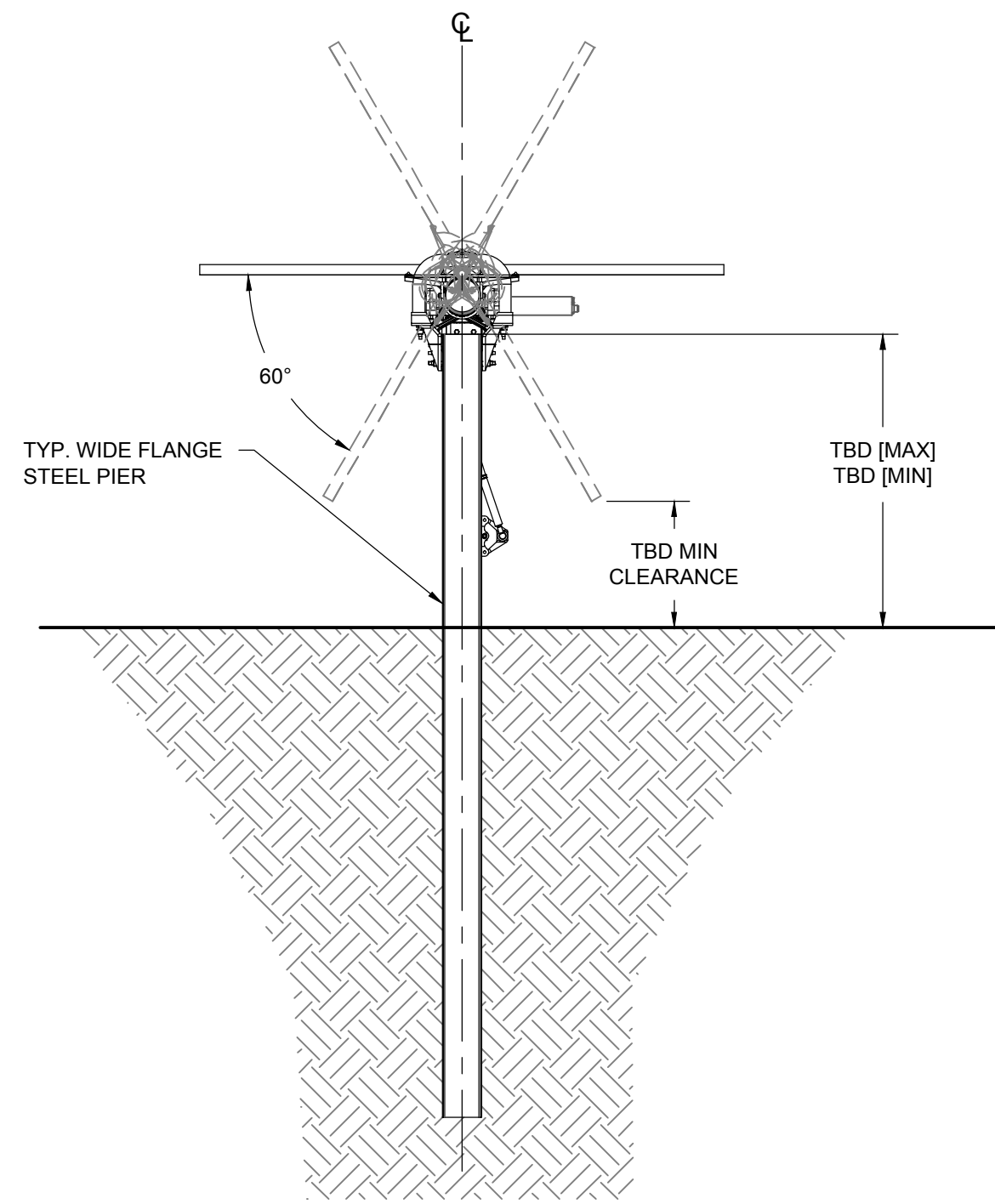
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DATE:	08/28/16	BY:	JAK	PRINTED:	08/28/2016	SubConsultPlan.dwg	

PROJECT: **CALSUN SOLAR PROJECT**
16808 KELSO ROAD
BYRON, CA 94714
ALAMEDA COUNTY

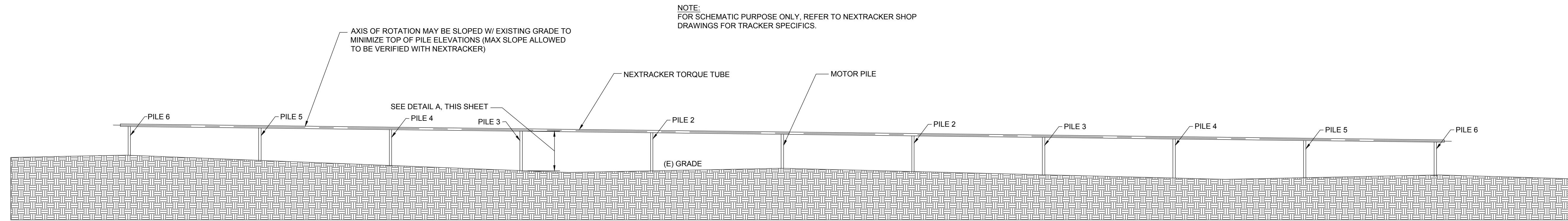
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DRAWING NO.: **EXH-1A**

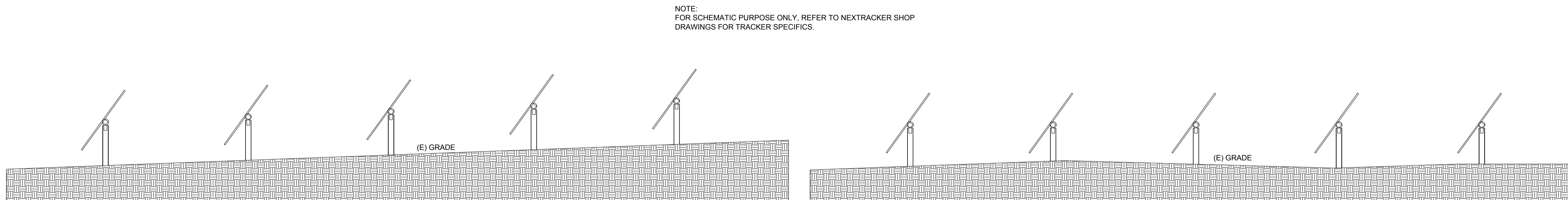
GENERAL NOTES:
 1. SINGLE AXIS TRACKER FOUNDATION SHALL BE STEEL PILE DRIVEN DIRECTLY INTO EARTH. PILE SHALL HAVE PROPER COATING TO PROTECT IT FOR THE DESIGN LIFE OF THE PROJECT.



A PILE DESIGN (TRACKER FOUNDATION)
 SCALE: NTS



B EAST/WEST ELEVATION
 SCALE: NTS



C NORTH/SOUTH ELEVATION
 SCALE: NTS

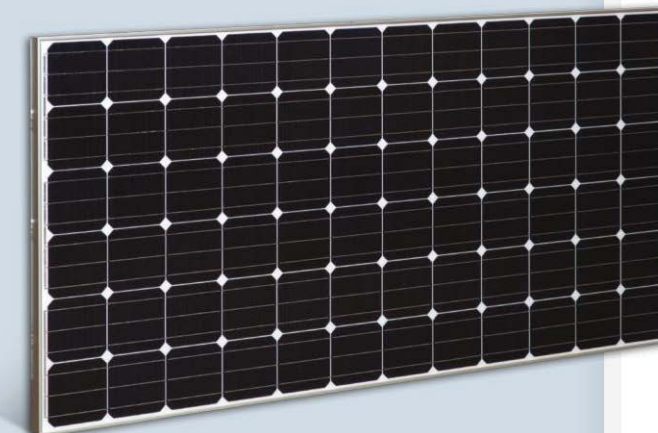
**PRELIMINARY
 NOT FOR CONSTRUCTION**

- INTERNAL USE ONLY -	
DRAWN	JAK
CHKD:	AMS
P.M.:	JTC
PROJECT #:	
CAO:16.002	
FILE NAME:	
08.28.16	JAK
DATE	BY (PRINTED)
08/28/2016	08/28/2016
PRELIMINARY	
DESCRIPTION	

PROJECT:
CALSUN SOLAR PROJECT
 1608 KELSOM ROAD
 ALAMEDA COUNTY

DRAWING TITLE:
TRACKER DETAILS

DRAWING NO.
EXH-1B



SUNIVA OPTIMUS® SERIES MONOCRYSTALLINE SOLAR MODULES

OPT SERIES: OPT 72 CELL MODULES (SILVER FRAME)

ENGINEERING EXCELLENCE

- Built exclusively with Suniva's premium ARTisun Select cells, providing one of the highest power outputs per square meter at an affordable price
- The leading US-born, US-operated crystalline silicon cell and module manufacturer, spun out of Georgia Tech's University Center of Excellence in Photovoltaics; one of only two such research centers in the US.
- Suniva's state-of-the-art manufacturing and module lab facilities feature the most advanced equipment and technology

QUALITY & RELIABILITY

- Suniva Optimus modules are manufactured and warranted to our specifications assuring consistent high performance and high quality.
- Rigorous in-house quality management tests beyond standard UL and IEC standards
- Performance longevity with advanced polymer backsheet
- UL1703 listed Type 2 PV module
- Passed the most stringent salt spray tests based on IEC 61701
- Passed enhanced stress tests based on IEC 61215 conducted at Fraunhofer ISE!
- PAN files are independently validated

MANUFACTURED IN Georgia & Michigan

Optimus® modules are known for their superior quality and long-term reliability. These high-powered modules consist of Suniva's premium ARTisun® Select cell technology and are designed and manufactured in the U.S.A. and North America using our pioneering ion implantation technology. Suniva's high power-density Optimus modules provide excellent performance and value.

FEATURES

- Utilizes our premier American-made cell technology, ARTisun Select®
- Superior performance and reliability; enhanced stress tests conducted at Fraunhofer ISE
- Module families ranging from 325-340W
- Positive only power tolerance
- Marine grade aluminum frame with hard anodized coating
- Certified PID-free by PV Evolution Labs (PVEL)
- Made in North America
- Qualifies for Ex-Im Financing
- 1000V UL
- 25 year linear power warranty; 10 year product warranty

CERTIFICATIONS



www.suniva.com



NX Horizon Self-Powered Tracker

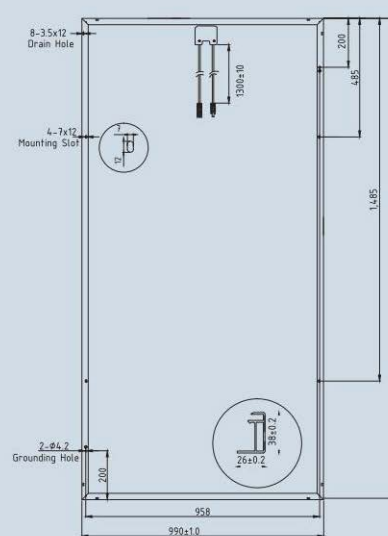
Our most amazing tracker yet.

In our mission to make solar a mainstream energy source, NEXTracker has engineered the most intelligent and flexible tracking technology yet. Using sustainable design methods with outcomes that benefit people and the planet, we bring you: NX Horizon™.

NX Horizon (formerly referred to as the Self-Powered Tracker or SPT), brings self-contained motor power to each row, eliminating power wiring and trenching. Our advanced horizontal tracker is designed to operate with far less power than other trackers and it has the widest rotational range available with the lowest O&M costs. By offering more powerful systems at a greater value, NEXTracker enables greater deployment of renewable energy worldwide.

NX Horizon key features and benefits include:

- Self-powered system with smart performance communications: Self-contained units on each row include a small dedicated watt PV panel to provide power to the controller which drives the motor and hosts intelligent control electronics to position each tracker. With smart communications built in, NX Horizon systems can be accessed remotely, providing customers with a granular view to optimize tracker performance, operations and maintenance.
- Independent balanced rows with 120 degree rotational range: Each NX Horizon row has its own controlled motor with rotational range that delivers up to 2% more energy than typically linked row trackers. These agile, independent rows stow in less than 90 seconds to reduce wind forces on the array, carefully protecting the PV modules in rapidly changing environments. NX Horizon solar trackers also have a mechanically balanced row design that align PV panels with the tracker's axis of rotation – which greatly reduces torsional load, using less energy from the motor to track throughout the day.
- Self-grounded system with theft-proof fasteners: NX Horizon is the world's first horizontal tracker with an entirely self-grounded design. This means no separate bonding hardware is required. You save on material and associated costs by eliminating grounding washers, braided straps, bare copper wire, and grounding rods. What's more, we've designed our own fasteners that can only be removed with special tools – deterring PV theft.



OPTIMUS SERIES: OPT 72 CELL MODULES

ELECTRICAL DATA (NOMINAL)

The rated power may only vary by -0.11W and all other electrical parameters by ± 5%

Module Type	OPT325-72-4-100	OPT330-72-4-100	OPT335-72-4-100	OPT340-72-4-100
Power Classification (Pmax)	325 W	330 W	335 W	340 W
Module Efficiency (%)	16.66%	16.92%	17.18%	17.43%
Voltage at Max. Power Point (Vmp)	37.5 V	37.6 V	37.7 V	37.8 V
Current at Max. Power Point (Imp)	8.67 A	8.78 A	8.89 A	8.99 A
Open Circuit Voltage (Voc)	45.8 V	45.9 V	45.9 V	46.0 V
Short Circuit Current (Isc)	9.42 A	9.54 A	9.66 A	9.78 A

The electrical data apply to standard test conditions (STC): irradiance of 1000 W/m² with AM 1.5 spectra at 25°C.

CHARACTERISTIC DATA

Type of Solar Cell	High-efficiency ARTisun Select cells, 3 and 5 busbar options available
Frame	Silver anodized aluminum alloy
Glass	Tempered (low-iron), anti-reflective coating
Junction Box	NEMA IP67 rated; 6 internal diodes
Cable & Connectors	12 AWG (4 mm²) PV Wire with multiple connector options available; cable length 1300 mm

MECHANICALS

Cells / Module	72 (6 x 12)
Module Dimensions	1970 x 990 mm (77.6 x 39 in.)
Module Thickness (Depth)	38 mm (1.5 in.)
Approximate Weight	23 kg (50.7 lbs.)

TEMPERATURE COEFFICIENTS

Voltage	β, Voc (%/°C)	-0.335
Current	α, Isc (%/°C)	+0.047
Power	γ, Pmax (%/°C)	-0.420
NOCT Avg	(+/- 2 °C)	46.0

LIMITS

Max. System Voltage	1000 VDC for IEC, 1000 VDC for UL
Max Series Fuse Rating	15 Amps
Operating Module Temperature	-40°C to +85°C (-40°F to +185°F)
Storm Resistance/Static Load	Tested to IEC 61215 for loads of 2400 Pa (50 psf); hail and wind resistant

Suniva® reserves the right to change the data at any time. View manual at suniva.com UVB 80 kWh, TC 400, DH 2000. *Tests were conducted on module type OPT 60 silver frame.

Please read installation manual before installing or working with module.

HEADQUARTERS
5755 Peachtree Industrial Blvd.
Norcross, Georgia 30092 USA
Tel: +1 678 477 2700
www.suniva.com

