DRAFT

Initial Study and Mitigated Negative Declaration for the Los Banos Wildlife Area Solar Project

Lead Agency:

DGS CALIFORNIA DEPARTMENT OF GENERAL SERVICES

Real Estate Services Division

707 Third Street, 4th Floor

West Sacramento, California 95605

FOREFRONT POWER

Prepared for:

100 Montgomery Street #1400

San Francisco, California 94104

January 2024

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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Initial Study and Mitigated Negative Declaration
Los Banos Wildlife Area Solar Project
Merced County, California

Lead Agency:

State of California Department of General Services
Real Estate Services Division
707 Third Street, 4th Floor
West Sacramento, California 95605

Prepared For:

100 Montgomery Street
San Francisco, California 94104

Prepared By:

2525 Warren Drive
Rocklin, California 95677

January

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DRAFT MITIGATED NEGATIVE DECLARATION
LOS BANOS WILDLIFE AREA SOLAR PROJECT

Lead Agency:	State Department of General Services
Project Proponent:	ForeFront Power LLC
Project Location:	The Project is located just outside and north of the City of Los Banos, approximately 1.0 mile directly east of the intersection of Mercy Springs Road and Henry Miller Avenue, in unincorporated Merced County. The Project Site is east of an irrigation canal known as San Luis Canal at 18110 Henry Miller Avenue. The Assessor's Parcel Number (APN) for the Project Site is 070-202-012. Section 31, Township 09 South, Range 11 East of the Mount Diablo Base and Meridian. The approximate center of the site is located at latitude 37.100008° and longitude -121.817025°.

Project Description:

The Proposed Project is a solar Photo Voltaic power generation system to be located within the Los Banos Wildlife Area, at 18110 Henry Miller Ave, Los Banos, CA. The 486 ground-mounted solar arrays would occupy approximately 27,000 square feet and will convert sunlight to direct current electrical power which would then be converted to alternating current by string inverters before being delivered to the Pacific Gas and Electric distribution system. The total system size is expected to be approximately 211 kilowatts, subject to final design and Site optimization.

The solar system would be configured into three generally contiguous arrays that are laid-out to avoid impacts to natural resources. The solar system would utilize either fixed-tilt or single-axis tracking mounting technology to optimize efficiency and performance. Single-axis trackers are designed to rotate the arrays in the east-to-west plane to track the sun's movement across the horizon. Once installed, the ground-mounted solar arrays would be approximately 8 feet in height depending on the time of day to the extent a tracking system is utilized. A security fence (totaling 850 linear feet) would be installed around the solar arrays.

Conduits and wires would be buried in trenches that run between rows and/or installed above-grade running along the backside of strings to connect the output of each string to the inverters. String inverters would be attached to racking adjacent to each array to convert electricity from direct current to alternating current. The inverters then send alternating current electricity to an on-site transformer to step the electricity up to the interconnection voltage.

Public Review Period: To be determined.

Mitigation Measures Incorporated into the Project to Avoid Significant Effects:

Biological Resources

BIO-1: **Nesting Bird Survey.** If construction is to occur during the nesting season (generally February 1 - August 31), conduct a pre-construction nesting-bird survey of all suitable nesting habitat within 14 days prior to construction. The survey shall be conducted within a 500-foot radius of Project work areas for raptors and within a 100-foot radius for other nesting birds. If any active nests are observed, these nests shall be designated an environmentally sensitive area and protected by an avoidance buffer established in coordination with CDFW until the breeding season has ended or until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival.

Timing/Implementation: Prior to construction (only during nesting season)

Implementation/Responsibility/Verification: Developer/Project Biologists

BIO-2: **Special-Status Wildlife Survey.** A qualified biologist shall conduct a pre-construction special-status wildlife survey in the Project Area (including impacts areas, access roads, and staging areas) between 30 and 15 days prior to ground- or vegetation-disturbing construction activities. The survey shall be conducted within 200 feet of all areas of ground or vegetation disturbance and shall be conducted for the following species: California tiger salamander, western spadefoot, northwestern pond turtle, Northern California legless lizard, giant garter snake, San Joaquin kit fox, and American badger. The survey shall follow accepted procedures for these species and shall map any occurrences or habitat features (i.e., dens or burrows) with sign of special-status species. If no special-status species are detected, construction may proceed in unoccupied habitat. If special-status species are detected, the following measures shall apply:

- If a special-status species is detected within or near the Project Area during the pre-construction survey and there is potential for Project activities to impact the species, a qualified biological monitor shall be present during all activities that may impact the species (e.g., ground or vegetation disturbance).
- Special-status wildlife detected prior to or during construction shall be allowed to move out of the work area of their own volition. If an individual must be relocated, a qualified biologist with required permits or approvals must relocate the individual out of harm's way to the nearest suitable habitat at least 100 feet from the Project work area where it was found.

If a kit fox or badger den is detected within 200 feet of the work area, it shall be designated an environmentally sensitive area and protected by an avoidance buffer of 200 feet for non-natal dens. A buffer distance for natal dens shall be established in consultation with USFWS and/or CDFW. Avoidance buffers shall be maintained until a qualified biologist determines the den is no longer active. Any demarcation of the dens or avoidance zone shall not prevent access to the den by kit foxes or badgers.

Timing/Implementation: *Prior to and during construction.*

Implementation/Responsibility/Verification: Developer/Project Biologists

BIO3: **Worker Environmental Awareness Training.** A qualified biologist shall conduct mandatory worker environmental awareness training for all contractors, work crews, and any onsite personnel to aid workers in recognizing special-status species and other sensitive biological resources that may occur onsite. The training shall include identification of the special-status species with potential to occur and their habitats, a description of the regulatory status of sensitive resources, and review of the limits of construction, environmentally sensitive areas, and measures required to reduce impacts to biological resources. The Project shall retain a qualified biologist with any required permits on an as-needed basis to assist with potential biological issues that may arise during construction (i.e., wildlife relocation).

Timing/Implementation: *Prior to construction*

Implementation/Responsibility/Verification: Developer/Project Biologists

BIO-4: **Impact Limits and Avoidance Areas.** The Project impact limits shall be clearly demarcated prior to construction and all workers shall be made aware of the impact limits and avoided areas. If orange construction fencing is to be used, it shall be placed such that there is a one-foot gap between the ground and the bottom of the fencing to prevent ground-dwelling animals from being caught in the fencing. No work shall occur outside of the Project impact limits. All vehicles and equipment shall be restricted to the Project impact limits and/or existing designated access roads and staging areas. Project-related vehicles shall observe a speed limit of 15 miles per hour during the day and 10 miles per hour at night in construction areas and on access roads where it is safe and feasible to do so, except on county roads and State and federal highways.

Timing/Implementation: *Prior to and during construction*

Implementation/Responsibility/Verification: Developer/Project Biologists

BIO-5: **Inadvertent Entrapment Prevention.** To prevent inadvertent entrapment of special-status wildlife during construction, all excavated, steep-walled holes or trenches more than two-feet deep shall be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape or the USFWS/CDFW should be contacted for guidance.

Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way.