Product: Module per panel: OPT - 72 cell 123

Modular per panel: 53 W, 11.5 A, 30.0 V, 33.0 V, 36.0 V, 39.0 V, 42.0 V, 45.0 V, 48.0 V, 51.0 V, 54.0 V, 57.0 V, 60.0 V, 63.0 V, 66.0 V, 69.0 V, 72.0 V, 75.0 V, 78.0 V, 81.0 V, 84.0 V, 87.0 V, 90.0 V, 93.0 V, 96.0 V, 99.0 V, 102.0 V, 105.0 V, 108.0 V, 111.0 V, 114.0 V, 117.0 V, 120.0 V, 123.0 V, 126.0 V, 129.0 V, 132.0 V, 135.0 V, 138.0 V, 141.0 V, 144.0 V, 147.0 V, 150.0 V, 153.0 V, 156.0 V, 159.0 V, 162.0 V, 165.0 V, 168.0 V, 171.0 V, 174.0 V, 177.0 V, 180.0 V, 183.0 V, 186.0 V, 189.0 V, 192.0 V, 195.0 V, 198.0 V, 201.0 V, 204.0 V, 207.0 V, 210.0 V, 213.0 V, 216.0 V, 219.0 V, 222.0 V, 225.0 V, 228.0 V, 231.0 V, 234.0 V, 237.0 V, 240.0 V, 243.0 V, 246.0 V, 249.0 V, 252.0 V, 255.0 V, 258.0 V, 261.0 V, 264.0 V, 267.0 V, 270.0 V, 273.0 V, 276.0 V, 279.0 V, 282.0 V, 285.0 V, 288.0 V, 291.0 V, 294.0 V, 297.0 V, 300.0 V, 303.0 V, 306.0 V, 309.0 V, 312.0 V, 315.0 V, 318.0 V, 321.0 V, 324.0 V, 327.0 V, 330.0 V, 333.0 V, 336.0 V, 339.0 V, 342.0 V, 345.0 V, 348.0 V, 351.0 V, 354.0 V, 357.0 V, 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1023.0 V, 1026.0 V, 1029.0 V, 1032.0 V, 1035.0 V, 1038.0 V, 1041.0 V, 1044.0 V, 1047.0 V, 1050.0 V, 1053.0 V, 1056.0 V, 1059.0 V, 1062.0 V, 1065.0 V, 1068.0 V, 1071.0 V, 1074.0 V, 1077.0 V, 1080.0 V, 1083.0 V, 1086.0 V, 1089.0 V, 1092.0 V, 1095.0 V, 1098.0 V, 1101.0 V, 1104.0 V, 1107.0 V, 1110.0 V, 1113.0 V, 1116.0 V, 1119.0 V, 1122.0 V, 1125.0 V, 1128.0 V, 1131.0 V, 1134.0 V, 1137.0 V, 1140.0 V, 1143.0 V, 1146.0 V, 1149.0 V, 1152.0 V, 1155.0 V, 1158.0 V, 1161.0 V, 1164.0 V, 1167.0 V, 1170.0 V, 1173.0 V, 1176.0 V, 1179.0 V, 1182.0 V, 1185.0 V, 1188.0 V, 1191.0 V, 1194.0 V, 1197.0 V, 1200.0 V, 1203.0 V, 1206.0 V, 1209.0 V, 1212.0 V, 1215.0 V, 1218.0 V, 1221.0 V, 1224.0 V, 1227.0 V, 1230.0 V, 1233.0 V, 1236.0 V, 1239.0 V, 1242.0 V, 1245.0 V, 1248.0 V, 1251.0 V, 1254.0 V, 1257.0 V, 1260.0 V, 1263.0 V, 1266.0 V, 1269.0 V, 1272.0 V, 1275.0 V, 1278.0 V, 1281.0 V, 1284.0 V, 1287.0 V, 1290.0 V, 1293.0 V, 1296.0 V, 1299.0 V, 1302.0 V, 1305.0 V, 1308.0 V, 1311.0 V, 1314.0 V, 1317.0 V, 1320.0 V, 1323.0 V, 1326.0 V, 1329.0 V, 1332.0 V, 1335.0 V, 1338.0 V, 1341.0 V, 1344.0 V, 1347.0 V, 1350.0 V, 1353.0 V, 1356.0 V, 1359.0 V, 1362.0 V, 1365.0 V, 1368.0 V, 1371.0 V, 1374.0 V, 1377.0 V, 1380.0 V, 1383.0 V, 1386.0 V, 1389.0 V, 1392.0 V, 1395.0 V, 1398.0 V, 1401.0 V, 1404.0 V, 1407.0 V, 1410.0 V, 1413.0 V, 1416.0 V, 1419.0 V, 1422.0 V, 1425.0 V, 1428.0 V, 1431.0 V, 1434.0 V, 1437.0 V, 1440.0 V, 1443.0 V, 1446.0 V, 1449.0 V, 1452.0 V, 1455.0 V, 1458.0 V, 1461.0 V, 1464.0 V, 1467.0 V, 1470.0 V, 1473.0 V, 1476.0 V, 1479.0 V, 1482.0 V, 1485.0 V, 1488.0 V, 1491.0 V, 1494.0 V, 1497.0 V, 1500.0 V, 1503.0 V, 1506.0 V, 1509.0 V, 1512.0 V, 1515.0 V, 1518.0 V, 1521.0 V, 1524.0 V, 1527.0 V, 1530.0 V, 1533.0 V, 1536.0 V, 1539.0 V, 1542.0 V, 1545.0 V, 1548.0 V, 1551.0 V, 1554.0 V, 1557.0 V, 1560.0 V, 1563.0 V, 1566.0 V, 1569.0 V, 1572.0 V, 1575.0 V, 1578.0 V, 1581.0 V, 1584.0 V, 1587.0 V, 1590.0 V, 1593.0 V, 1596.0 V, 1599.0 V, 1602.0 V, 1605.0 V, 1608.0 V, 1611.0 V, 1614.0 V, 1617.0 V, 1620.0 V, 1623.0 V, 1626.0 V, 1629.0 V, 1632.0 V, 1635.0 V, 1638.0 V, 1641.0 V, 1644.0 V, 1647.0 V, 1650.0 V, 1653.0 V, 1656.0 V, 1659.0 V, 1662.0 V, 1665.0 V, 1668.0 V, 1671.0 V, 1674.0 V, 1677.0 V, 1680.0 V, 1683.0 V, 1686.0 V, 1689.0 V, 1692.0 V, 1695.0 V, 1698.0 V, 1701.0 V, 1704.0 V, 1707.0 V, 1710.0 V, 1713.0 V, 1716.0 V, 1719.0 V, 1722.0 V, 1725.0 V, 1728.0 V, 1731.0 V, 1734.0 V, 1737.0 V, 1740.0 V, 1743.0 V, 1746.0 V, 1749.0 V, 1752.0 V, 1755.0 V, 1758.0 V, 1761.0 V, 1764.0 V, 1767.0 V, 1770.0 V, 1773.0 V, 1776.0 V, 1779.0 V, 1782.0 V, 1785.0 V, 1788.0 V, 1791.0 V, 1794.0 V, 1797.0 V, 1800.0 V, 1803.0 V, 1806.0 V, 1809.0 V, 1812.0 V, 1815.0 V, 1818.0 V, 1821.0 V, 1824.0 V, 1827.0 V, 1830.0 V, 1833.0 V, 1836.0 V, 1839.0 V, 1842.0 V, 1845.0 V, 1848.0 V, 1851.0 V, 1854.0 V, 1857.0 V, 1860.0 V, 1863.0 V, 1866.0 V, 1869.0 V, 1872.0 V, 1875.0 V, 1878.0 V, 1881.0 V, 1884.0 V, 1887.0 V, 1890.0 V, 1893.0 V, 1896.0 V, 1899.0 V, 1902.0 V, 1905.0 V, 1908.0 V, 1911.0 V, 1914.0 V, 1917.0 V, 1920.0 V, 1923.0 V, 1926.0 V, 1929.0 V, 1932.0 V, 1935.0 V, 1938.0 V, 1941.0 V, 1944.0 V, 1947.0 V, 1950.0 V, 1953.0 V, 1956.0 V, 1959.0 V, 1962.0 V, 1965.0 V, 1968.0 V, 1971.0 V, 1974.0 V, 1977.0 V, 1980.0 V, 1983.0 V, 1986.0 V, 1989.0 V, 1992.0 V, 1995.0 V, 1998.0 V, 2001.0 V, 2004.0 V, 2007.0 V, 2010.0 V, 2013.0 V, 2016.0 V, 2019.0 V, 2022.0 V, 2025.0 V, 2028.0 V, 2031.0 V, 2034.0 V, 2037.0 V, 2040.0 V, 2043.0 V, 2046.0 V, 2049.0 V, 2052.0 V, 2055.0 V, 2058.0 V, 2061.0 V, 2064.0 V, 2067.0 V, 2070.0 V, 2073.0 V, 2076.0 V, 2079.0 V, 2082.0 V, 2085.0 V, 2088.0 V, 2091.0 V, 2094.0 V, 2097.0 V, 2100.0 V, 2103.0 V, 2106.0 V, 2109.0 V, 2112.0 V, 2115.0 V, 2118.0 V, 2121.0 V, 2124.0 V, 2127.0 V, 2130.0 V, 2133.0 V, 2136.0 V, 2139.0 V, 2142.0 V, 2145.0 V, 2148.0 V, 2151.0 V, 2154.0 V, 2157.0 V, 2160.0 V, 2163.0 V, 2166.0 V, 2169.0 V, 2172.0 V, 2175.0 V, 2178.0 V, 2181.0 V, 2184.0 V, 2187.0 V, 2190.0 V, 2193.0 V, 2196.0 V, 2199.0 V, 2202.0 V, 2205.0 V, 2208.0 V, 2211.0 V, 2214.0 V, 2217.0 V, 2220.0 V, 2223.0 V, 2226.0 V, 2229.0 V, 2232.0 V, 2235.0 V, 2238.0 V, 2241.0 V, 2244.0 V, 2247.0 V, 2250.0 V, 2253.0 V, 2256.0 V, 2259.0 V, 2262.0 V, 2265.0 V, 2268.0 V, 2271.0 V, 2274.0 V, 2277.0 V, 2280.0 V, 2283.0 V, 2286.0 V, 2289.0 V, 2292.0 V, 2295.0 V, 2298.0 V, 2301.0 V, 2304.0 V, 2307.0 V, 2310.0 V, 2313.0 V, 2316.0 V, 2319.0 V, 2322.0 V, 2325.0 V, 2328.0 V, 2331.0 V, 2334.0 V, 2337.0 V, 2340.0 V, 2343.0 V, 2346.0 V, 2349.0 V, 2352.0 V, 2355.0 V, 2358.0 V, 2361.0 V, 2364.0 V, 2367.0 V, 2370.0 V, 2373.0 V, 2376.0 V, 2379.0 V, 2382.0 V, 2385.0 V, 2388.0 V, 2391.0 V, 2394.0 V, 2397.0 V, 2400.0 V, 2403.0 V, 2406.0 V, 2409.0 V, 2412.0 V, 2415.0 V, 2418.0 V, 2421.0 V, 2424.0 V, 2427.0 V, 2430.0 V, 2433.0 V, 2436.0 V, 2439.0 V, 2442.0 V, 2445.0 V, 2448.0 V, 2451.0 V, 2454.0 V, 2457.0 V, 2460.0 V, 2463.0 V, 2466.0 V, 2469.0 V, 2472.0 V, 2475.0 V, 2478.0 V, 2481.0 V, 2484.0 V, 2487.0 V, 2490.0 V, 2493.0 V, 2496.0 V, 2499.0 V, 2502.0 V, 2505.0 V, 2508.0 V, 2511.0 V, 2514.0 V, 2517.0 V, 2520.0 V, 2523.0 V, 2526.0 V, 2529.0 V, 2532.0 V, 2535.0 V, 2538.0 V, 2541.0 V, 2544.0 V, 2547.0 V, 2550.0 V, 2553.0 V, 2556.0 V, 2559.0 V, 2562.0 V, 2565.0 V, 2568.0 V, 2571.0 V, 2574.0 V, 2577.0 V, 2580.0 V, 2583.0 V, 2586.0 V, 2589.0 V, 2592.0 V, 2595.0 V, 2598.0 V, 2601.0 V, 2604.0 V, 2607.0 V, 2610.0 V, 2613.0 V, 2616.0 V, 2619.0 V, 2622.0 V, 2625.0 V, 2628.0 V, 2631.0 V, 2634.0 V, 2637.0 V, 2640.0 V, 2643.0 V, 2646.0 V, 2649.0 V, 2652.0 V, 2655.0 V, 2658.0 V, 2661.0 V, 2664.0 V, 2667.0 V, 2670.0 V, 2673.0 V, 2676.0 V, 2679.0 V, 2682.0 V, 2685.0 V, 2688.0 V, 2691.0 V, 2694.0 V, 2697.0 V, 2700.0 V, 2703.0 V, 2706.0 V, 2709.0 V, 2712.0 V, 2715.0 V, 2718.0 V, 2721.0 V, 2724.0 V, 2727.0 V, 2730.0 V, 2733.0 V, 2736.0 V, 2739.0 V, 2742.0 V, 2745.0 V, 2748.0 V, 2751.0 V, 2754.0 V, 2757.0 V, 2760.0 V, 2763.0 V, 2766.0 V, 2769.0 V, 2772.0 V, 2775.0 V, 2778.0 V, 2781.0 V, 2784.0 V, 2787.0 V, 2790.0 V, 2793.0 V, 2796.0 V, 2799.0 V, 2802.0 V, 2805.0 V, 2808.0 V, 2811.0 V, 2814.0 V, 2817.0 V, 2820.0 V, 2823.0 V, 2826.0 V, 2829.0 V, 2832.0 V, 2835.0 V, 2838.0 V, 2841.0 V, 2844.0 V, 2847.0 V, 2850.0 V, 2853.0 V, 2856.0 V, 2859.0 V, 2862.0 V, 2865.0 V, 2868.0 V, 2871.0 V, 2874.0 V, 2877.0 V, 2880.0 V, 2883.0 V, 2886.0 V, 2889.0 V, 2892.0 V, 2895.0 V, 2898.0 V, 2901.0 V, 2904.0 V, 2907.0 V, 2910.0 V, 2913.0 V, 2916.0 V, 2919.0 V, 2922.0 V, 2925.0 V, 2928.0 V, 2931.0 V, 2934.0 V, 2937.0 V, 2940.0 V, 2943.0 V, 2946.0 V, 2949.0 V, 2952.0 V, 2955.0 V, 2958.0 V, 2961.0 V, 2964.0 V, 2967.0 V, 2970.0 V, 2973.0 V, 2976.0 V, 2979.0 V, 2982.0 V, 2985.0 V, 2988.0 V, 2991.0 V, 2994.0 V,

Appendix B
Air Quality and GHG Calculations

Appendix B - Air Emissions Calculations

TABLE B-1

Construction Emissions Summary

CalSun Solar Energy Project

Construction Emissions with BMPs for Dust Control

Construction Period	Criteria Pollutant Emissions ^a					
	VOC	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}
Average Daily Emissions (lbs/day)	3.61	24.5	38.1	0.06	5.12	2.81
Project Emissions (tons/year)	0.33	2.21	3.43	0.01	0.46	0.25
BAAQMD Thresholds of Significance (lbs/day) ^b	54	--	54	--	82	54
Exceeds Threshold (Y/N)?	N	N	N	N	N	N

Construction Period	GHG Emissions ^a	
	CO ₂	CO ₂ e ^c
Average Daily Emissions (lbs/day)	5,928	6,224
Project Emissions (metric tons/year)	484	508
CARB Thresholds of Significance (metric tons/year) ^d	--	7,000
Exceeds Threshold (Y/N)?	N	N

Notes:

^a It was assumed that all construction equipment and vehicles could operate simultaneously on any given day during the project. Average daily emissions were determined per BAAQMD guidance by dividing total project emissions by the overall construction duration of 180 days.

^b BAAQMD Thresholds of Significance taken from Table 2-1 of the *Draft 2010 CEQA Air Quality Guidelines* (BAAQMD, 2010b).

^c Only CO₂ emission factors were available for all types of construction equipment utilized for this project. Emissions of CH₄ and N₂O from combustion sources are expected to be much lower than emissions of CO₂, contributing in the range of 2 to 4 percent of the total CO₂e emissions (CARB, 2017e). Therefore, the CO₂ emissions were conservatively increased by 5 percent to calculate CO₂e emissions, accounting for the potential CH₄ and N₂O emissions associated with construction activities.

^d CARB Thresholds of Significance taken as the statewide interim thresholds of significance for GHGs (CARB, 2008)

Appendix B - Air Emissions Calculations

TABLE B-2

Construction Emissions

Calsun Solar Energy Project

Equipment / Vehicle List ^a	Equipment / Vehicle Type	Quantity ^a	Quantity Units	Number of Days Used ^a	Hours per Day ^a	Miles per Day ^b	Emissions (lbs/day) ^c								Emissions (tons/year) ^c								CO ₂ Emissions (metric tons/year) ^c	
							VOC	CO	NO _x	SO ₂	PM ₁₀ Exhaust	PM _{2.5} Exhaust	PM ₁₀ Fugitive	PM _{2.5} Fugitive	CO ₂	VOC	CO	NO _x	SO ₂	PM ₁₀ Exhaust	PM _{2.5} Exhaust	PM ₁₀ Fugitive		PM _{2.5} Fugitive
Scraper	Construction Equipment	3	--	20	10	--	3.996	30.230	48.426	0.058	1.899	1.748	--	--	5,624.210	0.040	0.302	0.484	0.001	0.019	0.017	--	--	51.022
Blade	Construction Equipment	2	--	20	10	--	1.217	4.595	16.449	0.017	0.527	0.487	--	--	1,644.040	0.012	0.046	0.164	0.000	0.005	0.005	--	--	14.914
Compactor	Construction Equipment	2	--	20	10	--	0.100	0.526	0.628	0.001	0.024	0.024	--	--	86.197	0.001	0.005	0.006	0.000	0.000	0.000	--	--	0.782
Water Truck	Construction Equipment	2	--	180	10	--	1.771	9.992	17.974	0.034	0.653	0.599	--	--	3,269.274	0.159	0.899	1.618	0.003	0.059	0.054	--	--	266.926
Excavator	Construction Equipment	2	--	60	10	--	0.651	8.158	6.705	0.013	0.323	0.296	--	--	1,277.793	0.020	0.245	0.201	0.000	0.010	0.009	--	--	34.776
Backhoe	Construction Equipment	2	--	60	10	--	0.582	5.757	5.843	0.008	0.391	0.359	--	--	768.842	0.017	0.173	0.175	0.000	0.012	0.011	--	--	20.924
Pile Driver	Construction Equipment	2	--	60	10	--	1.261	5.733	15.017	0.015	0.638	0.585	--	--	1,428.002	0.038	0.172	0.451	0.000	0.019	0.018	--	--	38.864
Forklift	Construction Equipment	3	--	120	10	--	0.599	4.478	5.356	0.006	0.414	0.381	--	--	567.442	0.036	0.269	0.321	0.000	0.025	0.023	--	--	30.887
Onsite Pick-up Truck	Light-duty Truck	10	--	180	--	0.25	0.000	0.010	0.001	0.000	0.000	0.000	0.926	0.093	3.645	0.000	0.001	0.000	0.000	0.000	0.000	0.083	0.008	0.298
Offsite Worker Commute ^d	Light-duty Auto/Truck	23	--	180	--	21.6	0.019	1.044	0.096	0.003	0.050	0.021	0.322	0.080	301.355	0.002	0.094	0.009	0.000	0.004	0.002	0.029	0.007	24.605
Fugitive Dust ^e	Truck Dumping/Loading	24,600	yd ³ /project	20	--	--	--	--	--	--	--	0.043	0.007	--	--	--	--	--	--	--	0.000	0.000	--	
Fugitive Dust ^{f,g,h}	Grading/Scraping	89.10	acres/project	20	10	3.06	--	--	--	--	--	1.843	0.199	--	--	--	--	--	--	--	0.018	0.002	--	
Fugitive Dust	Bulldozing	2	--	60	10	--	--	--	--	--	--	5.872	3.227	--	--	--	--	--	--	--	0.176	0.097	--	
TOTAL							10.198	70.523	116.494	0.155	4.920	4.501	9.005	3.606	14,970.800	0.325	2.206	3.430	0.006	0.153	0.139	0.307	0.114	483.997

Notes:

-- = Parameter not required for computing emissions.

^a Unless otherwise noted, Equipment / Vehicle List, Quantity, Number of Days Used, and Hours per Day provided by D. Davy/CH2M on 3/1/2017 (CalSun Byron Solar PV Project.msg).

^b Unless otherwise noted, onsite pick-up trucks were assumed to travel up to 25% of the total project length (1 mile) each day and distances for offsite worker commutes were taken as the rural H-W trip length for the San Francisco Bay Area from Table 4.2 of Appendix A of the *CalEEMod User's Guide* (Environ, 2016).

^c The following conversion factors were used to estimate emissions:

1 lb =	453.6	g
1 metric ton =	2,204.62	lbs
1 ton =	2,000	lbs
1 yd ³ =	1.2641662	tons
1 mile =	5,280	ft
1 acre =	43,560	ft ²

^d Number of worker commutes was based on 1.25 workers per construction equipment, consistent with Section 4.5 of Appendix A of the *CalEEMod User's Guide* (Environ, 2016).

^e Truck Dumping/Loading was conservatively assumed to occur over 20 days, and accounts for both imported fill volumes and exported cut volumes.

^f Per Section 4.3 of Appendix A of the *CalEEMod User's Guide* (Environ, 2016), the duration of Grading/Scraping activities was loosely calculated based on the assumption that each blade could disturb 0.5 acres per 8-hour day and each scraper could disturb 1 acre per 8-hour day.