Timing/Implementation: *During construction.*

Implementation/Responsibility/Verification: Developer

BIO-6: Because Crotch bumble bee nest locations are chosen on an annual basis and the site provides marginal nesting habitat, a CDFW-approved Crotch bumble bee biologist shall conduct three weekly preconstruction nesting surveys with focus on detecting active nesting colonies with the third and final survey conducted within 24-hours immediately prior to ground disturbing activities that are scheduled to occur during the flight season (February through October). Surveys shall be completed at a minimum of one person-hour of searching per three acres of suitable habitat during suitable weather conditions (sustained winds less than 8 mph, mostly sunny to full sun, temperatures between 65 and 90 degrees Fahrenheit) at an appropriate time of day for detection (at least an hour after sunrise and at least two hours before sunset, though ideally between 9am-1pm). If no nests are found but the species is present, a full-time qualified biological monitor shall be present during initial vegetation or ground disturbing activities that are scheduled to occur during the queen flight period (February through March), colony active period (March through September), and/or gyne flight period (September through October). The Crotch bumble bee biologist shall immediately notify CDFW of the detection as further coordination may be required to avoid or mitigate certain impacts. If an active Crotch bumble bee nest is detected, an appropriate no disturbance buffer zone (including foraging resources and flight corridors essential for supporting the colony) shall be established around the nest to reduce the risk of disturbance or accidental take and the designated biologist shall coordinate with CDFW to determine if an Incidental Take Permit under Section 2081 of the California ESA will be required. Nest avoidance buffers may be removed at the completion of the flight season and/or once the qualified Crotch bumble bee biologist deems the nesting colony is no longer active and CDFW agrees with the determination.

If initial grading is phased or delayed for any reason, the 24-hour preconstruction nesting survey will be repeated prior to ground-disturbing activities that are scheduled to occur during the same flight season (February through October). Three preconstruction Crotch bumble bee nesting surveys shall be required in subsequent years of construction whenever vegetation and ground disturbing activities are scheduled to occur during the flight season (February through October) if nesting habitat is still present or has re-established and will be affected.

Timing/Implementation: Three weekly preconstruction nesting surveys

Implementation/Responsibility/Verification: Developer/Project Biologists

BIO-7: **Refuse Removal.** To avoid attracting special-status mammals to the Project site, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from the Project site during construction.

Timing/Implementation: *During construction.*

Implementation/Responsibility/Verification: *Developer*

BIO-8: **Erosion Control BMPs.** Erosion control measures should be placed between avoided aquatic resources and the outer edge of the impact limits prior to commencement of construction activities and should be maintained until construction is completed and soils have been stabilized.

Timing/Implementation: *Prior to and during construction.*

Implementation/Responsibility/Verification: *Developer*

BIO-9: **Fueling Containment BMPs.** Any fueling in the Study Area should use appropriate secondary containment techniques to prevent spills and should occur at least 150 feet from potential aquatic resources.

Timing/Implementation: *During construction.*

Implementation/Responsibility/Verification: *Developer*

Cultural Resources

CUL-1: **Implement Measures to Protect Unanticipated Cultural, Archaeological, and/or Tribal Cultural Resources Discoveries.** The following mitigation measure is intended to address the evaluation and treatment of inadvertent/unanticipated discoveries of potential tribal cultural resources (TCRs), archaeological, or cultural resources during a project's ground disturbing activities.

- If any suspected archaeological or cultural resources are discovered during ground disturbing construction activities, all work shall cease within 100 feet of the find, or an agreed upon distance based on the project area and nature of the find. A professional archaeologist who meets the Secretary of Interior's Standards for Archaeology will make recommendations for further evaluation and treatment, as necessary.
- If any suspected TCRs are discovered during ground disturbing construction activities, all work shall cease within 100 feet of the find, or an agreed upon distance based on the project area and nature of the find. A Tribal Representative from a California Native American tribe that is traditionally and culturally affiliated with a geographic area shall be immediately notified and shall determine if the find is a TCR (PRC §21074). The Tribal Representative will make recommendations for further evaluation and treatment, as necessary.
- When avoidance is infeasible, preservation in place is the preferred option for mitigation of TCRs, or archaeological or cultural resources under CEQA protocols, and every effort shall be made to preserve the resources in place, including through project redesign, if feasible. Culturally appropriate treatment may be, but is not limited to, processing materials for reburial, minimizing handling of cultural objects, leaving objects in place within the landscape, or returning objects to a location within the project area where they will not be subject to future impacts. Permanent curation of TCRs will not take place

unless approved in writing by the California Native American Tribe(s) that is traditionally and culturally affiliated with the project area.

- The contractor shall implement any measures deemed by the CEQA lead agency to be necessary and feasible to preserve in place, avoid, or minimize impacts to the resource, including, but not limited to, facilitating the appropriate tribal treatment of the find, as necessary. Treatment that preserves or restores the cultural character and integrity of a TCR may include Tribal Monitoring, culturally appropriate recovery of cultural objects, and reburial of cultural objects or cultural soil.
- Work at the discovery location cannot resume until all necessary investigation and evaluation of the discovery under the requirements of the CEQA, have been satisfied.

Human Remains

- If the find includes human remains, or remains that are potentially human, he or she shall ensure reasonable protection measures are taken to protect the discovery from disturbance (AB 2641). The archaeologist shall notify the Fresno County Coroner (per § 7050.5 of the Health and Safety Code). The provisions of § 7050.5 of the California Health and Safety Code, § 5097.98 of the California PRC, and AB 2641 will be implemented. If the Coroner determines the remains are Native American and not the result of a crime scene, the Coroner will notify the NAHC, which then will designate a Native American Most Likely Descendant (MLD) for the project (§ 5097.98 of the PRC). The designated MLD will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (§ 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§ 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.

Timing/Implementation: *During construction*

Implementation/Responsibility/Verification: *Developer and Department of General Services*

Geology and Soils

GEO-1 **Paleontological Discovery.** If paleontological or other geologically sensitive resources are identified during any phase of project development, the construction manager shall cease operation at the site of the discovery and immediately notify the DGS. DGS shall retain a qualified paleontologist to provide an evaluation of the find and to prescribe mitigation measures to reduce impacts to a less-than-significant level. In considering any suggested mitigation proposed by the consulting paleontologist, DGS shall determine whether

avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, land use assumptions, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for paleontological resources is carried out.

Timing/Implementation:	*During construction*
Implementation/Responsibility/Verification:	*Developer and Department of General Services*

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ACRONYMS AND ABBREVIATIONS

Term	Description
˚F	Fahrenheit
A-1	General Agriculture
AB	Assembly Bill
AMSL	Above Mean Sea Level
ANSI	American National Standards Institute
APE	Area of Potential Effects
APN	Assessor Parcel Number
BAU	Business As Usual
BMP	Best Management Practice
BPS	Best Performance Standards
BRA	Biological Resources Assessment
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officer's Association
CARB	California Air Resources Board
CARI	California Aquatic Resources Inventory
CCIC	Central California Information Center
CCID	Central California Irrigation District
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CGS	California Geological Survey
CH_4	Methane
CHRIS	California Historical Resources Information System
CI	*Coccidioides immitis*
City	City of Los Banos
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalents
County	Merced County
dBA	A-weighted decibels
DGS	California Department of General Services
DOF	California Department of Finance
DPM	Diesel Particulate Matter
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
ECHO	Enforcement and Compliance History Online
EIR	Environmental Impact Report
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zone

Term	Description
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	Greenhouse Gas
GLO	General Land Office
GP	General Plan
gpm	Gallons Per Minute
GWD	Goleta Water District
I-5	Interstate 5
IS	Initial Study
IS/MND	Initial Study Mitigated Negative Declaration
kW	Kilowatt
kWh	Kilowatt-hours
LEED	Leadership in Energy and Environmental Design
MCFD	Merced County Fire Department
MCT	Merced County Transit
MLD	Most Likely Descendant
MND	Mitigated Negative Declaration
MRZ	Mineral Resource Zone
MVD	Mid Valley Disposal
MCRWMA	Merced County Regional Waste Management Authority
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NIOSH	National Institute for Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OVFD	Los Banos Volunteer Fire Department
PG&E	Pacific Gas & Electric Company
PM_{10},$PM_{2.5}$	Particulate Matter
PPV	Peak Particle Velocity
PRC	Public Resources Code
PV	Photo Voltaic
RACT	Reasonably Available Control Technology
ROG	Reactive Organic Gas
RWQCB	Regional Water Control Board
RTP/SCS	Regional Transportation Plan and Sustainable Communities Strategy
SIP	State Implementation Plan
SR	State Route
SJVAPCD	San Joaquin Valley Air Pollution Control District
SJVAB	San Joaquin Valley Air Basin
SRA	State Responsibility Area
SSC	Species of Special Concern
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board

Term	Description
TCR	Tribal Cultural Resources
UCMP	University of California Museum of Paleontology
USC	U.S. Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VHFHSZ	Very High Fire Hazard Severity Zone
VOC	Volatile Organic Compounds
WEAP	Worker Environmental Awareness Program
WMP	Water Management Plan
WWTP	Wastewater Treatment Plant

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1.0 BACKGROUND

1.1 Summary

Project Title:	Los Banos Wildlife Area Solar Project
Lead Agency Name and Address:	State of California, Department of General Services Real Estate Services Division California Conservation Corps 1719 24th Street Sacramento, California 95816
Contact Person and Phone Number:	Terry Ash, Senior Environmental Planner Phone Number 916 201-0085
Project Location:	Los Banos Wildlife Area facility Henry Miller Road, Los Banos, California
General Plan Designation:	Agriculture
Zoning:	A-1 – General Agriculture

1.2 Introduction

The Californian Department of General Services is the Lead Agency for this California Environmental Quality Act (CEQA) Initial Study. This Initial Study has been prepared to identify and assess the anticipated environmental impacts of the Los Banos Wildlife Area Solar Project (Project) to satisfy CEQA (Public Resources Code [PRC], Section 21000 et seq.) and state CEQA Guidelines (Title 14, California Code of Regulations [CCR] 15000 et seq.). CEQA requires that all state and local government agencies consider the environmental consequences before approving those projects. State Department of General Services (DGS) will use this CEQA Initial Study to determine which CEQA document is appropriate for the Project: Negative Declaration, Mitigated Negative Declaration (MND), or Environmental Impact Report (EIR).

In accordance with CEQA, this Initial Study/Mitigated Negative Declaration (IS/MND) will be circulated for a 30-day public review and comment period. Written comments on the Draft IS/MND should be submitted to:

Ms. Terry Ash, DGS Senior Environmental Planner
cc: Amberly Morgan
2525 Warren Drive