^g Miles per Day traveled by the blade and scraper for Grading/Scraping activities were calculated per the following equation from Section 4.3 of Appendix A of the *CalEEMod User's Guide* (Environ, 2016):

$$\text{VMT (miles)} = A_s \text{ (acre)} / W_b \text{ (ft)} \times 43,560 \text{ (ft}^2\text{/acre)} / 5,280 \text{ (ft/mile)}$$

^h Per Section 4.3 of Appendix A of the *CalEEMod User's Guide* (Environ, 2016), the following blade width was assumed for grading/scraping equipment: 12 ft

Appendix B - Air Emissions Calculations

TABLE B-3

Construction Equipment Emission Factors

CalSun Solar Energy Project

Equipment	OFFROAD2011 Equipment Type	Horsepower ^a	Load Factor ^a	Emission Factors (g/bhp-hr) ^b						
				VOC	CO	NO _x	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Scraper	Scraper	367	0.48	0.343	2.595	4.156	0.005	0.163	0.150	482.732
Blade	Grader	187	0.41	0.360	1.359	4.866	0.005	0.156	0.144	486.329
Compactor	Plate Compactor	8	0.43	0.661	3.469	4.142	0.008	0.161	0.161	568.299
Water Truck	Off-Highway Truck	402	0.38	0.263	1.483	2.669	0.005	0.097	0.089	485.383
Excavator	Excavator	158	0.38	0.246	3.082	2.533	0.005	0.122	0.112	482.684
Backhoe	Tractor/Loader/Backhoe	97	0.37	0.368	3.638	3.693	0.005	0.247	0.227	485.855
Pile Driver	Crane	231	0.29	0.427	1.941	5.084	0.005	0.216	0.198	483.462
Forklift	Forklift	89	0.20	0.509	3.804	4.550	0.005	0.352	0.324	482.007

Notes:

^a Horsepower and Load Factors taken as the default, average values provided in Table 3.3 of Appendix D of the *CalEEMod User's Guide* (Environ, 2016).

^b Emission Factors taken as the defaults for the year 2019 provided in Table 3.4 of Appendix D of the *CalEEMod User's Guide* (Environ, 2016).

Appendix B - Air Emissions Calculations

TABLE B-4

Vehicle Emission Factors
CalSun Solar Energy Project

Vehicle	Vehicle Class ^a	Exhaust Emission Factors (g/mile) ^b							Road Emission Factors (g/mile) ^c		
		VOC	CO	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^d	CO ₂	PM ₁₀	PM _{2.5}	PM _{2.5}
Onsite Pick-up Truck	Light-duty Truck	0.070	1.890	0.168	0.007	0.051	0.023	661.395	373.321	37.332	167.995
Offsite Worker Commute	Light-duty Auto/Truck	0.017	0.975	0.089	0.003	0.046	0.019	281.265	0.300	0.075	0.300

Notes:

^a The vehicle classes are represented as follows:

Light-duty Truck: Assumed to be an average of LDT1, GAS and LDT2, GAS values.

Light-duty Auto/Truck: Assumed to be 50% LDA, GAS; 25% LDT1, GAS; and 25% LDT2, GAS values, per Section 4.5 of Appendix A of the *CalEEMod User's Guide* (Environ, 2016).

^b Exhaust Emission Factors from EMFAC2014 for Alameda County, calendar year 2019. EMFAC2007 Vehicle Categories were used. A speed of 40 mph was assumed for offsite, onroad vehicles, which is consistent with the CalEEMod default. A speed of 15 mph was assumed for onsite, offroad vehicles. A temperature of 62°F and relative humidity of 67% were used per Table B-1 of *CT-EMFAC: A Computer Model to Estimate Transportation Project Emissions* (Wu, Bai, Eisinger, and Niemeier, 2007).

^c Paved and unpaved road emission factors were calculated using CalEEMod methodology, as described below. Mitigation was not considered for paved road emission factors because the cost of implementation would be too great.

^d The PM₁₀ and PM_{2.5} emission factors include tire and brake wear.

Derivation of Paved Road Emission Factors

Parameter	PM ₁₀	PM _{2.5}
Average Weight ^a	2.4	2.4
k ^b	1	0.25
sL ^a	0.1	0.1
Emission Factor (g/mile)^c	0.300	0.075

Notes:

^a Average Weight and sL taken as the default values from CalEEMod for Alameda County.

^b k taken from Table 13.2.1-1 of Section 13.2.1 of AP-42 (EPA, 2011).

^c Emission factor calculated per Section 5.3 of Appendix A of the *CalEEMod User's Guide* (Environ, 2016):
 Emission Factor (g/mile) = k (g/mile) x [sL (g/m²)^{0.91} x [Average Weight (tons)]^{1.02}]

Derivation of Unpaved Road Emission Factors

Parameter	PM ₁₀	PM _{2.5}
Mean Vehicle Weight ^a	2.4	2.4
Silt Content ^b	8.5	8.5
k ^c	1.5	0.15
a ^c	0.9	0.9
b ^c	0.45	0.45
p ^d	63	63
Emission Factor (g/mile)^e	373.321	37.332
Reduction for Watering 2x Daily^f	55%	55%
Controlled Emission Factor (g/mile)	167.995	16.799

TABLE B-4
Vehicle Emission Factors
CalSun Solar Energy Project

Notes:

- ^a Mean Vehicle Weight taken as the CalEEMod default for Alameda County, assuming only light-duty trucks travel on unpaved roads.
- ^b Silt Content taken from Table 13.2.2-1 of Section 13.2.2 of AP-42 (EPA, 2006) for a Construction Site, Scraper Route; this value is consistent with the CalEEMod defaults.
- ^c k, a, and b taken from Table 13.2.2-2 of Section 13.2.2 of AP-42 (EPA, 2006) for industrial roads.
- ^d P taken as the CalEEMod default for the climate region of Alameda County.
- ^e Emission factor calculated using Equations 1a and 2 from Section 13.2.2 of AP-42 (EPA, 2006):
Emission Factor (g/mile) = $\{k \text{ (lbs/mile)}\} \times \{[\text{Silt Content (\%)} / 12]^a\} \times \{[\text{Mean Vehicle Weight (tons)} / 3]^b\} \times \{[365 \cdot P] / 365\} \times 453.6 \text{ (g/lb)}$
- ^f Percent reduction taken from Table XI-D of the CEQA Air Quality Analysis Handbook (SCAQMD, 2007) per the proposed BMPs.

Appendix B - Air Emissions Calculations

TABLE B-5

**Fugitive Dust Emission Factors
CalSun Solar Energy Project**

Fugitive Dust Emission Factors for Truck Dumping/Loading

Parameter	PM ₁₀	PM _{2.5}
k ^a	0.35	0.053
U ^b	4.9	4.9
M ^a	12.0	12.0
Emission Factor (lb/ton) ^c	0.0001	0.00001
Reduction from Watering to Maintain 12% Moisture ^d	69%	69%
Controlled Emission Factor (lb/ton)	0.00003	0.000004

Notes:

- ^a k and M taken from Section 4.3 of Appendix A of the CalEEMod User's Guide (Environ, 2016).
- ^b U taken as the CalEEMod default for the climate region of Alameda County. Value converted from units of m/s to mph.
- ^c Emission factor calculated using the following equation from Section 4.3 of Appendix A of the CalEEMod User's Guide (Environ, 2016):
Emission Factor (lb/ton) = $k \times 0.0032 \times [U \text{ (mph)} / 5]^{1.3} / [M \text{ (%) / 2}]^{1.4}$
- ^d Control efficiency taken from Table XI-A of the CEQA Air Quality Analysis Handbook (SCAQMD, 2007) per the proposed BMPs.

Fugitive Dust Emission Factors for Grading/Scraping

Parameter	PM ₁₀	PM _{2.5}
S ^a	7.1	7.1
F ^a	0.6	0.031
Emission Factor (lb/mile) ^b	1.543	0.167
Reduction for Watering Every 3 Hours ^c	61%	61%
Controlled Emission Factor (lb/mile)	0.602	0.065

Notes:

- ^a S and F taken from Section 4.3 of Appendix A of the CalEEMod User's Guide (Environ, 2016).
- ^b Emission factor calculated using the following equation from Section 4.3 of Appendix A of the CalEEMod User's Guide (Environ, 2016):
PM₁₀ Emission Factor (lb/mile) = $0.051 \times [S \text{ (mph)}]^{2.0} \times F_{PM10}$
PM_{2.5} Emission Factor (lb/mile) = $0.04 \times [S \text{ (mph)}]^{2.5} \times F_{PM2.5}$
- ^c Control efficiency taken from Table XI-A of the CEQA Air Quality Analysis Handbook (SCAQMD, 2007) per the proposed BMPs.

Fugitive Dust Emission Factors for Bulldozing with Backhoes

Parameter	PM ₁₀	PM _{2.5}
C ^a	1.0	5.7
M ^a	7.9	7.9
S ^a	6.9	6.9
F ^a	0.75	0.105
Emission Factor (lb/hr) ^b	0.753	0.414
Reduction for Watering Every 3 Hours ^c	61%	61%
Controlled Emission Factor (lb/hr)	0.294	0.161

Notes:

- ^a C, M, S, and F taken from Section 4.3 of Appendix A of the CalEEMod User's Guide (Environ, 2016).
- ^b Emission factor calculated using the following equation from Section 4.3 of Appendix A of the CalEEMod User's Guide (Environ, 2016):
PM₁₀ Emission Factor (lb/hr) = $\{[C \times S \text{ (%) }^{1.5}] / [M \text{ (%) }^{1.4}]\} \times F_{PM10}$
PM_{2.5} Emission Factor (lb/hr) = $\{[C \times S \text{ (%) }^{1.2}] / [M \text{ (%) }^{1.3}]\} \times F_{PM2.5}$
- ^c Control efficiency taken from Table XI-A of the CEQA Air Quality Analysis Handbook (SCAQMD, 2007) per the proposed BMPs.

Appendix C
Biological Resources Evaluation

S U R V E Y R E P O R T

Biological Resources Habitat Assessment for the CalSun Solar Energy Project

Prepared for
Calpine
Corporation



January 2017



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Appendixes

Appendix A Map Figures

Appendix B Representative Site Photographs

Appendix C Wildlife Species Observed during August 18, 2016 Site Reconnaissance

Appendix D Special-status Species Analyzed for Potential Presence at Project Site

Acronyms and Abbreviations

CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH2M	CH2M HILL Engineers, Inc.
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CSC	California Species of Concern
CWA	Clean Water Act
EACCS	East Alameda County Conservation Strategy
ECAP	East County Area Plan
EPA	Environmental Protection Agency
ESA	Endangered Species Act
Proposed project	Calsun-Bryon Solar Energy Project
RWQCB	Regional Water Quality Control Board
SWRCB	State Water Resources Control Board
USACE	United States Army Corps of Engineers
USFWS	United State Fish and Wildlife Service
WDR	waste discharge requirements

Introduction

This Biological Resources Habitat Assessment Report for the Calpine Corporation's CalSun Solar Energy Project (proposed project) discusses the existing conditions in the study area including vegetation communities, sensitive biological resources, and special-status plant and wildlife species that are known to occur or have the potential to occur onsite. The CalSun project is a proposal to construct a 20 MW solar photovoltaic energy facility in eastern Alameda County, California, near the intersection of Byron-Bethany and Mountain House Roads.

This report comprises the following elements:

- Review of the regulatory framework including federal, state, and local jurisdictions
- Review of the existing habitat characteristics including vegetation communities, soils, and hydrology
- Review of special-status wildlife known to occur, or that could potentially occur in the area
- Location of any known occurrences of special-status wildlife species within the study area vicinity
- Location of potentially sensitive habitats, including wetlands, perennial and intermittent drainages, and riparian areas

The following appendixes support this report:

- Map Figures
- Representative Site Photographs
- Plant and Animal Species Observed during the Site Reconnaissance
- Special-status Plant and Wildlife Species Evaluated for the Project Area

On August 18, 2016, CH2M biologist Todd Ellwood conducted a field reconnaissance of the Study Area to assess the habitat occurring on the site and to determine the potential for presence of special-status species.

In summary, the site selected for the proposed project is a highly disturbed agricultural parcel in far northeastern Alameda County. Special-status species such as San Joaquin kit fox (*Vulpes macrotis mutica*), California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), Swainson's hawk (*Buteo swainsoni*), and vernal pool fairy shrimp (*Branchinecta lynchi*) are known from the region, particularly west of the site where the valley floor transitions from agriculture to California annual grassland. Industrial and agricultural developments bordering the project site including orchard and row crop parcels, networks of concrete lined aqueducts and irrigation canals, an electrical individuals to the site. The project site lacks suitable aquatic habitat for special-status aquatic species.

1.1 Project Description

1.1.1 Project Objectives

CalSun will use arrays of solar photovoltaic (PV) panels to provide clean, renewable energy that will help California's utilities to meet the renewable portfolio standard per SB 350 that the regulated utilities must deliver 50 percent of the electrical power they provide to their customers from renewable sources by 2030. The project's battery component will help the California Independent System Operator to manage the intermittent nature of solar generation by storing up energy during times of peak generation for release during times of peak use.

1.1.2 Project Location

The project is in the northeastern corner of Alameda County, California. The project site consists of 112 acres bordered on the north by the Byron-Bethany Highway (County Road J4), and on the west by Mountain House Road. Kelso Road is 0.40 miles to the south. The Clifton Court Forebay is 0.75 miles to the north and the Western Area Power Administration's Tracy Substation is located across Mountain House Road to the west. A transmission easement crossed diagonally through the property toward the substation. The site is in Township 1S, Range 2E, Mount Diablo Base and Meridian.

The project site is owned in fee by Byron Highway Energy Center, LLC, a subsidiary of Calpine Corporation.

1.1.3 General Plan and Zoning Designations

The General Plan designation for the site is Large Parcel Agriculture. The zoning district is Agriculture.

1.1.4 Description of Project

CalSun is a solar PV energy generation and storage project consisting of tracking solar PV arrays with a nominal output of 20 MW and up to 20 MW of energy storage capacity. Key elements of the project are as follows:

Solar PV Facility—The solar PV trackers will be oriented north-south in rows that are 13.3 feet apart. They will rotate in a single east-west axis over 120 degrees to maintain the efficient solar energy conversion throughout the day. The trackers will be mounted on tracking posts installed in the ground and will not require concrete footings. Blocks of trackers will be served by an inverter to convert DC power to AC. The project will use 15,860 feet (3 miles) of 20-foot-wide internal roads to service the solar PV tracking modules and other equipment and provide access for fire suppression equipment.

The project will be remotely operated and will not require office or warehouse space on site. Technicians will visit the site periodically for routine maintenance and repairs.

The project will use a small amount of water for infrequent washing of dust from the solar panels. The project will use a small amount of water for infrequent washing of dust from the solar panels. Water will likely be provided by the Byron-Bethany Irrigation District.

The facility will be surrounded by 11,798 feet (2.2 miles) of fencing.

Energy Storage Facility—The lithium-ion batteries will be installed in modular units on a 5-acre portion of the property and will provide efficient storage of solar energy for release to the grid during times of peak demand.

Grid Interconnection—The project will interconnect with either the existing adjacent 70 kV Herdlyn-Tracy transmission line or through the Western Area Power Administration's Tracy Substation. A small switchyard will be constructed on site.

1.1.5 Surrounding Land Uses and Setting

The project site is on level land surrounded by agricultural uses to the east. The Sacramento-San Joaquin Delta lies to the east and north. To the west are lower foothills of the Coast Ranges, which consist mostly of undeveloped grazing land. Across Mountain House Road to the west are the Western Area Power Administration Tracy Substation and the Delta-Mendota Canal, which runs parallel to the site towards the Clifton Court Forebay, which is about 0.75 miles to the north. The nearest residential subdivision is 1.1 miles to the southeast in the community of Mountain House. The town of Byron is 5 miles to the northwest and the City of Tracy is 7 miles to the southeast.

1.2 Regulatory Setting

This section describes the laws, ordinances, regulations, and standards that apply to biological resource protection for the proposed project and how they were used to assess the potential presence of sensitive habitats and special-status species. It also describes the regulatory framework that may apply to biological resources in the project area and lists the agencies responsible for enforcing the regulations.

1.2.1 Federal

Federal Endangered Species Act (ESA) (16 U.S.C. §1531 et seq.). Section 9 prohibits the “take” of species listed as endangered or threatened under the Act. “Take” is defined by regulation as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct.” “Harm” is further defined by the U.S. Fish and Wildlife Service (USFWS) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. “Harass” is defined by USFWS as intentional or negligent actions that create the likelihood of injury to listed species by annoying them to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. “Incidental take” is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Although “take” of a listed species is prohibited under ESA Section 9, incidental take authorization may be obtained pursuant to ESA Section 7 by federal entities following consultation with USFWS and issuance of a Biological Opinion or Section 10 with adoption of a Habitat Conservation Plan by private entities.

Migratory Bird Treaty Act (16 U.S.C. §703 – 711). Protects all migratory birds, including nests and eggs.

Bald and Golden Eagle Protection Act (16 U.S.C. §668). Specifically protects bald and golden eagles from harm or trade in parts of these species.

Clean Water Act (CWA) Sections 401 and 404. Prohibits the discharge of dredged or fill material into “waters of the United States,” including wetlands, without a permit from the United States Army Corps of Engineers (USACE). The definition of waters of the United States includes rivers, streams, estuaries, the territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas “that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” [33 Code of Federal Regulations (CFR) 328.3 7b]. Under Section 10 of the Rivers and Harbors Act of 1899, the USACE has the authority to regulate the navigable capacity of any of the waters of the United States. Under this Act, it is not lawful to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of...any navigable water of the United States...”

All Section 404 CWA permit actions require water quality certification pursuant to Section 401 of the CWA. This authority has been delegated by the United States Environmental Protection Agency (EPA) to the California State Waters Resources Control Board (SWRCB), who delegates regional authority to the Regional Water Quality Control Board (RWQCB).

1.2.2 State

California Endangered Species Act (CESA) (Fish and Game Code Section 2050 et seq.). States that species listed as threatened or endangered in California cannot be “taken” or harmed unless such “take” is authorized pursuant to a section 2081 Incidental Take Permit, or through a 2080.1 Consistency

Determination. “Take” currently is defined as to do or attempt to do the following: hunt, pursue, catch, capture, or kill a member of a listed species.

California Environmental Quality Act (CEQA) (Public Resources Code Section 15380). Defines “rare” in a broader sense than the CESA and California Department of Fish and Wildlife (CDFW) definitions of threatened, endangered, or species of special concern. Under this definition, CDFW can request additional consideration of species not otherwise protected. CEQA requires that the effects of a project on environmental resources must be analyzed and assessed using criteria determined by the lead agency.