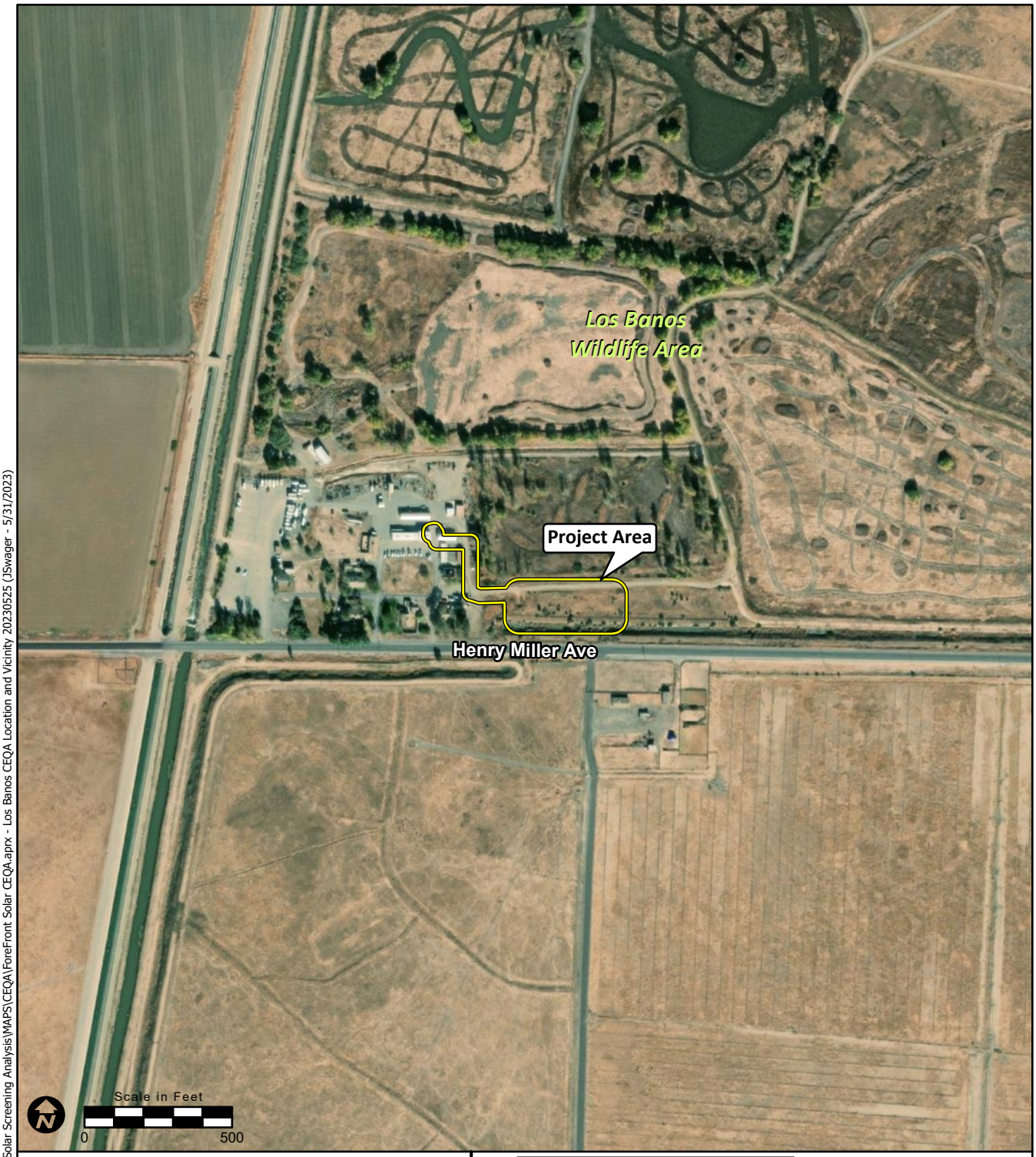
Rocklin, CA 95677

amorgan@ecorpconsulting.com

1.3 Surrounding Land Uses/Environmental Setting

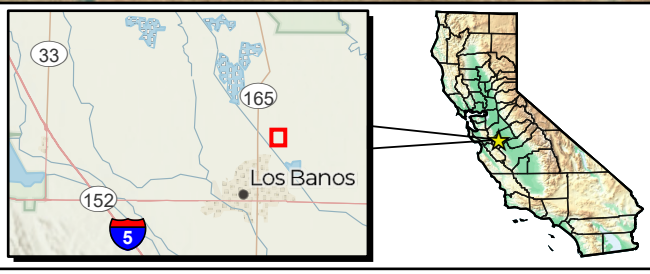
The Proposed Project is in unincorporated Merced County (County) just outside of the limits of the City of Los Banos (City). The Site is situated east of Interstate 5 (I-5), north of State Route (SR) 152, east of SR 165, and within the California Department of Fish and Wildlife (CDFW) Los Banos Wildlife Area Headquarters at 18110 Henry Miller Avenue in the City of Los Banos and within the larger Los Banos Wildlife Area (Figure 1-1). The Proposed Project is only accessible by rural paved roads, surrounded by agricultural land on the valley floor.

As shown in Figure 1-2: Representative Site Photographs. surrounding land uses include a mix between agricultural land, open space/wildlife area, and vacant land. As discussed above, the Site is located within the CDFW wildlife area and open space land north and east of the Site, with agricultural land beyond. Directly adjacent to and beyond Henry Miller Avenue to the south is the Los Banos Wastewater Treatment Facility, surrounded by agricultural land to the southeast and Vacant land to the southwest. Abutting the facility's western boundary is the San Luis Canal, with agricultural, commercial (Merced County Housing Authority), multi-family residential (Rafael Silva Migrant Head Start facility), and an industrial materials storage yard beyond. Southeast of the Site, and beyond Henry Miller Avenue and agricultural land, is the AG Sports Complex and a single-family residential neighborhood within the City of Los Banos.



Project Area - 2.24 acres

Merced County, California
§31,, T.09S, R.11E, MDBM
§36, T.09S, R.10E, MDBM
Latitude (NAD83): 37.100082°
Longitude (NAD83): -120.817307°



Location: N:\2018\2018-116.028 RESD Solar Screening Analysis\MAPS\CEQA\ForeFront Solar CEQA.aprx - Los Banos CEQA Location and Vicinity 20230525 (JSwager - 5/31/2023)

Map Date: 5/31/2023
Sources: ESRI, Maxar (2020), ForeFront Power

Figure 1-1. Project Location and Vicinity

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2021-112.01 ForeFront Power - Los Banos Wildlife Area

Figure 1-2. Project Site Photos

Photo 1. Representative photo of Project Site

Photo 2. Representative Photo of Project Site, Drainage Ditch, and Henry Miller Avenue Beyond.

2.0 PROJECT DESCRIPTION

2.1 Project Background

The (DGS) is proposing to add solar arrays to the Los Banos CDFW facility. The solar fields would be located adjacent to existing CDFW facilities (i.e., administrative complexes) and would be .approximately 27,000 square feet in size.

Several policies, regulations, and standards have been adopted by the State of California to address global climate change issues. Examples of such actions include the Governor's Green Building Order S-20-04, which mandates that State agencies evaluate the merits of using clean and renewable on-site energy generation technologies in all new building or large renovation projects. Incorporating solar Photo Voltaic (PV) technology supports energy reduction goals and achievement of Leadership in Energy and Environmental Design (LEED) building certifications from the United States Green Building Council. Using solar PV also supports the Global Warming Solutions Act.

To comply with policies, regulations, and standards that have been adopted by the State to address global climate change issues, DGS, in conjunction with participating State agencies, have created the Power Purchase Program. This program includes the installation of PV systems at State facilities. The PV systems are installed, operated, and owned by third parties who enter long-term power purchase agreements (PPAs) with the participating State agency.

2.2 Project Characteristics

The Proposed Project is a solar PV power generation system to be located within the Los Banos Wildlife Area, at 18110 Henry Miller Ave, Los Banos, CA. The 486 ground-mounted solar arrays would occupy approximately 27,000 square feet and will convert sunlight to direct current electrical power which would then be converted to alternating current by string inverters before being delivered to the Pacific Gas and Electric Company (PG&E) distribution system. The total system size is expected to be approximately 211 kilowatts (kW), subject to final design and site optimization.

The solar system would be configured into three generally contiguous arrays that are laid-out to avoid impacts to natural resources. A security fence (totaling 850 linear feet) would be installed around the solar arrays. The solar system would utilize either fixed-tilt or single-axis tracking mounting technology to optimize efficiency and performance. Single-axis trackers are designed to rotate the arrays in the east-to-west plane to track the sun's movement across the horizon. Once installed, the ground-mounted solar arrays would be approximately 8 feet in height depending on the time of day to the extent a tracking system is utilized (Figure 2-1).

The electrical collection system is not expansive due to the close proximity of the solar arrays to each other. Conduits and wires would be buried in trenches that run between rows and/or installed above-grade running along the backside of strings to connect the output of each string to the inverters. String inverters would be attached to racking adjacent to each array to convert electricity from direct current to alternating current.

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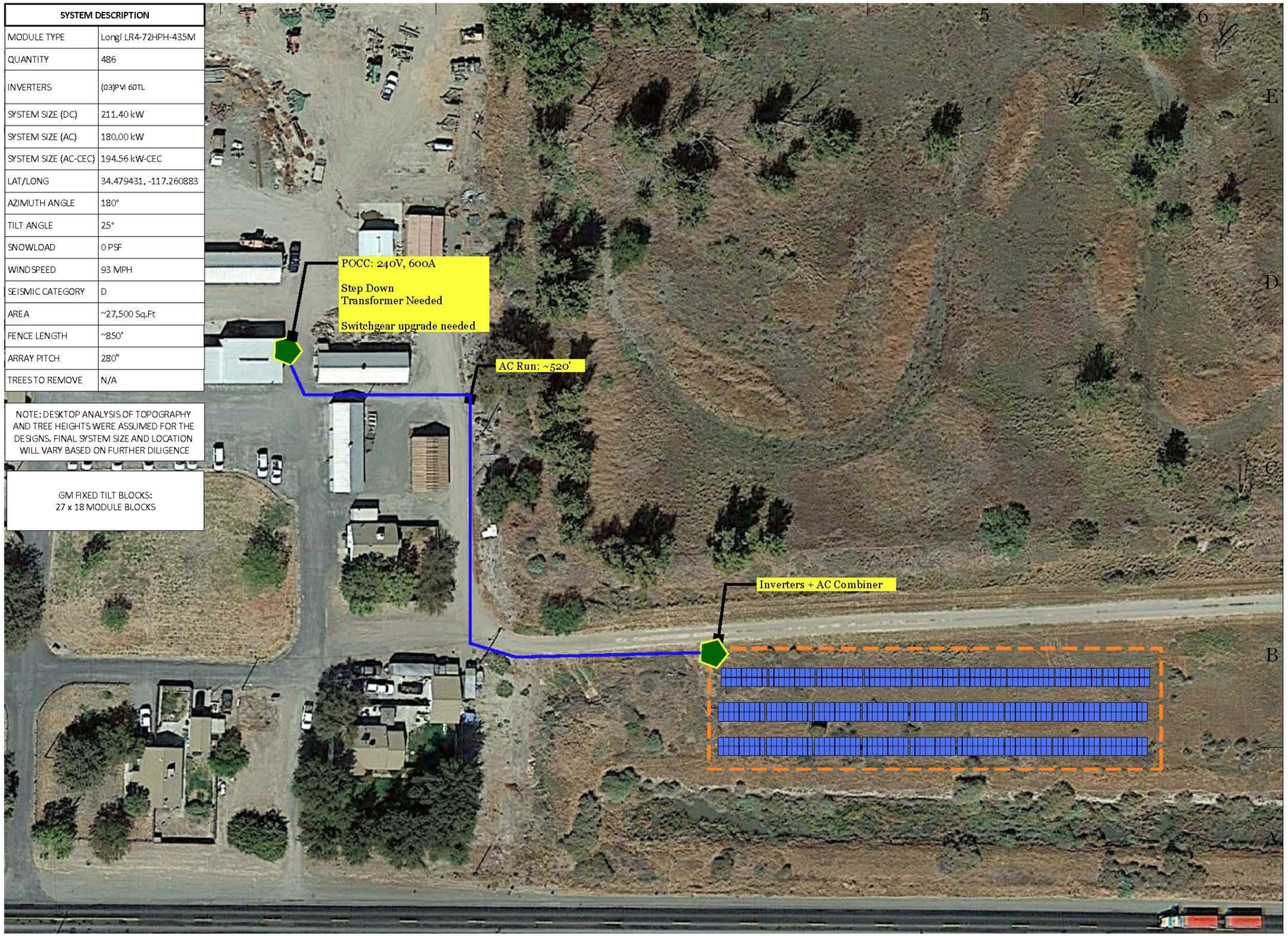
SYSTEM DESCRIPTION	
MODULE TYPE	Longi LR4-72HPH-435M
QUANTITY	486
INVERTERS	(03)PVI 60TL
SYSTEM SIZE (DC)	211.40 kW
SYSTEM SIZE (AC)	180.00 kW
SYSTEM SIZE (AC-CEC)	194.56 kW-CEC
LAT/LONG	34.479431, -117.260883
AZIMUTH ANGLE	180°
TILT ANGLE	25°
SNOWLOAD	0 PSF
WIND SPEED	93 MPH
SEISMIC CATEGORY	D
AREA	~27,500 Sq.Ft
FENCE LENGTH	~850'
ARRAY PITCH	280"
TREES TO REMOVE	N/A

NOTE: DESKTOP ANALYSIS OF TOPOGRAPHY AND TREE HEIGHTS WERE ASSUMED FOR THE DESIGNS. FINAL SYSTEM SIZE AND LOCATION WILL VARY BASED ON FURTHER DILIGENCE

GM FIXED TILT BLOCKS:
27 x 18 MODULE BLOCKS



FOREFRONT POWER

100 MONTGOMERY STREET #1400
SAN FRANCISCO, CA 94104
(855) 204-5083
www.ForeFrontPower.com

STAMP:

NOT FOR CONSTRUCTION

Department of Fish and Wildlife Los Banos Wildlife Area

18110 Henry Miller Ave,
Los Banos, CA 93635

PROJECT NUMBER:
CA-20-0268

SHEET TITLE:
CONCEPTUAL LAYOUT

SHEET SIZE:
TABLOID 11" X 17"

NO.	REVISION	DATE	INIT.

DATE: 05.Feb.2021
DRAWN BY: RP
ENGINEER: RP
APPROVED BY:

PROJECT PHASE:
PRELIMINARY DESIGN
SCALE: 1" : 60'

SHEET NO:
CL-1

Source: ForeFront Power

Figure 2-1. Site Plan

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The inverters then send alternating current electricity to an on-site transformer to step the electricity up to the interconnection voltage. A 520-foot linear trench would be excavated from the northwest corner of the array where the inverters would be located to the point of connection in the existing facility. The alignment runs east to west along an existing road before turning north on a paved area before turning west and connecting to an existing building within the developed headquarters area. Trenching would be accomplished within existing roadways and improved areas and would not impact any natural areas. At the point of connection, a step-down transformer would be constructed along with switchgear upgrades. Following placement of the conduit to connect the inverters and the transformer, the trench would be backfilled.

2.3 Operations and Maintenance

Once construction of the Proposed Project is completed, primary production-related monitoring would be done remotely. No employees would be based at the project site. The public would not have access to the facility. Access to the area would be infrequent and limited to authorized personnel only.

2.3.1 Project Timing

Construction would begin in late 2024 and would consist of approximately 120 days of activity to occur within a 180-day construction period. Prior to construction of the solar arrays, the project site will be cleared of debris and vegetation. Minimal site grading will be required for the installation of the system and access road. Construction equipment would include the following:

For the Site Preparation/Grading:

- Bobcat with mower attachment or tractor with mower attachment
- One dump truck
- One grader for short term use
- One Water truck

For the Construction of Structures:

- One backhoe for trenching
- One backhoe for wheel compaction
- One forklift for material deliveries
- One to three pile driving rigs
- One generator for Conex storage interior lighting and office

There would be 20 construction days requiring the use of a 3,000-gallon water truck. Approximately one truckload every other day is anticipated for dust control. Total water demand during construction is estimated to be 3,000 gallons every other day for 20 days, totaling 30,000 gallons. The water would come from an onsite source. Construction crew size is estimated to be 30 to 45 crew members at peak, with 15

workers on average. Material deliveries would consist of approximately three or four trucks for steel in one or two days, panel deliveries of approximately six trucks over two or three days, and misc. electrical component deliveries on an intermittent basis once or twice a week. Temporary sanitary facility servicing will occur once a week. Other truck traffic would consist of construction equipment deliveries upon mobilization and equipment haul off near project completion.

2.4 Regulatory Requirements, Permits, and Approvals

The following approvals and regulatory permits would be required for implementation of the Proposed Project:

- Regional Water Quality Control Board, Central Valley Region
- National Pollutant Discharge Elimination System Permit
- Storm Water Pollution Prevention Plan

2.5 Consultation With California Native American Tribe(s)

On June 27, 2023, general request for information letters were sent to each representative listed for the tribes on the Native American Heritage Commission (NAHC) response letter. A summary of the consultation process is provided in Section 4.18, Tribal Cultural Resources, of this Initial Study.

In the absence of tribes wishing to consult, information about potential impacts to Tribal Cultural Resources (TCRs) was drawn from: 1) the results of a search of the Sacred Lands File of the NAHC; 2) existing ethnographic information about pre-contact lifeways and settlement patterns; and 3) information on archaeological site records obtained from the CHRIS.

3.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED AND DETERMINATION

3.1 Environmental Factors Potentially Affected

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

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

Determination

On the basis of this initial evaluation:

I find that the Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	☐
I find that although the Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	☒
I find that the Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	☐
I find that the Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	☐
I find that although the Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Project, nothing further is required.	☐

Terry Ash Date
Senior Environmental Planner

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4.0 ENVIRONMENTAL CHECKLIST AND DISCUSSION

4.1 Aesthetics

4.1.1 Environmental Setting

4.1.1.1 Regional Setting

The rural and agricultural landscapes provide the primary scenic resources in Merced County. The County also has many scenic vistas, such as the Coastal and Sierra Nevada Mountain ranges, and the Los Banos Creek, Merced, San Joaquin, and Bear Creek River corridors. State Route 152 and Interstate 5 are designated scenic routes in parts of the county. Preservation of the County's scenic features, both natural and working landscapes, enhances the amenity value and economic development potential of the County as it adds to the quality of life for existing and future residents (Merced County 2013).