Title 14, California Code of Regulations (Sections 670.2 and 670.5). Lists animals designated as threatened or endangered in California. California “Species of Concern” (CSC) is a category conferred by the CDFW on those species that are indicators of regional habitat changes or considered potential future protected species. CSC do not have any special legal status, but are intended by CDFW for use as a management tool to take these species into special consideration when decisions are made concerning the future of any land parcel. These can be considered rare under CEQA guidelines.

California Fish and Game Code Sections 1601 – 1607. Prohibit alteration of any stream or lake, including intermittent and seasonal channels and many artificial channels, without a Lake or Streambed Alteration Agreement from CDFW. This applies to any channel modifications that would be required to meet drainage, transportation, or flood control objectives of a project.

Fish and Game Code Section 3511, 4700, 5050, and 5515. Describe species that are “fully protected.” Fully protected birds may not be taken or possessed, except under specific permit requirements. Sections 3511, 4700, 5050, and 5515 list bird, mammal, amphibian, and reptile species that are fully protected in California.

Fish and Game Code Section 3503. States that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.

Fish and Game Code Section 3513. Makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird.

Native Plant Protection Act of 1977, Fish and Game Code §1900 et seq. Designates state rare and endangered plants and provides specific protection measures for identified populations.

Porter-Cologne Water Quality Control Act Section 13263. Authorizes the RWQCB to regulate discharges of waste and fill material to waters of the State, including “isolated” waters and wetlands, through the issuance of waste discharge requirements (WDR). The RWQCB typically issues WDRs for projects undergoing an Individual Section 404/10 process pursuant to USACE requirements. Since WDRs must be approved by the elected Board, a public hearing is also a component of WDR permitting activity.

1.2.3 Local and Other Jurisdictions

East County Area Plan. Land use planning in the eastern portion of Alameda County is governed by the East County Area Plan (ECAP). In November 2000, the Alameda County electorate approved Measure D, the Save Agriculture and Open Space Lands Initiative, which amended portions of the County’s General Plan, including the ECAP, to limit urban development on agricultural lands. The Open Space Element of the ECAP addresses sensitive lands and regionally significant open space, including biological resources.

East Alameda County Conservation Strategy¹. The East Alameda County Conservation Strategy (EACCS) is a collaborative effort among several local, state, and federal agencies intended to provide an effective

¹ East Alameda County Conservation Strategy (EACCS) prepared by ICF Jones and Stokes for East Alameda County Conservation Strategy Steering Committee, dated 2010, can be accessed at: <http://www.eastalco-conservation.org/>

voluntary framework to protect, enhance, and restore natural resources in eastern Alameda County, while improving and streamlining the environmental permitting process for impacts resulting from infrastructure and development projects. The EACCS is intended to identify and provide a means to avoid, minimize and compensate for impacts on biological resources such as endangered and other special-status species, and sensitive habitat types (e.g., wetlands, riparian corridors, rare upland communities). The EACCS provides a framework of comprehensive conservation goals and objectives, and facilitates implementation using consistent and standardized mitigation requirements. By implementing the EACCS, local agencies will be able to more easily address the legal requirements relevant to these species.

Methods

The information discussed in the following sections is based on a review of aerial photographs, including Google Earth™, and field observations made during the August 18, 2016 site visit. In addition, research of known and potential species occurrences was conducted using online databases of special-status plant and wildlife species. Habitat descriptions and species lists contained in the EACCS, which could be represented in the project area, were also reviewed. Overall, the species considered for the proposed project were obtained from a search of the California Natural Diversity Database (CNDDDB), California Native Plant Society (CNPS) online database, the species list provided by the Sacramento Fish and Wildlife office of the USFWS, and those species listed in the EACCS that may also occur at the project site.

A site reconnaissance for sensitive biological resources was conducted by CH2M biologist Todd Ellwood along the entire project area, including general floristic and wildlife observations. In addition, a search for areas potentially under USACE, RWQCB, and/or CDFW jurisdiction as waters of the U.S. and/or state including wetlands, and stream and riparian areas was conducted during the survey. The study area is composed of proposed solar arrays, onsite access roads, an onsite electrical substation and onsite staging/laydown areas. As of the date of this report, there are no offsite linear facilities (e.g., pipelines) associated with the proposed project.

The following sections summarize the environmental setting including habitat characterizations, vegetation communities, and special-status species descriptions for the study area.

2.1 Environmental Setting

The proposed project site is located in Alameda County, east of Tracy Pumping Station and near the Delta-Mendota Canal, approximately 8 miles northwest of the City of Tracy, California. The general project region has a Mediterranean climate and supports a mosaic of pastures, dairies, alfalfa fields, hay, row crops, orchards, annual grasslands, and residential communities. An irrigation ditch runs the length of the eastern boundary of the project site and, according to the current tenant, the ditch may have historically been a natural drainage feature (Don Holck, personal communication with Todd Ellwood/CH2M on August 16 and 18, 2016). The ditch generally lacks any wetland characteristics due to the level of agricultural disturbance indicative of the area. The entirety of the site is has been in agricultural production since circa the 1930s and, for the last decade, has been subject to a routine regimen of monthly flood irrigation, crop cultivation, and tilling (Don Holck, personal communication with Todd Ellwood/CH2M on August 16 and 18, 2016). In August of 2016, the northern area of the site was planted with alfalfa and the southern area was scheduled to be planted with a grain crop later in the year.

Principal land uses in the region are row and field crops, orchards, and vineyards. These land uses remain prevalent in the county although housing and industrial land uses are becoming more common. Alfalfa fields border the site to the south and an orchard to the east. To the west of the project site along the Delta-Mendota Canal is a disked grassy field. To the north of the project site are the Byron Highway and Union Pacific Railroad. Further north of the railroad are similar agricultural developments. Habitat types potentially affected in the project area are limited to agricultural.

Results

3.1 Vegetation Community Descriptions

The following sections describe the potentially affected environment of the project site, with respect to habitat, wildlife, and sensitive species that use or that could potentially use the project site and adjacent areas. See Figure 2 in Appendix A for mapping of vegetation communities within the project area. Representative photographs are included in Appendix B. A list of plant and wildlife species observed during the field visit is included in Appendix C. Finally, a list of sensitive species known or potentially could exist onsite is included in Appendix D.

3.1.1 Agriculture

The project site is dominated by agricultural uses, consisting of alfalfa-oat rotation. In addition to cultivated crops, the edges of the site support patches of ruderal vegetation along dirt access roads. Slender oat grass (*Avena barbata*), thistle (*Salsola* sp.) and prickly sow thistle (*Sonchus asper*) are the dominated weed species. The parcel has been under cultivation for many years, and the site is essentially flat, with no trees and no significant topographic features, though the site is crossed by concrete-lined irrigation ditches. According to the current tenant, the surrounding ditches hold water only during irrigation time and dry quickly in a matter of a few days. California ground squirrels (*Spermophilus beechyii*) are controlled onsite with pesticides or other means in order to minimize damage to agricultural equipment (Don Holck, personal communication with Todd Ellwood/CH2M on August 16 and 18, 2016). Similar agricultural uses dominate surrounding properties.

3.1.2 Irrigation Ditches

The project site is bordered on the east side by an irrigation ditch that runs north to south. The length of the irrigation ditch appears to be periodically bladed clean of vegetation, based on the smooth appearance of the banks and the discontinuous vegetation along the watercourse. A single small willow (*Salix* sp.) exists along the irrigation ditch.

As noted above, predominant surface water features in the project vicinity are the Delta-Mendota Canal, California Aqueduct, Old River, Clifton Court Forebay, Canal 45 (operated by Byron Bethany Irrigation District), and Mountain House Creek, which drains the foothills approximately 4 miles southwest of the project site. Several unnamed drainages run parallel to Mountain House Creek and drain the foothills west of the site. Some of these drainages and portions of Canal 45 support patchy stands of bullrush and cattails that are small, but functional emergent marsh habitat. Between the California Aqueduct and Delta-Mendota Canal, an unnamed drainage pools on the shallow hardpan soils creating numerous ephemeral ponds and wet areas that could be characterized as vernal pools. Most agricultural fields and some pastures are crossed by irrigation ditches and drains that may also be considered wetlands. Finally, farm ponds occur on several properties in the vicinity, including one behind the Mountain House School, located approximately 1 mile south of the project site. These man-made wetlands are highly modified and maintained, and generally lack substantial riparian or marsh type vegetation. However, federal law protects all wetlands as sensitive and limited habitats.

3.1.3 Industrial, Landscape, Urban

The project site is surrounded on three sides by two-lane paved highways that comprise urban and landscape habitat. To the west, the Western Area Power Administration Tracy Substation has been cleared and landscaped with redwoods, oleanders, juniper, and non-native shrubs and trees. An

abandoned milking shed as well as bee hives are currently present on the project site. High tension transmission lines and supporting lattice tower structures traverse through the middle of the project site. Overall vegetation on the project site comprises agricultural crop species that are widely distributed and relatively common.

3.2 Wildlife Habitat

Wildlife that use agricultural habitat tend to occur across all habitat types rather than only a single habitat. Species that commonly use the patchwork of changing crops include voles (*Microtus californicus*), mice (*Mus musculus*), coyote (*Canis latrans*), red fox (*Vulpes fulva*), opossum (*Didelphis virginianus*), striped skunk (*Mephitis mephitis*), killdeer (*Charadrius vociferus*), and great egret (*Ardea alba*). Typical raptors include turkey vulture (*Cathartes aura*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), and American kestrel (*Falco sparverius*). Reptiles and amphibians that are likely to occur include gopher snake (*Pituophis melanoleucus*), racer (*Coluber constrictor*), Western fence lizard (*Sceloporus occidentalis*), and Pacific tree frog (*Hyla regilla*).

The habitat onsite is highly disturbed, thus most of the species in this area occur widely and are relatively common. Some sensitive and potentially rare species could also use this habitat opportunistically or infrequently, and they are discussed individually below. The more general habitat community, however, is not rare or limited in distribution. The location of the proposed project does not demonstrate any unique habitat features that are likely to support unique species or communities.

3.3 Special-status Species

Special-status species are those species identified by resource agencies as rare, threatened, endangered, or otherwise of concern because of declines in their populations, ranges, and/or habitats. For animals, this includes species that are:

- Listed or proposed for listing under the federal ESA
- Listed or candidates for listing under the California ESA
- Animals designated as “Fully Protected” under the California Fish and Game Code
- Animals designated as “Species of Special Concern” by the CDFW
- Animals designated as “Covered Species” by the EACCS

A species’ potential to occur in the vicinity of the Project was determined by assessing whether the study area is found within the known or expected geographic range, and whether its known or expected habitat is found within the study area. The likelihood of occurrence (low, moderate, high) is based on presence of suitable habitat requirements (for example, substrate, hydrology, vegetation type, and disturbance factors) and range, applied by using the following general guidelines:

None: Habitat within the study area does not satisfy the species’ requirements and/or the project is not within the known or expected range of the species. No known occurrences have been reported from the study area. The species’ presence within the study area is not expected.

Low: Habitat within the project area satisfies very few of the species’ requirements and/or the known or expected range of the species is within 5 miles of the project area. In addition, no known occurrences have been reported from the project area. The species’ presence within the project area is unlikely.

Moderate: Habitat within the project area meets some of the species’ requirements and known locations for the species are found in the project region (East Alameda County). Presence of the species within the project area is moderately likely.

High: Habitat within the project area meets most or all of the species' requirements and known locations for the species are found within 5 miles of the project. Presence of the species within the project area is highly likely.

Detected: Occurrences observed during the August 2016 site reconnaissance of the project area or have been previously recorded in the project area by other published report findings such as, but not limited to, the CNDDDB and EACCS.

Using these criteria, one special-status wildlife species was detected during the site reconnaissance (northern harrier) and nine have been previously recorded in the region of the proposed project (vernal pool fairy shrimp, California red-legged frog, California tiger salamander, western pond turtle, loggerhead shrike, western burrowing owl, Swainson's hawk, San Joaquin kit fox, and American badger). One special-status wildlife species has a high potential to occur within onsite (western burrowing owl), and three special-status species have a moderate potential to occur within onsite (loggerhead shrike, Swainson's hawk, and white-tailed kite).

A complete list of special-status wildlife evaluated for this assessment is included in Appendix D. Figures 3a (plants) and 3b (animals) (Appendix A) shows known CNDDDB occurrences of special-status species within 10 miles of the proposed project. Figure 4 (Appendix A) shows the known CNDDDB occurrences of special-status species within 2 miles of the project area. Most of the occurring species are associated with upland grassland habitats, with a few being associated with aquatic habitats. Special-status species discussed below have known populations in the vicinity of the project area.

3.3.1 Plants

A total of 50 special-status plant species were determined by the literature review to potentially occur within the project site. Their habitat description, status, and potential for occurrence are provided in Appendix D, Table 1. Potential for occurrence was based on habitat, elevation, and proximity to known recorded occurrences of a species. Currently, the project area is in agricultural production and thus rare botanical species are not expected to occur onsite. In addition, many of the special-status species are associated with marshes, wetlands, and/or vernal pools, which are also lacking from the project area.

3.3.2 Wildlife

Although all federally and/or state listed wildlife species listed in Appendix D, Table 1 have been found to have a low potential to occur in the project area, this section discusses individually the listed species that are known from the project vicinity with a low likelihood of occurrence onsite. The agricultural land cover onsite presents the primary limiting habitat for these species, which are otherwise widely known to occur where annual grassland habitat otherwise exists in this area of the county. Also provided below is a description of species with moderate to high potential for occurrence in the project area. A list of wildlife species observed during the site reconnaissance is provided in Appendix C.

Northern Harrier (*Circus cyaneus*). This species is a California species of concern. This raptor inhabits meadows, grasslands, open rangelands, desert sinks, and emergent wetlands, and prefers tall grasses and forbs for cover. The northern harrier nests on the ground in shrubby vegetation and in grasslands. This species was observed in the project area during the reconnaissance survey, and only suitable foraging habitat is present.

Vernal pool fairy shrimp. This crustacean is a federally threatened species that typically inhabits small to large pools with clear, tea-colored or muddy water, most commonly in grass - or mud-bottomed swales or basalt flow depression pools in unplowed grasslands, but sometimes in sandstone rock outcrops and alkaline vernal pools (58 Federal Register 48136). Vernal pool crustaceans are sporadically distributed within vernal pool complexes (58 [180] Federal Register 48136), where some or many of the pools in a complex may not be inhabited during any one year. Historically, vernal pool crustaceans might have dispersed via large-scale flood events that allowed the species to colonize different individual pools or

pool complexes. Urban development and the construction of dams, levees, and other flood-control measures have limited this dispersal method. Waterfowl and shorebirds can transport vernal pool crustaceans by ingesting diapaused eggs without compromising the eggs capacity to hatch once they have passed through the bird's digestive system. Birds can also transport eggs to new habitats while attached to their feet, legs or feathers. Eggs may also be dispersed and transported on the legs and hooves of cattle and on other grazing livestock (Eriksen and Belk, 1999).

Based on field observations conducted on August 18, 2016, the level of agricultural disturbance onsite likely precludes appropriate sub-surface hardpan that provides the requisite pooling necessary to complete the vernal pool crustacean life cycle. This species is known from within 1 mile of the project area.

California red-legged frog. This species is federally-listed threatened and a California species of concern. It is the largest native frog in the western United States, and was once abundant in much of California. Adults need dense, shrubby, or emergent riparian vegetation closely associated with deep (greater than 2 feet) still or slow-moving water. Well-vegetated terrestrial areas within the riparian corridor may provide important sheltering habitat during winter. California red-legged frogs aestivate during summer or dry weather in small mammal burrows and moist leaf litter. They have been found up to 100 feet from water in adjacent dense riparian vegetation and can travel in excess of 2 miles overland during dispersal to adjacent breeding sites (USFWS, 2002).

This species is known west of the proposed project in California annual grassland habitat along Bruns Road where numerous breeding ponds exist. Critical habitat unit CCS-2b does not overlap with the project area and the network of aqueducts and irrigation canals, public roadways, railroads, and agricultural and industrial developments surrounding the proposed project likely precludes the presence of this species onsite. This species is known from within 1.5 miles of the project area.

California tiger salamander. This species is a federally-listed and a state-listed threatened species. It is a large, stocky, terrestrial salamander distinguished from other Ambystomids by having a dark body covered with pale yellow or white spots. The California tiger salamander is restricted to grasslands and low (typically below 2,000 feet) foothill regions where aquatic sites are available for breeding. They prefer to breed in natural ephemeral pools, including vernal pools, seasonal ponds such as stock ponds, and spend most of the year in adjacent grassland communities. Tiger salamanders will aestivate underground in small mammal burrows or cracks during the summer dry months. They have been reported to move up to 1.3 miles from a breeding pond, with most reported within 2,200 feet of a breeding pond.

This species is known west of the proposed project in California annual grassland habitat along Bruns Road where numerous breeding ponds exist. The network of aqueducts and irrigation canals, public roadways, railroads, and agricultural and industrial developments surrounding the proposed project likely precludes the presence of this species onsite. This species is known from within 1.5 miles of the project area.

Western burrowing owl (*Athene cunicularia*). This species is a California species of concern. This small owl inhabits open, dry grassland. This species nests in old burrows of California ground squirrels or other small fossorial mammals, but has also been known to nest in storm drains or other manmade structures. Although this owl prefers to nest in burrows located in flat or rolling annual grasslands; or bare terrain adjacent to agriculture and waterways, they often use burrows located on levees, berms, and other earthen structures. Burrowing owls are year-long resident of dry California grasslands, and forage on insects, reptiles, birds, small mammals, and carrion.

Potentially suitable burrow sites existing along the irrigation canal that borders the eastern project boundary. During the reconnaissance survey no individual burrowing owls were observed, including their sign (white wash, prey remains, scat). This species is known from within 1 mile of the project area.

Loggerhead shrike (*Lanius ludovicianus*). This species is a California species of concern. This species is typically associated within open grassland habitats providing perch sites such as trees, shrubs, posts, fences, or utility lines. This small bird feeds mostly on large insects, but will also take fish, amphibians, reptiles, other small birds, mammals, and carrion. Loggerhead shrikes usually nest in native shrubs. This species was not observed during the reconnaissance surveys but is known to nest in the project region. This species is known from within 2 miles of the project area.

Swainson's Hawk. This raptor is a California threatened species that is migratory and commonly uses the upper canopy of medium-sized to large trees in the Central Valley and other regions of northern California for seasonal breeding activities. Appropriate tree species for nesting were not observed within project area during the reconnaissance survey. Although this species most likely would not nest within the project area, it is known to occur on a seasonal basis throughout the greater vicinity of the project area. Swainson's hawks may forage within the project area limits. This species is known from within 1 mile of the project area.

White-tailed kite (*Elanus leucurus*). This medium-sized raptor is a California fully-protected species. This species is known for hovering in low elevation flights over the ground in search of prey. Rodents provide a main component of their diet. The white-tailed kite is known for breeding in a variety of habitat types including oak woodland and open stages of riparian forest and scrub, generally in the tops of trees near open areas. White-tailed kites may forage within the project area limits. This species is known from within 2 miles of the project area.

San Joaquin kit fox. This is a federally endangered and state threatened species. The San Joaquin kit fox lives in grasslands or grassy open areas with scattered shrubs or scrub. This species dens in small animal burrows or in man-made structures including culverts. They use many dens in an area, and prefer open, level areas with loose-textured soils. Kit fox prey on small mammals, primarily kangaroo rats, ground squirrels, rabbits, birds and insects. This species ranges up to nine miles in search of prey, and usually has a home range between one and two square miles, although its home range may be as large as twelve square miles.

Ground squirrels and their burrows are generally lacking from the project area due to agriculture therefore there are no potential dens sites for the San Joaquin kit fox onsite. Adjacent land uses are similarly disturbed including the grassy parcel immediately west of the project area where routine disking occurs along the eastern flank of the Delta-Mendota Canal. This species is known from within 2 miles of the project area.

3.4 Potential Jurisdictional Wetlands and Waters

Wetlands are protected under specific regulations of the USACE, CDFW, and RWQCB and are important because they typically support the highest abundance and diversity of plant and wildlife species. Some special-status species, such as red-legged frog and vernal pool crustacea are dependent on them.

As noted above, the project site is highly disturbed, routinely impacted cropland, and supports no natural wetlands or potential wetlands. It is bordered on the east side by an irrigation ditch that drains farm fields from the south toward the Old River. The ditch within the project area has been scraped of vegetation, is maintained frequently, and lacks riparian or wetland vegetation. According to the current tenant, the ditch may have historically been a natural drainage feature, realigned and channelized for agricultural purposes (Don Holck, personal communication with Todd Ellwood/CH2M on August 16 and 18, 2016). The project site is crossed by three irrigation ditches, two of which are concrete lined. These ditches are seasonally dry and support no wetland vegetation.

The drainage canal onsite would be identified and avoided by project construction, or an appropriate permit for alteration would be secured from USACE, CDFW, and/or RWQCB as appropriate. Therefore, the project is not anticipated to adversely affect waters of the U.S. or waters of the State.

References

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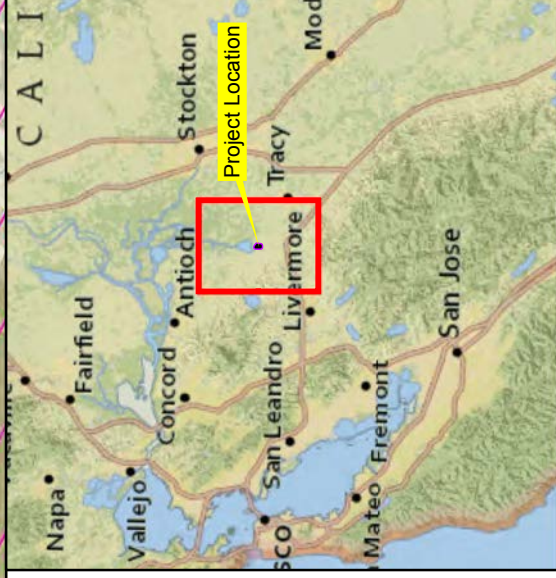
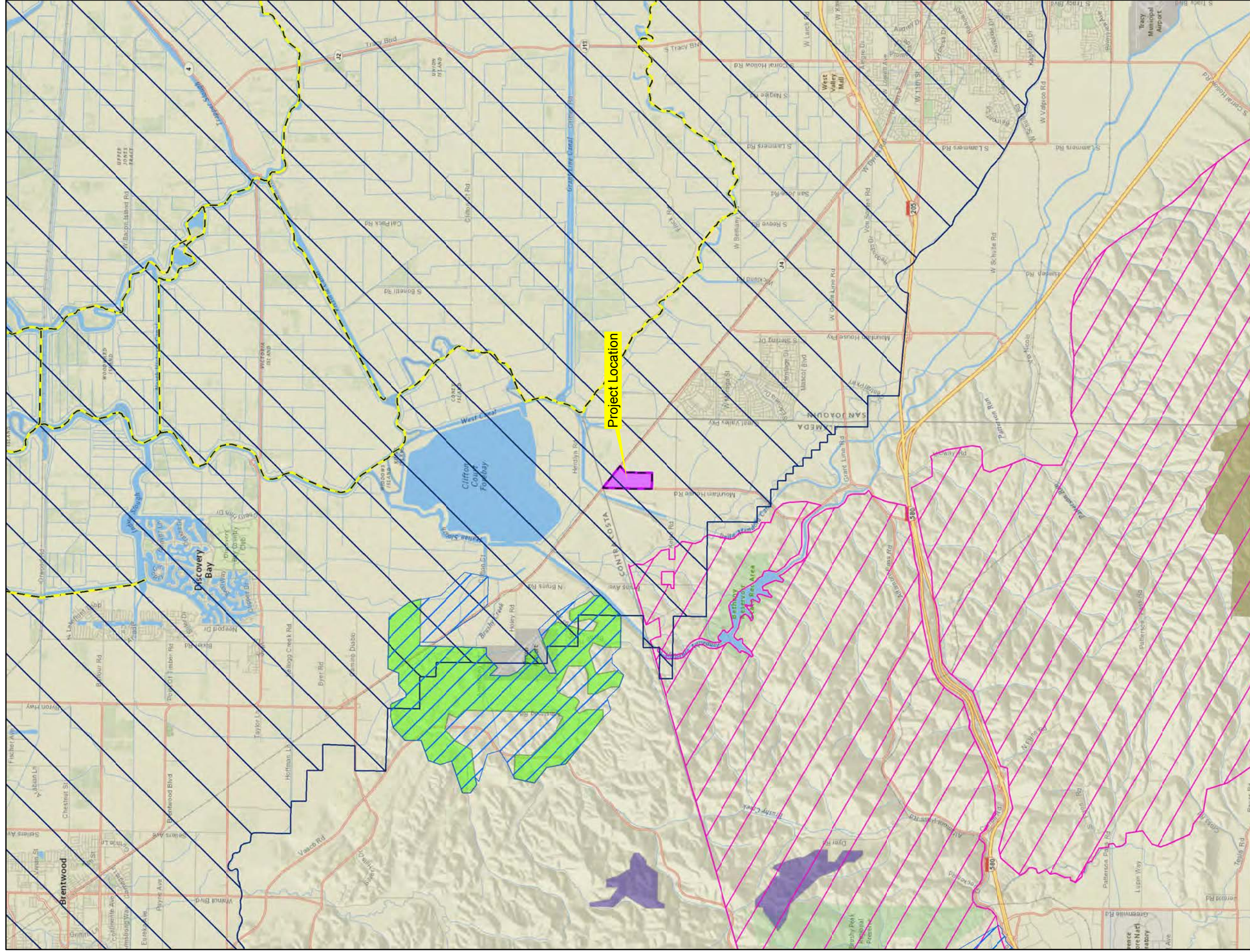
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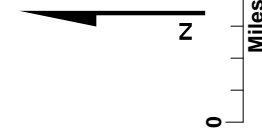
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Appendix A

Map Figures

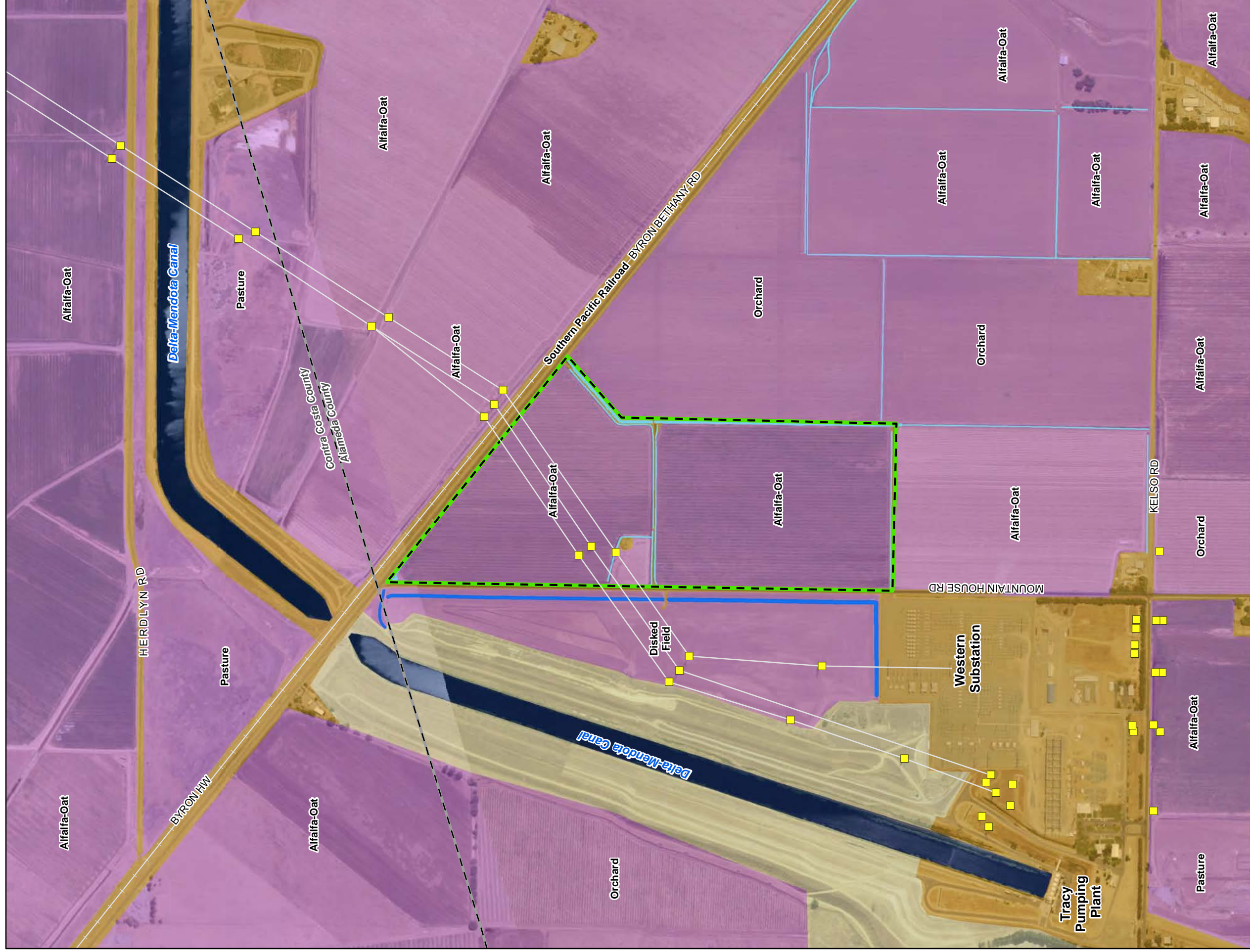


- LEGEND**
- Project Area
 - Critical Habitat**
 - Alameda whipsnake (=striped racer)
 - California red-legged frog
 - Delta smelt
 - Vernal pool fairy shrimp
 - Longhorn fairy shrimp
 - Contra Costa goldfields
 - Steelhead



Service Layer Credits: Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

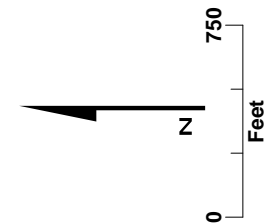
Figure 1
Project Overview
 CalSun Byron Solar Energy Project



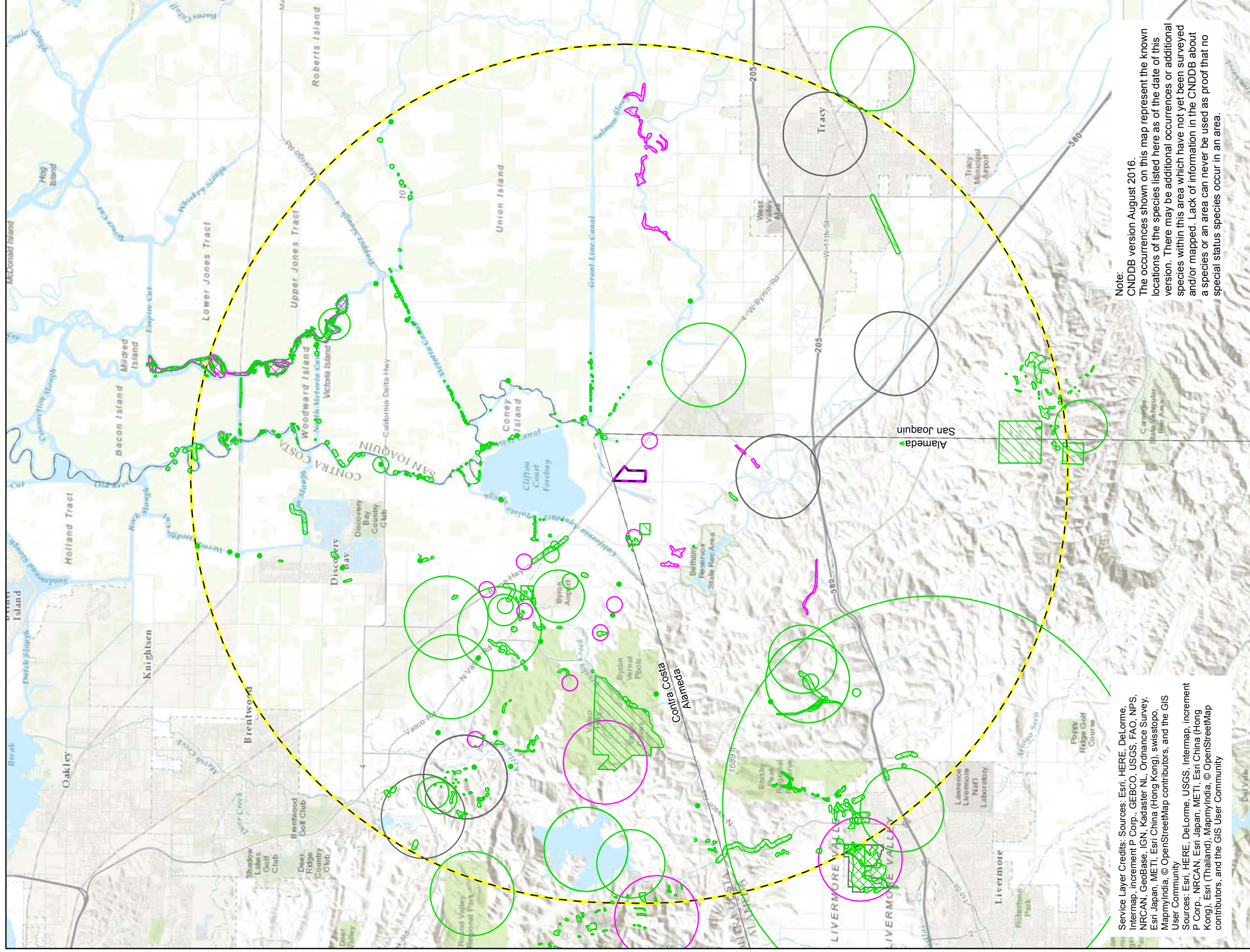
LEGEND

- Project Area
- County Boundary
- Railroad
- Agriculture
- Disturbed Grassland
- Developed
- Irrigation Ditch
- Stormwater Ditch
- Canal
- Transmission Line Tower
- Transmission Line

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Geomatics, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
 Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, Increment P Corp.



**Figure 2
Project Location and
Habitat Map**
CalSun Byron Solar Energy Project



Note:
 CNDDDB version August 2016.
 The occurrences shown on this map represent the known locations of the species listed here as of the date of this version. There may be additional occurrences or additional species within this area which have not yet been surveyed and/or mapped. Lack of information in the CNDDDB about a species or an area can never be used as proof that no special status species occur in an area.