This portion of Merced County has a unique geography of oak habitats, including shady riparian woodland along the water features. The area is a popular location for birdwatching and consists of a series of ponds, seasonal and permanent wetlands, lakes, sloughs, upland/grassland pastures, and marshes in the 6,000-acre habitat restoration area (CA Watchable Wildlife 2023).

The following policies regarding scenic views are set forth in Merced County General Plan Scenic Resources section:

Goal NR-4: Protect scenic resources and vistas.

Policy NR-4.1: Scenic Resource Preservation Promote the preservation of agricultural land, ranch land, and other open space areas as a means of protecting the County's scenic resources.

Policy NR-4.3: Building Design Require that siting and design of buildings protect, improve, and enhance the scenic quality of the built and natural environments and take full advantage of scenic resources through site orientation, building setbacks, preservation of viewsheds, height limits, and the use of appropriate construction materials and exterior modulation.

Policy NR-4.5: Light Pollution Reduction Require good lighting practices, such as the use of specific light fixtures that reduce light pollution, minimize light impacts, and preserve views of the night sky.

4.1.1.2 Visual Character of the Project Site

The Proposed Project is in unincorporated Merced County just outside of the limits of the City of Los Banos. The Site is situated east of I-5, north of SR 152, east of SR 165, and within the CDFW Los Banos Wildlife Area Headquarters at 18110 Henry Miller Avenue in the City of Los Banos and within the larger

Los Banos Wildlife Area. The Los Banos Wildlife Area is a State-protected wildlife area and was the first of a series of waterfowl refuges established throughout the state to manage habitat for wintering waterfowl.

The Project Site is located adjacent to the wildlife refuge Headquarters, which includes a handful of single-family residences for onsite employees, storage buildings, equipment storage yards, internal roadways, parking areas, and storage containers. The solar arrays are proposed to be installed east of the existing structures, adjacent to and approximately 100 feet north of Henry Miller Avenue, of which the main facility fronts. The solar array would be located within relatively flat terrain situated at an elevational range of approximately 90 to 95 feet Above Mean Sea Level (AMSL), with various grassland patches and native shrubs scattered throughout the currently vacant land. An irrigation ditch borders the southern Site boundary, between the proposed solar arrays and Henry Miller Avenue.

4.1.2 Aesthetics (I) Environmental Checklist and Discussion

Except as provided in Public Resources Code Section 21099, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐

Less Than Significant Impact.

The Proposed Project is located within a wildlife refuge headquarters surrounded by rural county roadways, a wildlife waterfowl refuge (north, south, and east of the Site), and agriculture-rich land (north, south, and west of the Site) just outside the limits of the City of Los Banos. The Project consists of 486 ground-mounted solar arrays, occupying approximately 27,000 square feet, with a total height of 9 feet, and expected to be a total of 211 kW in size. An 850-foot-long security fence is proposed to be installed around the arrays. A 520-foot-long trench would contain an underground conduit to transfer electricity from the solar arrays to a proposed transformer to be located on the side of one of the existing warehouse facility structures, located directly north of the CDFW headquarters' central, undeveloped lawn. Based on a review of the California Department of Transportation (Caltrans) State Scenic Highway List and the Merced County General Plan, scenic vistas were not identified within the Project vicinity (Caltrans 2023, Merced County 2012).

As discussed previously, the County General Plan (GP) aims to protect scenic resources such as agriculture, ranch land, and open space areas through the GP Policy NR-4.1 *Scenic Resource Preservation.* As the adjacent refuge is an open space scenic resource, with agricultural land making up the majority of the County and Project Vicinity, these scenic resources have the potential to be impacted by the Proposed Project. However, as addressed in Section 2.2 above, the solar system would be configured into three generally contiguous arrays that are designed specifically to avoid impacts to natural resources.

As previously mentioned, the ground-mounted solar arrays would be approximately 9 feet in height depending on the time of day to the extent a tracking system is utilized. The arrays would be consistent with the existing buildings onsite that obstruct views of these scenic resources currently. However, these views would only be obstructed from the public for a matter of seconds as views of these resources would

be experienced by individuals driving past on the Project Vicinity County roadways. Once the vehicles pass by the array and fencing, views of these scenic resources would resume. These array configurations, along with the security fence being see-through, would have a less than significant impact to the scenic resources in the area.

Except as provided in Public Resources Code Section 21099, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒

No Impact.

4.1.2.1 State Scenic Highways

The California Scenic Highway Program protects and enhances the scenic beauty of California's highways and adjacent corridors. Caltrans can designate a highway as scenic based on how much natural beauty can be seen by users of the highway, the quality of the scenic landscape, and if development impacts the enjoyment of the view.

According to Caltrans, the closest scenic highway to the Project Site is a portion of SR 152, west of I-5, and a segment of I-5 located approximately 9 miles southwest of the Site. The Proposed Project Site is not visible from either of the scenic routes (Caltrans 2023).

As stated above, according to Caltrans' list of designated Scenic Highways and the Merced County General Plan, the Proposed Project is not located near or within a state scenic highway and therefore would not damage designated scenic resources, including but not limited to trees, outcroppings, and historic buildings within a state scenic highway. Therefore, no impacts are anticipated, and no mitigation measures are required.

Except as provided in Public Resources Code Section 21099, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the Project is in an urbanized area, would the Project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐

Less than Significant Impact.

The Proposed Project is within a rural setting consisting of riparian/grassland/wetland and agriculture-rich features (Figure 2). Project construction activities would introduce heavy equipment, such as backhoes, forklifts, and/or similar machinery into the viewshed of all viewer groups, creating temporary effects on views of and from the Project Site during construction. Once the Project is completed, the solar arrays will be surrounded by a security fence. There would be minor change in the visual character or quality of public views of the wildlife refuge headquarters and its surroundings and the Project would not conflict with zoning and other regulations governing scenic quality. There would be a less than significant impact and no mitigation is required.

Except as provided in Public Resources Code Section 21099, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Would the Project create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Less Than Significant Impact.

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

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

The Proposed Project includes the use of trackers. Trackers are devices that orient the solar array perpendicular (surface normal) to the incident solar radiation, thereby maximizing solar cell efficiency and potential energy output. Tracking devices are capable of positioning the array so that the incident rays would be at, or very near the surface normal (perpendicular angle). In these optimal conditions, when the

sun is high in the sky, the law of reflection indicates that the reflected ray would be at an equally low angle and reflected in a direction toward the light source or back into the atmosphere away from terrestrial-based receptors. This also means that the potential for glare is further reduced. However, when the sun is low on the horizon (near dawn or dusk), the sun's angle in the sky is low; because the trackers are tilted toward the light source, the potential for fugitive glare on terrestrial-based receptors increases. As discussed above, the non-engineered anti-reflective materials applied directly to the solar cells will reduce this glare to a less than significant level for wildlife in the area.

The Project Site is located approximately 0.80 mile north of the limits of the City of Los Banos. The closest sensitive receptors would be the residents at the Rafael Silva Migrant Head Start facility located approximately 0.80 mile west of the Project Site. Although there is a potential for fugitive glare to be directed to the west, the Los Banos Wildlife Headquarters' buildings and its surrounding trees would obstruct direct views of the Project Site from the residences. Glare impacts would be less than significant. No mitigation required.

4.1.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.2 Agriculture and Forestry Resources

4.2.1 Environmental Setting

According to the California Department of Conservation online Important Farmland Finder Map, the Project Site does not contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, nor is the Site zoned for agriculture or forestry use or subject to a Williamson Act contract. The California Important Farmland Finder Map identifies the Site as Urban and Built-Up Land. The adjacent parcels directly south, beyond Henry Miller Avenue, and east are designated as Grazing Land; the parcel directly west beyond the Site-adjacent Santa Fe Canal is designated Unique Farmland and Farmland of Statewide Importance; and the parcel directly adjacent to, and north of the Project Site, is designated as Farmland of Local Importance (California Department of Conservation 2023).

4.2.2 Agriculture and Forestry Resources (II) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒

No Impact.

As discussed above, the California Important Farmland Finder Map identifies the Project Site as Urban and Built-Up Land. Thus, the Project would not 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, to non-agricultural use. There would be no impact and no mitigation is required.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

No Impact.

The Project Site and surrounding areas are not zoned for agricultural use. Property directly adjacent to the Site, and beyond the Site-adjacent Santa Fe Canal to the east, is zoned Agricultural and is under a Williamson Act contract. This Project would not conflict with existing zoning for agricultural uses or a Williamson Act contract. Therefore, no impact would occur, and no mitigation is required.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
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))?	☐	☐	☐	☒

No Impact.

The County Zoning Ordinance does not identify the Project Site as 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)). Thus, Project implementation would not conflict with or cause the rezoning of any of the above zoning designations and there would be no impact and no mitigation is required.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

No Impact.

See discussion under item c). No impact would occur, and no mitigation is required.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

No Impact.

See discussion under item a) and c), the Proposed Project would not result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest. No impact would occur, and no mitigation measures are required.

4.2.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.3 Air Quality

This assessment was prepared using methods and assumptions recommended in the rules and regulations of the San Joaquin Valley Air Pollution Control District (SJVAPCD). Regional and local existing conditions are presented, along with pertinent pollutant emissions standards and regulations. The purpose of this assessment is to estimate criteria air pollutants attributable to the Project and determine the level of impact the Project would have on the environment.

4.3.1 Environmental Setting

The Project Site is located just outside of the City of Los Banos on land within unincorporated Merced County. The California Air Resources Board (CARB) divides the state into air basins that share similar meteorological and topographical features. The Proposed Project is located in the San Joaquin Valley Air Basin (SJVAB). SJVAB occupies the southern two-thirds of the Central Valley and includes a portion of Kern County. The SJVAB is mostly flat, less than 1,000 feet in elevation, and is surrounded on three sides by the Sierra Nevada, Tehachapi, and Coast Range mountains. This bowl-shaped feature forms a natural barrier to the dispersion (spreading over an area) of air pollutants. As a result, the SJVAB is highly susceptible to pollutant accumulation over time.

Both the U.S. Environmental Protection Agency (USEPA) and CARB have established ambient air quality standards for common pollutants. These ambient air quality standards establish safe levels of contaminants that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called criteria pollutants because the health and other effects of each

pollutant are described in criteria documents. The six criteria pollutants are ozone (O_3), carbon monoxide (CO), Particulate Matter (PM), oxides of nitrogen (NO_x), sulfur dioxide (SO_2), and lead. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. The portion of Merced County encompassing Los Banos is designated as a nonattainment area for the state standards of O_3, PM_{10} (particulate matter less than 10 microns in diameter), and $PM_{2.5}$ (particulate matter less than 2.5 microns in diameter) and the federal standards of O_3 and $PM_{2.5}$ (CARB 2022).

The air quality regulating authority for Merced County is SJVAPCD. The agency's primary responsibility is ensuring that the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) are attained and maintained in the greater Merced County Area. The unique geography with its potential for trapped pollutants underscores the importance of the SJVAPCD regulating air pollution. The SJVAPCD is responsible for adopting or creating a comprehensive plan to reduce the emissions of these criteria pollutants. They also enforce rules and regulations, inspect and issue permits for stationary sources of air pollutants, respond to citizen complaints, monitor ambient air quality and meteorological conditions, award grants to reduce motor vehicle emissions, and conduct public education campaigns, as well as many other activities. All projects are subject to SJVAPCD rules and regulations in effect at the time of construction.

The following is a list of noteworthy SJVAPCD rules that are required of construction activities associated with the Proposed Project:

- **Regulation IV (Visible Emissions), Rule 4101, Nuisance.** The purpose of this rule is to protect the health and safety of the public from source operations that emit or may emit air contaminants or other materials. It prohibits emissions of air contaminants or other materials "which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public."
- **Regulation IV (Visible Emissions), Rule 4601, Architectural Coatings.** The rule limits Volatile Organic Compound (VOC) emissions from architectural coatings and specifies practices for proper storage, cleanup, and labeling requirements. Rule 4601 applies to "any person who supplies, sells, offers for sale, applies, or solicits the application of any architectural coating, or who manufactures, blends or repackages any architectural coating for use within the District." Materials covered by the rule include adhesives, architectural coatings, paints, varnishes, sealers, stains, concrete curing compounds, concrete/masonry sealers, and waterproofing sealers.
- **Regulation IV (Visible Emissions), Rule 4641, Cutback, Slow Curve and Emulsified Asphalt, Paving and Maintenance Operations.** The purpose of this rule is to limit VOC emissions by restricting the application and manufacturing of certain types of asphalt and maintenance operations and applies to the use of these materials. Specifically, certain types of asphalt cannot be used for penetrating prime coat, dust palliative, or other paving: rapid cure and medium cure cutback asphalt, slow cure asphalt that contains more than 0.5 percent of organic compound which evaporates at 500˚F or lower, and emulsified asphalt containing VOC in excess of 3 percent which evaporates at 500˚F or lower.

- **Regulation VIII (Fugitive PM_{10} Prohibitions), Rules 8021–8071, Fugitive PM_{10} Prohibitions.** The purpose of these rules is to limit airborne particulate emissions associated with construction, demolition, excavation, extraction, and other earthmoving activities, as well as with open disturbed land and emissions associated with paved and unpaved roads. Accordingly, these rules include specific measures to be employed to prevent and reduce fugitive dust emissions from anthropogenic sources.

- **Regulation IX (Mobile and Indirect Sources), Rule 9510, Indirect Source Review.** This rule will reduce emissions of NO_x and PM_{10} from new development projects that attract or generate motor vehicle trips. In general, new development contributes to the air pollution problem in the SJVAB by increasing the number of vehicles and vehicle miles traveled. Although newer, cleaner technology is reducing per-vehicle pollution, the emissions increase from new development partially offsets emission reductions gained from technology advances. Indirect Source Review applies to larger development projects that have not yet gained discretionary approval.