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeBCo, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



- LEGEND**
- Project Area
 - 10 Miles from Project Area
 - CNDDDB Occurrences**
 - Plant (Specific bounded area with an 80-meter radius)
 - Plant (Specific, noncircular bounded area)
 - Plant (Nonspecific bounded area)
 - Plant (Nonspecific, circular feature)
 - Terrestrial Community (Specific, noncircular bounded area)
 - Terrestrial Community (Nonspecific, circular feature)
 - Multiple (Nonspecific bounded area)
 - Multiple (Nonspecific, circular feature)

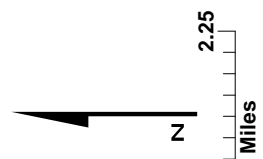
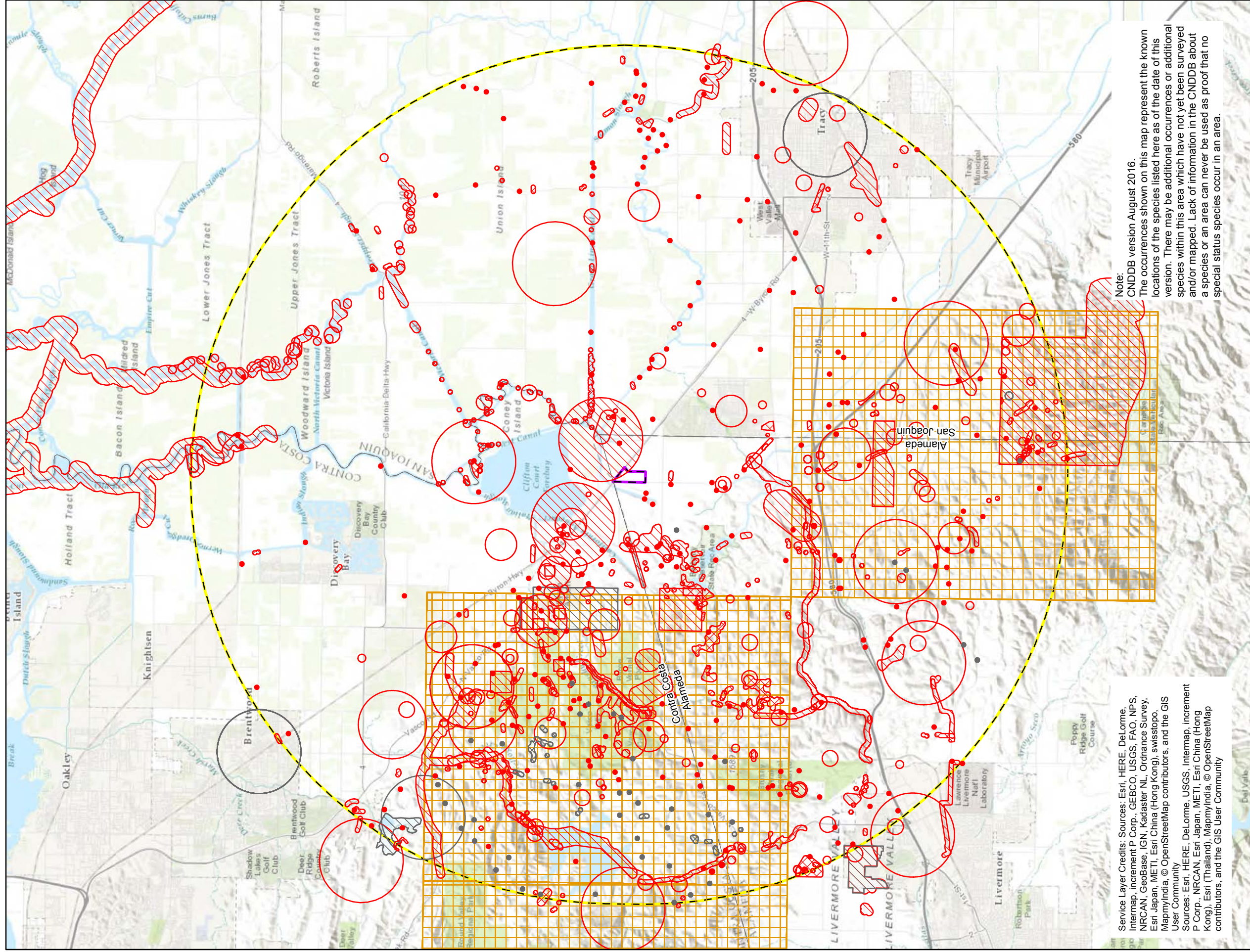


Figure 3A
California Natural Diversity Database (CNDDDB) Plant Occurrences within 10 miles of the Project Location
CalSun Byron Solar Energy Project



LEGEND

- Project Area
- 10 Miles from Project Area
- CNDDDB Occurrences**
- Animal (Specific bounded area with an 80 meter radius)
- Animal (Specific, non-circular bounded area)
- Animal (Non-specific bounded area)
- Animal (Non-specific, circular feature)
- Multiple (Specific bounded area with an 80 meter radius)
- Multiple (Specific, non-circular bounded area)
- Multiple (Non-specific bounded area)
- Multiple (Non-specific, circular feature)
- Sensitive EO's (Commercial only)

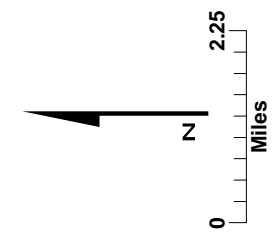
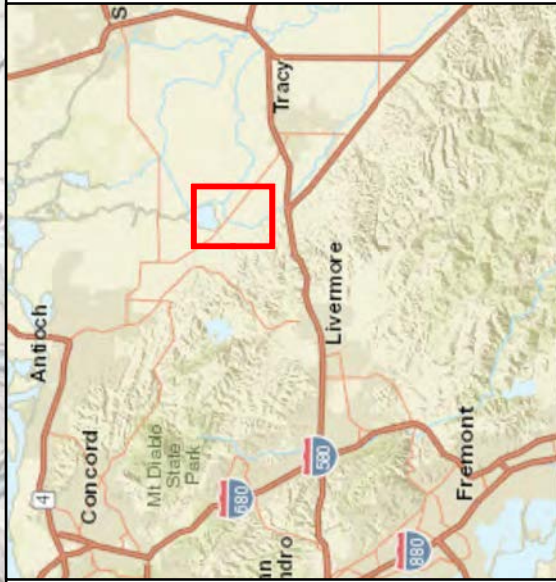
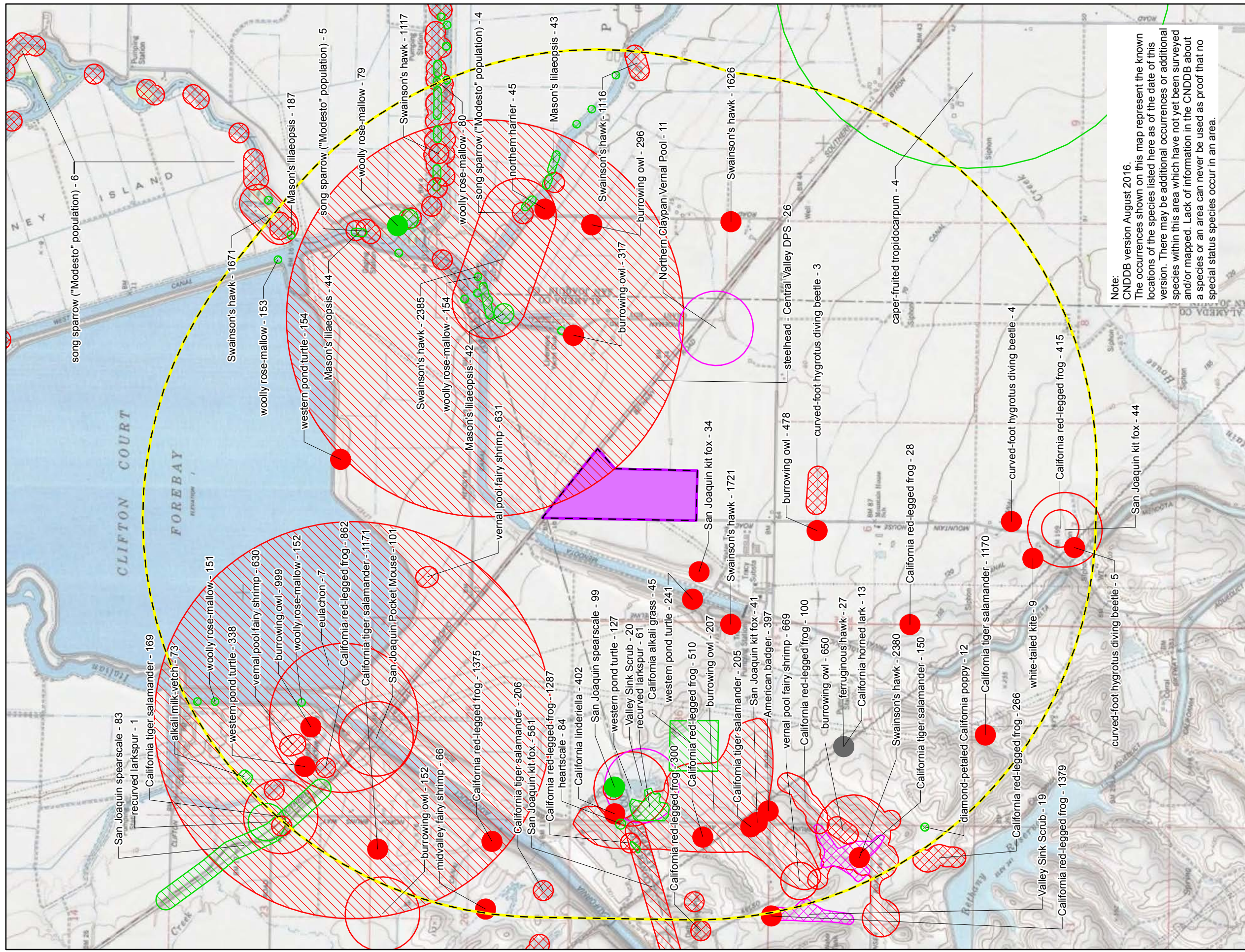


Figure 3B
California Natural Diversity Database (CNDDDB) Animal Occurrences within 10 miles of the Project Location
CalSun Byron Solar Energy Project



LEGEND

Project Area
 Purple shaded area

CNDDDB Occurrences

- Plant (Specific bounded area with an 80 meter radius) - Green circle with diagonal hatching
- Plant (Specific, non-circular bounded area) - Green circle with cross-hatching
- Plant (Non-specific bounded area) - Green circle with vertical hatching
- Plant (Non-specific, circular feature) - Green circle with horizontal hatching
- Animal (Specific bounded area with an 80 meter radius) - Red circle with diagonal hatching
- Animal (Specific, non-circular bounded area) - Red circle with cross-hatching
- Animal (Non-specific bounded area) - Red circle with vertical hatching
- Animal (Non-specific, circular feature) - Red circle with horizontal hatching
- Terrestrial Community (Specific, non-circular bounded area) - Pink circle with diagonal hatching
- Terrestrial Community (Non-specific, circular feature) - Pink circle with cross-hatching
- Multiple (Specific bounded area with an 80 meter radius) - Black circle with diagonal hatching
- 2 Miles from Project Area - Yellow dashed line

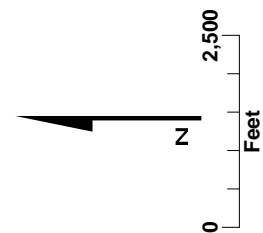


Figure 4
California Natural Diversity Database (CNDDDB) Plant and Animal Occurrences within 2 miles of the Project Location
 CalSun Byron Solar Energy Project

Appendix B
Representative Site Photographs



Photograph 1. View southwest of harvested oat field inside project area.
Photograph taken on August 18, 2016



Photograph 2. View north of irrigation ditch bordering western project boundary. Project area oat field is shown on the left.
Photograph taken on August 18, 2016.



Photograph 3. View northwest of northern project boundary along Byron-Bethany Highway.
Photograph taken on August 18, 2016.



Photograph 4. View southwest of alfalfa field from under transmission lines.
Photograph taken August 18, 2016.



Photograph 5. View north of alfalfa field and Mountain House Road along western project area boundary. Photograph taken August 18, 2016.

Appendix C
Wildlife Species Observed during
August 18, 2016 Site Visit

TABLE C-1
Wildlife Species Observed during the CalSun Site Reconnaissance (August 18, 2016)

Common Name	Scientific Name
Insects	
Buckeye butterfly	<i>Junonia coenia</i>
Monarch butterfly	<i>Danaus plexippus</i>
Birds	
Great blue heron	<i>Ardea herodias</i>
Great egret	<i>Ardea alba</i>
Unidentified gull	<i>Larus sp.</i>
Turkey vulture	<i>Cathartes aura</i>
Northern harrier	<i>Buteo regilla</i>
Common raven	<i>Corvus corax</i>
Barn swallow	<i>Hirundo rustica</i>
Mammals	
California ground squirrel	<i>Spermophilus beecheyi</i>
Black-tailed jackrabbit	<i>Lepus californicus</i>
Stripped skunk (roadkill)	<i>Mephitis mephitis</i>

Appendix D
Special-status Species Evaluated for
the Project Area

Table D-1. Comprehensive List of Special-Status Species Potentially Occurring in the CalSun Project Area.

Common Name	Scientific Name	Status ^a	Season ^b	Primary Habitat ^c	Potential Occurrence in Project Area
Plants					
Santa Clara thorn-mint	<i>Acanthomintha lanceolata</i>	4.2, EACCS: No	Mar-Jun	Chaparral (often serpentine), cismontane woodland, coastal scrub	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Large-flowered fiddleneck	<i>Amsinckia grandiflora</i>	FE, CE, 1B.1, EACCS: No	Apr-May	Cismontane woodland, valley and foothill grassland.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Bent-flowered fiddleneck	<i>Amsinckia lunaris</i>	1B.2, EACCS: No	Mar-Jun	Coastal bluff scrub, cismontane woodland, valley and foothill grassland.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
California androsace	<i>Androsace elongata ssp. acuta</i>	4.2, EACCS: No	Mar-Jun	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Alkali milk-vetch	<i>Astragalus tener var. tener</i>	1B.2, EACCS: No	Mar-Jun	Playas, valley and foothill grassland, vernal pools/alkaline.	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.
Heartscale	<i>Atriplex cordulata</i>	1B.2, EACCS: No	Apr-Oct	Chenopod scrub, meadows and seeps, valley and foothill grassland.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Crownscale	<i>Atriplex coronata var. coronata</i>	4.2, EACCS: No	Mar-Oct	Chenopod scrub, valley and foothill grassland, vernal pools	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.
Lost Hills crownscale	<i>Atriplex coronata var. vallicola</i>	1B.2, EACCS: No	Apr-Sept	Chenopod scrub, valley and foothill grassland, vernal pools	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.

Table D-1. Comprehensive List of Special-Status Species Potentially Occurring in the CalSun Project Area.

Common Name	Scientific Name	Status ^a	Season ^b	Primary Habitat ^c	Potential Occurrence in Project Area
Brittlescale	<i>Atriplex depressa</i>	1B.2, EACCS: No	Apr-Oct	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools.	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.
Lesser saltscale	<i>Atriplex depressa</i>	1B.1, EACCS: No	May-Oct	Chenopod scrub, playas, valley and foothill grassland	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Big-scale balsamroot	<i>Balsamorhiza macrolepis var. macrolepis</i>	1B.2, EACCS: No	Mar-Jun	Chaparral, cismontane woodland, valley and foothill grassland.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Big tarplant	<i>Blepharizonia plumosa</i>	1B.1, EACCS: Yes	Jul-Oct	Valley and foothill grassland.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Round-leaved filaree	<i>California macrophylla</i>	1B.2, EACCS: No	Mar-May	Cismontane woodland, valley and foothill grassland.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Mt. Diablo fairy-lantern	<i>Calochortus pulchellus</i>	1B.2, EACCS: No	Apr-Jun	Chaparral, cismontane woodland, valley and foothill grassland	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Bristly sedge	<i>Carex comosa</i>	2B.2, EACCS: No	May-Sep	Coastal prairie, marshes and swamps (lake margins), valley and foothill grassland	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Lemmon's jewelflower	<i>Caulanthus coulteri var. lemmonii</i>	1B.2, EACCS: No	Mar-May	Valley and foothill grassland.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Congdon's tarplant	<i>Centromadia parryi ssp. congdonii</i>	1B.1, EACCS: Yes	May-Oct(Nov)	Valley and foothill grassland (alkaline).	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.

Table D-1. Comprehensive List of Special-Status Species Potentially Occurring in the CalSun Project Area.

Common Name	Scientific Name	Status ^a	Season ^b	Primary Habitat ^c	Potential Occurrence in Project Area
Parry's rough tarplant	<i>Centromadia parryi</i> ssp. <i>rudis</i>	4.2, EACCS: No	May-Oct	Alkaline, vernal mesic seeps and sometimes roadsides; valley and foothill grassland, vernal pools	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.
Hispid bird's-beak	<i>Cordylanthus mollis</i> ssp. <i>hispidus</i>	1B.1, EACCS: No	Jun-Sep	Meadows and seeps, playas, valley and foothill grassland/alkaline.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Palmate-bracted bird's-beak	<i>Cordylanthus palmatus</i>	FE, CE, 1B.1, EACCS: Yes	May-Oct	Chenopod scrub, valley and foothill grassland/alkaline.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Small-flowered morning glory	<i>Convolvulus simulans</i>	4.2, EACCS: No	Mar-Jul	Clay, serpentinite seeps; chaparral (openings), coastal scrub, valley and foothill grassland	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Livermore tarplant	<i>Deinandra baccigalupii</i>	1B.1, EACCS: Yes	Jun-Oct	Meadows and seeps (alkaline).	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Hospital Canyon larkspur	<i>Delphinium californicum</i> ssp. <i>interius</i>	1B.2, EACCS: No	Apr-Jun	Chaparral (openings), cismontane woodland (mesic).	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Recurved larkspur	<i>Delphinium recurvatum</i>	1B.2, EACCS: Yes	Mar-Jun	Chenopod scrub, cismontane woodland, valley and foothill grassland/alkaline.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Delta button-celery	<i>Eryngium racemosum</i>	CE, 1B.1, EACCS: No	Jun-Sep	Riparian scrub (vernally mesic clay depressions).	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Spiny-sepal button-celery	<i>Eryngium spinosepalum</i>	1B.2, EACCS: No	Apr-Jun	Valley and foothill grassland, vernal pools	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.

Table D-1. Comprehensive List of Special-Status Species Potentially Occurring in the CalSun Project Area.

Common Name	Scientific Name	Status ^a	Season ^b	Primary Habitat ^c	Potential Occurrence in Project Area
Diamond-petaled California poppy	<i>Eschscholzia rhombipetala</i>	1B.1, EACCS: No	Mar-Apr	Valley and foothill grassland (alkaline).	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
San Joaquin spearscale	<i>Extriplex joaquinana</i>	1B.2, EACCS: Yes	Apr-Oct	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Stinkbells	<i>Fritillaria agrestis</i>	4.2, EACCS: No	Mar-Jun	Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Diablo helianthella	<i>Helianthella castanea</i>	1B.2, EACCS: No	Mar-Jun	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Hogwallow starfish	<i>Hesperovox caulescens</i>	4.2, EACCS: No	Mar-Jun	Sometimes alkaline; valley and foothill grassland, vernal pools	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.
Brewer's western flax	<i>Hesperolinon breweri</i>	1B.2; EACCS: No	May-Jul	Usually serpentine; chaparral, cismontane woodland, valley and foothill grassland	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Woolly rose-mallow	<i>Hibiscus lasiocarpus</i>	1B.2, EACCS: No	Jun-Sep	Marshes and swamps (freshwater)	None, this species generally associated with Delta water bodies (i.e., sloughs). There are no known records of occurrence in the project area.
Contra Costa goldfields	<i>Lasthenia conjugens</i>	FE, 1B.1, EACCS: No	Mar-Jun	Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools.	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.

Table D-1. Comprehensive List of Special-Status Species Potentially Occurring in the CalSun Project Area.

Common Name	Scientific Name	Status ^a	Season ^b	Primary Habitat ^c	Potential Occurrence in Project Area
Ferris' goldfields	<i>Lasthenia ferrisiae</i>	4.2, EACCS: No	Feb-May	Vernal pools (alkaline, clay)	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.
Delta tule pea	<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	1B.2, EACCS: No	May-Jul(Sep)	Marshes and swamps (freshwater and brackish).	None, this species generally associated with Delta water bodies (i.e., sloughs). There are no known records of occurrence in the project area.
Mason's lilaepsis	<i>Lilaeopsis masonii</i>	CR,1B.1, EACCS: No	Apr-Nov	Marshes and swamps (brackish or freshwater), riparian scrub.	None, this species generally associated with Delta water bodies (i.e., sloughs). There are no known records of occurrence in the project area.
Delta mudwort	<i>Limosella subulata</i>	2B.1, EACCS: No	May-Aug	Marshes and swamps	None, this species generally associated with Delta water bodies (i.e., sloughs). There are no known records of occurrence in the project area.
Showy golden madia	<i>Madia radiata</i>	1B.1, EACCS: No	Mar-May	Cismontane woodland, valley and foothill grassland.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Little mousetail	<i>Myosurus minimus</i> ssp. <i>apus</i>	3.1, EACCS: No	Mar-Jun	Valley and foothill grassland, vernal pools (alkaline)	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.
Adobe navarretia	<i>Navarretia nigelliformis</i> ssp. <i>nigelliformis</i>	4.2, EACCS: No	Apr-Jun	Clay, sometimes serpentine; valley and foothill grassland vernaly mesic, vernal pools sometimes	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.
Shining navarretia	<i>Navarretia nigelliformis</i> ssp. <i>radians</i>	1B.2, EACCS: No	Mar-Jul	Sometimes clay; cismontane woodland, valley and foothill grassland, vernal pools	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.

Table D-1. Comprehensive List of Special-Status Species Potentially Occurring in the CalSun Project Area.

Common Name	Scientific Name	Status ^a	Season ^b	Primary Habitat ^c	Potential Occurrence in Project Area
Antioch Dunes evening primrose	<i>Oenothera deltooides ssp. howellii</i>	FE, CE, 1B.1, EACCS: No	Mar-Sept	Inland dunes	None, dune habitat does not exist within or adjacent to the project site.
Hairless popcorn-flower	<i>Plagiobothrys glaber</i>	1A, EACCS: No	Mar-May	Meadows and seeps (alkaline).	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
California alkali grass	<i>Puccinellia simplex</i>	1B.2, EACCS: No	Mar-May	Alkaline, vernal mesic, sinks, flats, and lake margins; Chenopod scrub, meadows and seeps, valley and foothill grassland, vernal pools	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.
Marsh skullcap	<i>Scutellaria galericulata</i>	2B.2, EACCS: No	Jun-Sep	Meadows and seeps (mesic), marshes and swamps.	None, this species generally associated with Delta water bodies (i.e., sloughs). There are no known records of occurrence in the project area.
Chaparral ragwort	<i>Senecio aphanactis</i>	2B.2, EACCS: No	Jan-Apr	Chaparral, cismontane woodland, coastal scrub, sometimes alkaline.	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Suisun Marsh aster	<i>Symphotrichum lentum</i>	1B.2, EACCS: No	May-Nov	Marshes and swamps (brackish and freshwater).	None, this species generally associated with Delta water bodies (i.e., sloughs). There are no known records of occurrence in the project area.
Saline clover	<i>Trifolium depauperatum var. hydrophilum</i>	1B.2, EACCS: No	Apr-Jun	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools.	None, project area is an irrigated cropland, vernal pools are lacking, and there are no known records of this species within or adjacent to the site.
Caper-fruited troidocarpum	<i>Tropidocarpum capparideum</i>	1B.1, EACCS: No	Mar-Apr	Valley and foothill grassland (alkaline hills).	None, project area is an irrigated cropland and there are no known records of this species within or adjacent to the site.
Insects and Crustaceans					
San Bruno Elfin Butterfly	<i>Callophrys mossii bayensis</i>	FE, EACCS: No	RES	Mostly considered to exist only on hilly chaparral and grassland habitats of San Bruno Mountain at northern San Francisco Peninsula	None, project area is an irrigated cropland and there are no known records of this species within 10 miles of the site.

Table D-1. Comprehensive List of Special-Status Species Potentially Occurring in the CalSun Project Area.

Common Name	Scientific Name	Status ^a	Season ^b	Primary Habitat ^c	Potential Occurrence in Project Area
Callippe silverspot butterfly	<i>Speyeria callippe callippe</i>	FE, EACCS: Yes	RES	Best known from San Bruno Mountain in San Mateo County. Occurs in grasslands of hilly terrain where its sole larval food plant, <i>Viola pedunculata</i> , grows.	None, project area is an irrigated cropland and there are no known records of this species within 10 miles of the site.
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	FE, EACCS: No	RES	Large, cool-water vernal pools with moderately turbid water.	None, playa pools do not occur in the project area and no known records in the project area.
Longhorn fairy shrimp	<i>Branchinecta longiantenna</i>	FE, EACCS: No	RES	Rock outcrops, vernal pools, ephemeral alkali pools, and vernal swales.	None, no suitable habitat (sandstone depressions, vernal pools) is present and no known records within 3 miles of the project area.
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT, EACCS: Yes	RES	Vernal pools, ephemeral alkali pools, seasonal stock ponds, vernal swales and rock outcrops.	Low, no suitable habitat (e.g., zero gradient seasonal pools) is present and no known records in the project area.
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	FE, EACCS: No	RES	Vernal pool wetland ecosystems.	None, playa pools do not occur in the project area and no known records in the project area.
Valley elderberry longhorn beetle	<i>Desmocerius californicus dimorphus</i>	FT, EACCS: No	RES	The species is nearly always found on or close to its host plant, elderberry.	None, the elderberry host plant does not occur in the project area; no known records in the project area.
Fish					
Delta smelt	<i>Hypomesus transpacificus</i>	FT, EACCS: No	RES	Endemic to the upper Sacramento-San Joaquin Delta where they inhabit open surface waters.	None, this species generally associated with Delta water bodies which are lacking from the project area.
Longfin smelt	<i>Spirinchus thaleichthys</i>	FC, ST, EACCS: No	RES	Found in bay, estuary, and nearshore coastal habitats.	None, this species generally associated with Delta water bodies which are lacking from the project area.
Central California Valley Steelhead	<i>Oncorhynchus mykiss</i>	FT, EACCS: Yes	RES	Shaded pools of small, cool, low-flow upstream reaches of tributaries of the San Francisco Bay and San Pablo Bay basins.	None, project area is an irrigated cropland and there are no open surface waters onsite.
Amphibians					

Table D-1. Comprehensive List of Special-Status Species Potentially Occurring in the CalSun Project Area.

Common Name	Scientific Name	Status ^a	Season ^b	Primary Habitat ^c	Potential Occurrence in Project Area
California tiger salamander, central population	<i>Ambystoma californiense</i>	FT, ST, EACCS: Yes	RES	Grassland, oak savanna, and edges of mixed woodlands. Breeding: vernal pools, temporary rainwater ponds, permanent human-made ponds if predatory fishes are absent.	Low, project area lacks breeding habitat and CNDDDB occurrences greater than 1.5 miles west of the site. Use of pesticides to control rodent population reduces aestivation sites and numerous barriers to dispersal surrounding site likely limits any occasional instances of migrating individuals.
Western spadefoot toad	<i>Spea hammondi</i>	CSC, EACCS: No	RES	Open areas with sandy or gravelly soils, in mixed woodlands, grasslands; rain pools which do not contain bullfrogs, fish, or crayfish are necessary for breeding.	None, no CNDDDB occurrences within 10 miles of project area and lacks suitable breeding habitat.
California red-legged frog	<i>Rana draytonii</i>	FT, CSC, EACCS: Yes	RES	Grasslands and streamside with plant cover; permanent water sources: lakes, ponds, reservoirs, slow streams, marshes, bogs, and swamps.	Low, CNDDDB occurrences less than 2 miles west of project area. However project area is an irrigated cropland and lacks suitable breeding habitat. Use of pesticides to control rodent population reduces aestivation sites and numerous barriers to dispersal surrounding site likely limits any occasional instances of migrating individuals.
Foothill yellow-legged frog	<i>Rana boylei</i>	EACCS: Yes	RES	Requires shallow, flowing water in small to moderate-sized streams with at least some cobble-sized substrate.	None, stream courses with cobble-sized substrate are lacking from the project area. There are no CNDDDB occurrences within 10 miles of project area.

Reptiles

San Joaquin coachwhip	<i>Masticophis flagellum ruddocki</i>	CSC, EACCS: No	RES	Open, dry, treeless areas, including grassland and saltbush scrub. Takes refuge in rodent burrows, under vegetation and surface objects.	Low, no known record occurrences in project area, and grasslands with a shrub component lacking in project area.
Alameda whipsnake	<i>Masticophis lateralis euryxanthus</i>	FT, CT, EACCS: Yes	RES	Open areas in canyons, rocky hillsides, chaparral scrublands, open woodlands, pond edges, and stream courses.	None, no suitable chaparral habitat onsite or known record occurrences within 3 miles of project area.

Table D-1. Comprehensive List of Special-Status Species Potentially Occurring in the CalSun Project Area.

Common Name	Scientific Name	Status ^a	Season ^b	Primary Habitat ^c	Potential Occurrence in Project Area
Giant garter snake	<i>Thamnophis gigas</i>	FT, CT, EACCS: No	RES	Marshes, sloughs, drainage canals, and irrigation ditches, especially around rice fields, and occasionally in slow-moving creeks.	None, no known record occurrences within 10 miles of project area and irrigation ditch is generally denude of vegetation and water exists for a short duration only during active irrigation.
Silvery legless lizard	<i>Anniella pulchra pulchra</i>	CSC, EACCS: No	RES	Occurs in moist warm loose soil with plant cover. Occurs in sparsely vegetated areas.	Low, no known record occurrences onsite and project area is highly disturbed cropland.
California coast horned lizard	<i>Phrynosoma coronatum (frontale population)</i>	CSC, EACCS: No	RES	Grasslands, woodlands, and chaparral, with open areas and patches of loose soil; and frequently found near ant hills.	Low, no known record occurrences onsite or within 4 miles and project area is highly disturbed cropland.
Western pond turtle	<i>Actinemys marmorata</i>	CSC, EACCS: No	RES	Ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation.	Low, CNDDDB occurrences within 1 mile of project site, however irrigation ditch is generally denude of vegetation and water exists for a short duration only during active irrigation.
Birds					
Tricolored blackbird	<i>Agelaius tricolor</i>	CSC, EACCS: Yes	RES (primarily)	Near open accessible water with dense emergent vegetation (e.g., cattails).	Low, this species may occasionally forage in the project area however suitable nesting habitat is lacking from project area.
Golden eagle	<i>Aquila chrysaetos</i>	BGPA, CFP, EACCS: Yes	RES (primarily)	Open grasslands and savannahs; Nests on cliffs of all heights and in large trees in open areas.	Low, species known from the region and may occasionally forage in the project area. Suitable nesting habitat is lacking from project area. This species is generally known from the Altamont Pass Wind Resource Area, located a few miles west of the project area.
Loggerhead shrike	<i>Lanius ludovicianus</i>	CSC, EACCS: No	RES (primarily)	Open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches.	Moderate, foraging habitat only, as no trees or shrubs occur within project area or will be impacted.

Table D-1. Comprehensive List of Special-Status Species Potentially Occurring in the CalSun Project Area.

Common Name	Scientific Name	Status ^a	Season ^b	Primary Habitat ^c	Potential Occurrence in Project Area
Western burrowing owl	<i>Athene cucularia</i>	CSC, EACCS: Yes	Primarily RES (may WNTR to South)	Open, dry grassland. Usually nests in old burrow of ground squirrel, or other small mammal.	High, site is highly disturbed, however suitable breeding habitat occurs along banks of irrigation ditch and foraging habitat is present in project area. Species are known from within 1 mile of project area.
Short-eared owl	<i>Asio flammeus</i>	CSC, EACCS: No	WNTR	Usually found in open areas with few trees such as annual and perennial grasslands, prairies, dunes, wetlands and irrigated lands.	Low, winter migrant to central valley and western Sierra Nevada foothills. Suitable roosting and resting habitat not present in the project area. No known records within 9 miles of the project area.
Swainson's hawk	<i>Buteo swainsoni</i>	CT, EACCS: No	SUM	Open riparian habitat, in scattered trees or small groves in sparsely vegetated flatlands. Usually near water in the Central Valley.	Moderate, CNDDB occurrences within 1 mile of project area; foraging habitat only, as no suitable nest trees exist onsite and none will be impacted by the project.
Northern harrier	<i>Circus cyaneus</i>	CSC, EACCS: No	RES (primarily)	Flat, open areas of tall, dense grasses, moist or dry shrubs, and edges for nesting, cover, and feeding.	Detected, species observed during August 2016 site survey. Suitable foraging habitat only in project area.
White-tailed kite	<i>Elanus leucurus</i>	CFP, EACCS: No	RES	Open grasslands, meadows, farmlands and emergent wetlands. Groves of dense, broad-leaved deciduous trees used for nesting and roosting.	Moderate, no known record occurrences in project area, but suitable foraging habitat is present in project area.
California black rail	<i>Laterallus jamaicensis coturniculus</i>	FP, ST, EACCS: No	RES	Tidal marshlands	None, tidal marshlands do not exist in the project area.
Song sparrow ("Modesto" population)	<i>Melospiza melodia mailliardi</i>	CSC, EACCS: No	RES	Moderately dense wetland/riparian vegetation	None, no known record occurrences in project area and breeding is lacking onsite due lack of wetland/riparian vegetation.
Grasshopper sparrow	<i>Ammodramus savannarum</i>	CSC, EACCS: No	SUM	Native grassland with mix of grasses and forbs for nesting and foraging.	Low, no known record occurrences in project area and breeding is unlikely due to level of site disturbance from agriculture.

Table D-1. Comprehensive List of Special-Status Species Potentially Occurring in the CalSun Project Area.

Common Name	Scientific Name	Status ^a	Season ^b	Primary Habitat ^c	Potential Occurrence in Project Area
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	CSC EACCS: No	WNTR	Dense emergent wetland of cattails, tules, and other wetland plants, often along border of lake or pond.	None, no known record occurrences in project area and wetland habitats are lacking onsite.
Mammals					
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	FE, CT, EACCS: Yes	RES	Annual grasslands or grassy open stages of vegetation, some agricultural areas.	Low, CNDDDB occurrences within 1 mile of project area. Suitable foraging habitat in project area; however denning is unlikely due to lack of mammal burrows as a result of site disturbance and chemical control of ground squirrels.
American badger	<i>Taxidea taxus</i>	CSC, EACCS: Yes	RES	Friable soils, and relatively open, uncultivated ground; grasslands, savannas.	Low, CNDDDB occurrences within 1 mile of project area. Suitable foraging habitat in project area; however denning is unlikely due to level of site disturbance and chemical control of ground squirrels.
Riparian brush rabbit	<i>Sylvilagus bachmani riparius</i>	FE, CE, EACCS: No	RES	Riparian oak forests with dense understory	None, no suitable riparian habitat exists onsite.

Notes:

^a **Status.**

Federal Status

- FE = federally listed as endangered
 - FT = federally listed as threatened
 - FD = federally delisted
 - BGPA = Bald and Golden Eagle Protection Act
 - BCC = bird of conservation concern
- State Status**
- CE = state listed as endangered
 - CT = state listed as threatened
 - CFP = state fully protected
 - CR = state rare
 - CSC = state species of concern
 - CWL = watch list species
- California Native Plant Society (CNPS) Status**
- 1A = plants presumed extinct in California, rare or extinct elsewhere
 - 1B = plants rare, threatened, or endangered in California and elsewhere

Table D-1. Comprehensive List of Special-Status Species Potentially Occurring in the CalSun Project Area.

Common Name	Scientific Name	Status ^a	Season ^b	Primary Habitat ^c	Potential Occurrence in Project Area
2B = plants endangered in California 3 = needs review 4 = uncommon in California .1 = seriously endangered .2 = fairly endangered <u>East Alameda County Conservation Strategy (EACCS)</u> Yes = covered species No = not a covered species					
^b Season. Blooming period for plants. Season of use for animals. RES = Resident; SUMR = Summer; WNTR = Winter					
^c Primary Habitat. Most likely habitat association					
Sources: (Clifton Court Forebay, Brentwood, Woodward Island, Holt, Union Island, Tracy, Midway, Altamont, and Byron Hot Springs Quads searched) California Department of Fish and Wildlife. Natural Diversity Database Program "Rarefind" California Natural Diversity Database. The Resources Agency, Sacramento. California Native Plant Society. 2016. Inventory of Rare and Endangered Plants (online 8th edition). California Native Plant Society. Sacramento, CA					

Appendix D
Cultural Resources Inventory Report

Cultural Resources Survey of the CalSun Solar Project

PREPARED FOR: Mitch Weinberg, Calpine Corporation

COPY TO: Barbara McBride, Jill Van Dalen, Calpine Corporation

PREPARED BY: Gloriella Cardenas, MA, RPA, Kurt Lambert, Doug Davy; CH2M

DATE: June 23, 2017

CalSun is a solar photovoltaic energy generation and storage project located in eastern Alameda County, California on a single 112-acre parcel (see Figures 1 and 2, figures are included at the end of the memorandum), Assessor's Parcel Number 99B-7100-3-1. It is bordered on the north by the Byron-Bethany Road (County Road J4), and on the west by Mountain House Road. The portion of the site to be developed for the solar generation and energy storage facility is 89.1 acres in size. The project will consist of 20 MW of single-axis tracking solar photovoltaic arrays and 20 MW of energy storage capacity.

This report documents a cultural resources literature search of the CalSun project site and intensive pedestrian survey of previously unsurveyed portions of the project site. The survey resulted in the recordation of a single historical resource site, a farm utility structure, possibly a milking shed.

The literature search was conducted by Gloriella Cardenas, MA, RPA and the field survey was conducted by cultural resources specialist Kurt Lambert. Mr. Lambert has 18 years of experience conducting cultural resources surveys.

Literature Search

CH2M requested a literature search of the California Historical Resources Information System at the Northwest Information Center (NWIC), located in Sonoma State University, Rohnert Park, California on September 22, 2016 and the results were provided by the NWIC on October 13, 2016. The records search included a review of all recorded prehistoric and historic archaeological sites and historic architectural resources, as well as all known cultural resource survey and excavation reports of a study area consisting of the Project site and the area within one half-mile radius around the Project site. Additionally, the National Register of Historic Places (NRHP), the California Register of Historic Resources (CRHR), California Historical Landmarks, and California Points of Historic Interest were all examined.

The following historical maps were reviewed to identify known historical land uses pertinent to the Project area:

- 1916 United States Geological Survey (USGS) Byron Quadrangle topographic map
- 1940 United States Geological Survey (USGS) Byron Quadrangle topographic map

Review of the mapped data provided by the NWIC revealed that eight previous studies have been conducted within the project site boundary and an additional nine previous studies have been conducted within 0.5 mile of the project site (NWIC 2016). The majority of these studies are cultural resources assessments which included archaeological pedestrian surveys. Table 1 lists all previous investigations conducted within the study area, which is composed of the APE and a 0.5-mile radius.

The previous surveys covered all of the CalSun project site area except for the extreme northern tip of the property and a triangle of land on the eastern boundary along Byron-Bethany highway.

Table 1. Literature Search Results, Cultural Resources Reports

Authors and Date	Report Name	CHRIS Catalogue NADB Numbers
Within the project area		
Pastron, Allen G., 1989	Cultural Resources Evaluation of the Proposed Mountain House Planned Community, Alameda and San Joaquin Counties, California	S-18762
Anonymous – 1996	Cultural Resources Technical Report, Contra Costa Water District, Los Vaqueros Resource Management Plan	S-43313
Meyer, Jack, 2002	Preliminary Geoarchaeological Assessment of the East Altamont Energy Center Site and “Linears”, Alameda, Contra costa, and San Joaquin Counties, California	S-43932
Bard, James, Robin McClintock, James Sharp, and Robert Harmon	A Cultural Resource Assessment of the Proposed East Altamont Energy Center, Alameda Contra Costa and San Joaquin Counties, California	S-24271
Torres, Dorothy and Gary Reinoehl, 2002	Historic Resources Survey for East Altamont Energy Center	S-43312
Hatoff, Brian, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente, 1995	An Archaeological Field Reconnaissance of the Moller Property, Near Byron, Alameda and Contra Costa Counties, California.	S-17993
Martin, Leigh, Aimee Arrigoni, and William Self, 2006	Historic Property Survey Report, Byron Highway Shoulder Improvement Project, Contra Costa County, California, EA 964100, STP-5928-1	S-33643
Siskin, Barb, Cassidy DeBaker, Thomas Martin, Beatrice Cox, and Jennifer Lang, 2010	Cultural Resources Inventory for the San Joaquin Valley Right of Way Maintenance Environmental Assessment Project	S-43685
Within 0.5 mile of the project		
Bramlette, Allan, Mary Praetzellis, Adrian Praetzellis, Margaret Purser, and David A. Fredrickson, 1990	Archaeological and Historical Resources Inventory for the Vasco Road and Utility Relocation Project, Contra Costa and Alameda Counties	S-12800
Peak, Melinda A. and Robert Gerry, 2002	An Evaluation of Historic Features, East Altamont Energy Center Project, Alameda County, California	S-28673
Nickels, Adam, and BranDee Bruce, 2009	Class III Cultural Resources Inventory for the Tracy Fish Facility, Abandoned Intake Rehabilitation and Development Contra Costa County, California	S-35794
St. Claire-Jerman, Michelle, 2011	Cultural Resources Report for the Cool Earth Altamont Solar Energy Center Project, Alameda County	S-46102
Scantlebury, Meg, 2013	Addendum 1 to the Built Historical Resources Evaluation Report for the Bay Delta Conservation Plan Project, Sacramento, Yolo, Solano, San Joaquin, Contra Costa, and Alameda Counties, California	S-46749

Table 1. Literature Search Results, Cultural Resources Reports

Authors and Date	Report Name	CHRIS Catalogue NADB Numbers
West, G. James, 1982	Class II Archaeological Survey, Kellogg Unit Reformulation, Contra Costa County, California	S-10508
Gilberti, Joseph, 2002	A Cultural Resources Reconnaissance Survey of Proposed Removal of the Tracy-Contra Costa-Ygnacio 69kV Transmission Line, Contra Costa and Alameda Counties, California	S-27445
Killam, William R., 1978	Cultural Resources Investigations and Intensive Survey for the Lawrence Livermore Direct Service 230 kV Transmission Line	S-9119
Werner, Roger H., 1988	Cultural Resource Survey for the Proposed Delta Mendota Canal, California Aqueduct, Intertie, Alameda County, California	S-11647

Source: NWIC 2016

Two historical resources, both transmission lines, are located within the project parcel, but not within the project fence line. A number of historical resources have previously been recorded within a half-mile of the project site, including the Tracy Pumping Plant and a segment of the Delta-Mendota Canal including its intake, which was found to meet the criteria for listing in the National Register of Historic Places. Other historical resources in the area such as the Tracy Substation, have been evaluated and found not eligible for the National Register.

Table 2 lists all the previously recorded sites within the study area. Further details regarding resources in the project are provided below.

Table 2. Literature Search Results, Cultural Resources Sites

Site Number	Site Type	Site Description	Evaluation CRHR/NRHP Year
P-01-10449	Historic	Segment of the Hurley-Tracy Transmission Line (No. 4)	Not eligible, 2001
P-01-10446	Historic	Segment of PG&E Distribution Line (No. 7)	Not eligible, 2001

Two transmission lines of the historic era and that are in operation are within the larger project parcel but not within the project site boundary because they are within the transmission line easement that runs through the property diagonally. These properties have been found not eligible for the NRHP.

P-01-10446. This resource is a segment of the PG&E Distribution Line (No. 7) which was originally constructed by Stanislaus Electric in 1909. This is a single wood pole line and was associated with early hydroelectric plants in California. The line was a 60 kV line off of the main transmission line of Stanislaus Electric Company’s system which connected the Stanislaus Powerhouse on the Middle Fork of the Stanislaus River to Oakland. In 1914, this line is denoted as a Sierra and San Francisco Power Company line and in 1917, it is denoted as a Pacific Gas and Electric line. This segment was recommended as not eligible for the NRHP in 2001. As of its recording in 2001, this line was still in use (Bakic and Baker, 2001a).

P-01-10449. This resource is a segment of the Hurley-Tracy Transmission Line (No. 4). This line was constructed in 1951 by the US Bureau of Reclamation as part of the Central Valley Project. The Shasta Dam was constructed as part of the Central Valley Project to collect water from the southern Cascade Mountain range and then transport it down the Sacramento Valley via the Sacramento River. The Tracy Pumping Plant then pumps the water nearly 200 feet up from the river to the Delta Mendota Canal. This canal moves water to the San Joaquin Valley where it is used for crop irrigation. The Hurley-Tracy line is one of three transmission lines constructed to bring electricity from the hydropower generators at Shasta Dam to the Tracy Pumping Station. This resource was recommended as not eligible in 2001 for the NRHP or the CRHR (Bakic and Baker, 2001b).

Pedestrian Archaeological Survey

All but 12 acres of the property has experienced intensive archaeological survey under the eight previous surveys. A survey of this remaining acreage was conducted on May 9, 2017 by cultural resources specialist Kurt Lambert. The survey was conducted under the supervision of CH2M archaeologist Gloriella Cardenas M.A., RPA, who meets the qualifications for Principal Investigator in the Secretary of the Interior's standards and guidelines for archaeology and historic preservation (National Park Service 1983). The survey covered the previously unsurveyed areas using pedestrian linear transects spaced at a minimum of 15 meters apart.

The previously unsurveyed portions of the project site consisted of two separate, triangular areas each adjacent to the west side of Byron-Bethany Road in an area used for agriculture. These areas had been harvested of alfalfa and ploughed recently before the survey took place. Despite recent ploughing, low lying vegetation remained throughout the parcel. Ground visibility was approximately 40-50 percent due to this vegetation. No cultural resources were noted within the 12-acre previously unsurveyed area.

A structure associated with agriculture, possibly a milking shed, was identified in the energy storage area outside of the previously unsurveyed area and was recorded on California Department of Parks and Recreation Form DPR-523 (attached to this memorandum).

Milking Shed. This structure is located just south of the series of high-voltage transmission lines that runs diagonally across the parcel and near one of the transmission towers. The structure has been called a 'milking shed' and has a gable roof with two dormers at the spine of the roof. It measures approximately 25' long (E-W) and 10' wide (N-S). It is approximately 12' high to the ridge of the roof. The lower portion of the walls consists of concrete and the upper portion is made of wooden siding, in a board-and-batten design. The concrete portion wraps around the structure up to a height of 51". The wooden portion extends to a height of approximately 9', at the bottom of the eaves of the gable roof. The roof was at one time covered with wooden shingles, but these have mostly have fallen into the interior of the structure. Along the exterior of the western elevation is a flight of five cement steps and a landing. There are two doorways (one boarded up) and two window openings in the northern elevation of the structure. The southern elevation likewise has two windows, although now just empty frames. The interior of the structure is divided into two small rooms, measuring approximately 10' x 12'. It is now filled with wood from the ceiling (rafters and shingles) and tires.

The milking shed is one of several structures visible in aerial photographs from 1939 (these structures do not appear as buildings on USGS topographic maps). The surrounding structures (presumably barns or equipment sheds or shops) were much larger than the milking shed and are not evident in aerial photographs dating from 1979 and later.

The milking shed is lacking integrity of materials and workmanship due to its dilapidated condition. It is lacking integrity of feeling and association due to the removal of the other agricultural buildings that once surrounded it and had some functional relationship to it. There is no apparent association with people or events with particular importance in national, regional or local history. The building is unremarkable architecturally. It is not the work of a master architect and does not have the potential to

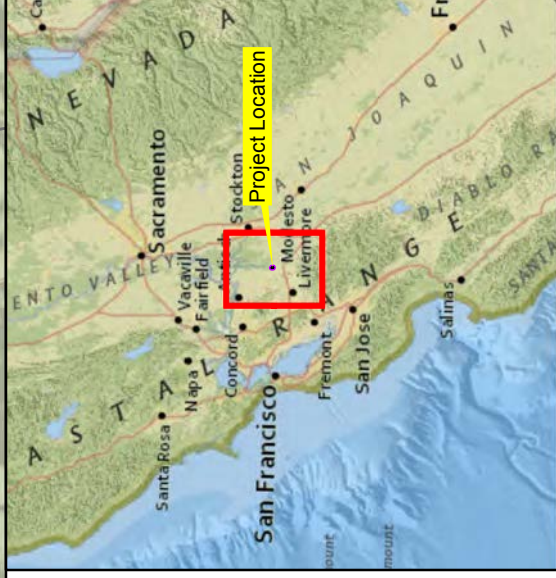
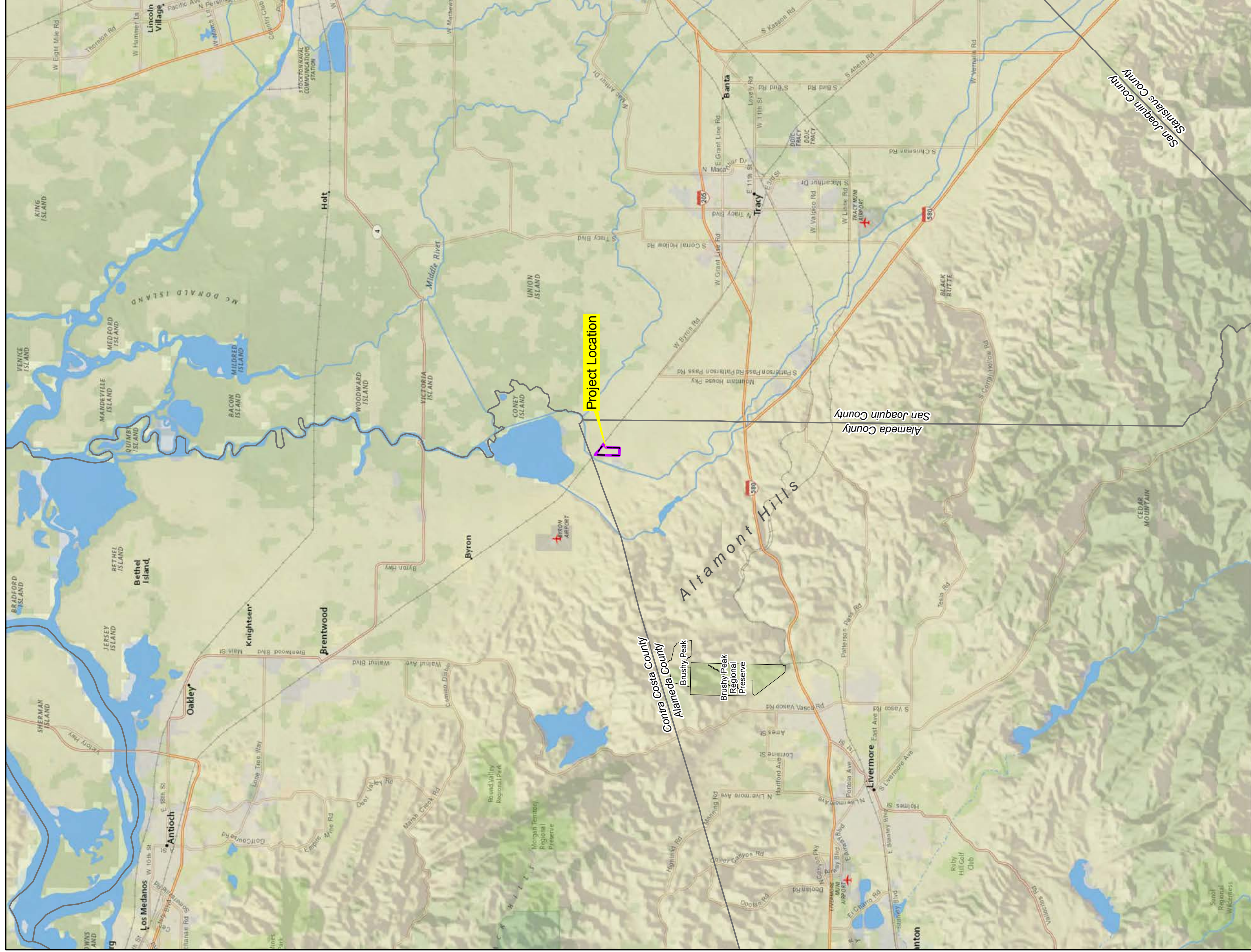
yield information important to history. It is therefore not eligible for listing in the National Register of Historic Places or California Register of Historical Resources.


Summary and Conclusions

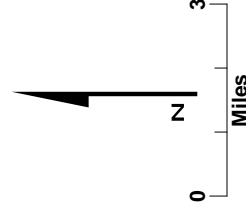
Cultural resources have not previously been recorded within the boundaries of the project site other than segments of two transmission lines and the milking shed, all of which are found not eligible for listing in the California Register of Historical Resources or the National Register of Historic Places. The possibility remains that buried archaeological resources could be encountered during site grading or other construction activities. If previously unrecorded archaeological properties are discovered in the project area during construction, it is recommended that the project owner conduct archaeological investigations to confirm/document presence of such resources, and conduct on-site monitoring when project activities are taking place near a cultural resources site to ensure that impacts to cultural resources are avoided.

There are no known cemeteries located on the project site. If human remains or Native American Tribal cultural resources or archaeological sites are inadvertently encountered during construction, the project owner should comply with California Health and Safety Code 7050.5, and contact the county coroner. If the coroner determines that the find is Native American, the coroner is required to contact the Native American Heritage Commission in Sacramento.

Figures



LEGEND
 Project Site



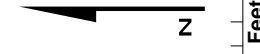
Service Layer Credits: Content may not reflect National Geographic's current map policy. Sources: National Geographic, Esri, DeLorme, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

Figure 1
Regional Location
 CalSun Solar Project





- LEGEND**
- Project Site
 - Areas Newly Surveyed for Cultural Resources
 - County Boundary
 - Railroad
 - High-voltage Transmission Line



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 2
Project Site and Surveyed Areas
 CalSun Solar Photovoltaic Energy Project



DPR Form 523, Milking Shed

State of California <input type="checkbox"/> The Resources Agency		
DEPARTMENT OF PARKS AND RECREATION	Primary #	HRI #
PRIMARY RECORD	Trinomial	
		NRHP Status Code
Review Code	Other Listings Reviewer	Date

Page 1 of 1

*Resource Name or #: (Assigned by recorder) Milking Shed

P1. Other Identifier: _____

*P2. Location: Not for Publication Unrestricted

*a. County: Alameda and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: Clifton Court Forebay, 1978 T 1S; R 4E; El Pescadero Rancho; MD B.M.

c. Address: Mountain House Road and Byron-Bethany Road City: Byron, California Zip: 94514

e. UTM: (Give more than one for large and/or linear resources) Zone 10, 625,337 mE/ 4,185,265 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate): Parcel at intersection of Mountain House Road with Byron-Bethany Road (Alameda County Road J4). The structure is located east of Mountain House Road, between Byron-Bethany and Kelso Roads. It is just south of the southernmost high-voltage transmission tower closest to Mountain House Road.

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The resource consists of a milking shed located in an agricultural field underneath high voltage transmission lines leading to the nearby Tracy Substation. The structure has a gable roof (with two dormers at the spine of the roof). It measures approximately 25' long (E-W) and 10' wide (N-S). It is approximately 12' high to the ridge of the roof. The lower portion of the walls consists of concrete and the upper portion is made of wooden siding, in a board-and-batten design. The concrete portion wraps around the structure up to a height of 51". The wooden portion extends to a height of approximately 9', at the bottom of the eaves of the gable roof. The roof had been covered with wooden shingles, but these are mostly gone, and some have fallen into the interior of the structure. The skeletal framing, running lengthwise, is still in place. Two 3' x 3' dormers are located at the spine of the roof. The eastern most is somewhat intact, but the western feature is almost entirely gone, leaving just an opening in the roof. Along the exterior of the western elevation is a flight of five cement steps and a landing. There are two doorways (one boarded up) and two window openings in the northern elevation of the structure. The southern elevation likewise has two windows, although now just empty frames. The interior of the milking shed is divided into two small rooms, measuring approximately 10' x 12'. It is now filled with wood from the ceiling (rafters and shingles) and tires.

*P3b. Resource Attributes: (List attributes and codes) HP4, Ancillary Building

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)



*P5b. Description of Photo: (view, date, accession #)

View of milking shed looking 60 degree

*P6. Date Constructed/Age and Source: Historic Prehistoric Both

*P7. Owner and Address: Calpine Corporation, Dublin, CA

*P8. Recorded by: (Name, affiliation, and address): Kurt Lambert, CH2M, 2485 Natomas Park Drive, Sacramento, CA

*P9. Date Recorded: 05/09/2017

*P10. Survey Type: Intensive Pedestrian Surface Survey

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Cardenas, Gloriella and Kurt Lambert. 2017. Cultural Resources Survey of the CalSun Solar Project, Alameda County, California. Prepared by CH2M for Calpine Corporation.

*Attachments: NONE Location Map Continuation Sheet Building, Structure, and Object Record
 Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art
 Record Artifact Record Photograph Record Other (List): _____