  Indirect Source Review applies to larger development projects that have not yet gained discretionary approval. A discretionary permit is a permit from a public agency, which requires some amount of deliberation by that agency, including the potential to require modifications or conditions on the project. In accordance with this rule, developers of larger residential, commercial, and industrial projects are required to reduce smog-forming NO_x and PM_{10} emissions from their projects' baselines as follows (SJVAPCD 2017):

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

These reductions are intended to be achieved through incorporation of on-site reduction measures. If, after implementation of on-site emissions reduction measures project emissions still exceed the minimum baseline reduction, the Indirect Source Review requires a project applicant to pay an off-site fee to the SJVAPCD, which is then used to fund clean-air projects within the air basin.

4.3.2 Air Quality (III) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒

No Impact.

As part of its enforcement responsibilities, the USEPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal

standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under state law, the California Clean Air Act requires an air quality attainment plan to be prepared for areas designated as nonattainment with regard to the NAAQS and CAAQS. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

As previously mentioned, the Project Site is located within the Merced County portion of the SJVAB, which is under the jurisdiction of the SJVAPCD. The SJVAPCD is required, pursuant to the Clean Air Act (CAA), to reduce emissions of criteria pollutants for which the SJVAB in nonattainment. The SJVAPCD attains and maintains air quality conditions in Merced County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. Local air districts, such as the SJVAPCD, prepare air quality attainment plans or air quality management plans and submit them to CARB for review, approval, and incorporation into the applicable SIP. The air districts develop the strategies stated in the SIPs for achieving air quality standards on a regional basis.

The SJVAPCD has prepared the following air quality plans:

- 2004 Extreme Ozone Attainment Demonstration Plan
- 2007 Plan for the 1997 8-Hour Ozone Standard
- 2009 Reasonably Available Control Technology (RACT)
- 2013 Plan for the Revoked 1-Hour Ozone Standard
- 2014 RACT SIP
- 2016 Plan for the 2008 8-Hour Ozone Standard
- 2020 RACT Demonstration for the 2015 8-Hour Ozone Standard
- 2022 Plan for the 2018 *-Hour Ozone Standard
- 2007 PM_{10} Maintenance Plan
- 2008 $PM_{2.5}$ Plan
- 2012 $PM_{2.5}$ Plan
- 2015 Plan for the 1997 $PM_{2.5}$ Standard
- 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard
- 2018 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard

These plans collectively address the air basin's nonattainment status with the national and state O3 standards as well as particulate matter by establishing a program of rules and regulations directed at reducing air pollutant emissions and achieving state (California) and national air quality standards.

Pollutant control strategies are based on the latest scientific and technical information and planning assumptions.

According to the SJVAPCD (2015), the established thresholds of significance for criteria pollutant emissions are based on SJVAPCD New Source Review offset requirements for stationary sources. Stationary sources in the SJVAB are subject to some of the most stringent regulatory requirements in the nation. Emission reductions achieved through implementation of SJVAPCD offset requirements are a major component of SJVAPCD's air quality planning efforts. Thus, projects with emissions below the thresholds of significance for criteria pollutants are determined to "Not conflict or obstruct implementation of the SJVAPCD's air quality plan" (SJVAPCD 2015). As shown in Table 4.3-1, Project construction would not generate emissions in excess of SJVAPCD significance thresholds and therefore would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new air quality violations. Additionally, once construction is complete, the Project would not generate quantifiable criteria emissions from Project operations. The Project is proposing a solar PV power generation system located within the Los Banos Wildlife Area. The Project would not cause an increase in currently established population projections. Conversely, the operation of the Project would create renewable energy over its planned lifetime and decrease the need for energy from fossil fuel–based power plants in the state, which is considered a beneficial impact to statewide air quality. The energy produced by the Project would displace the criteria pollutant emissions which would otherwise be produced by existing business-as-usual power generation resources (including natural gas and coal).

For these reasons, the Project would not conflict with any applicable air quality plans. There is no impact.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐

Less than significant impact.

4.3.2.1 Project Construction-Generated Criteria Air Quality Emissions

Emissions associated with Project construction would be temporary and short-term but have the potential to represent a significant air quality impact. Two basic sources of short-term emissions will be generated through Project construction: operation of the heavy-duty equipment (i.e., excavators, loaders, haul trucks) and the creation of fugitive dust during excavation. Construction activities such as excavation and grading operations, construction vehicle traffic, and wind blowing over exposed soils would generate exhaust emissions and fugitive PM emissions that affect local air quality at various times during construction. Effects would be variable depending on the weather, soil conditions, the amount of activity taking place, and the nature of dust control efforts. The dry climate of the area during the summer months creates a

high potential for dust generation. Project construction activities would be subject to SJVAPCD Regulation VIII, which specifies the following measures to control fugitive dust:

- Apply water to unpaved surfaces and areas.
- Use nontoxic chemical or organic dust suppressants on unpaved roads and traffic areas.
- Limit or reduce vehicle speed on unpaved roads and traffic areas to a maximum of 15 miles per hour.
- Maintain areas in a stabilized condition by restricting vehicle access.
- Install wind barriers.
- During high winds, cease outdoor activities that disturb the soil.
- Keep bulk materials sufficiently wet when handling.
- Store and handle materials in a three-sided structure.
- When storing bulk materials, apply water to the surface or cover the storage pile with a tarp.
- Don't overload haul trucks. Overloaded trucks are likely to spill bulk materials.
- Cover haul trucks with a tarp or other suitable cover. Or, wet the top of the load enough to limit visible dust emissions.
- Clean the interior of cargo compartments on emptied haul trucks prior to leaving a site.
- Prevent trackout by installing a trackout control device.
- Clean up trackout at least once a day. If along a busy road or highway, clean up trackout immediately.
- Monitor dust-generating activities and implement appropriate measures for maximum dust control.

Construction-generated emissions associated with the Proposed Project were calculated using the California Emissions Estimator Model (CalEEMod), version 2022.1. CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. Project construction-generated air pollutant emissions were calculated using CalEEMod model defaults for Merced County. Appendix A provides more information regarding the construction assumptions, including construction equipment and duration, used in this analysis.

Predicted daily and maximum emissions attributable to Project construction are summarized in Table 4.3-1. Such emissions are short-term and of temporary duration, lasting only as long as Project construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the SJVAPCD's thresholds of significance.

Table 4.3-1. Construction-Related Emissions

Construction Year	Pollutant (tons per year)					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Construction Year One	0.02	0.23	0.27	0.00	0.01	0.01
SJVAPCD Annual Significance Threshold	*10*	*10*	*100*	*27*	*15*	*15*
Exceed SJVAPCD Daily Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod Version 2022.1. Refer to Appendix A for Model Data Outputs.
Notes: CO = Carbon Monoxide; NO_x = Nitrous Oxides; $PM_{2.5}$ = Fine Particulate Matter; PM_{10} = Coarse Particulate Matter; ROG = Reactive Organic Gas; SJVAPCD = San Joaquin Valley Air Pollution Control District; SO_2; Sulfur Dioxide
All construction activities would be subject to the SJVAPCD Regulation VIII (Fugitive PM_{10} Prohibitions). The specific Regulation VIII measures applied in CalEEMod include the following: sweeping/cleaning roadway to prevent trackout; water exposed surfaces twice times daily; and limit speeds on unpaved roads.

As shown in Table 4.3-1, construction related emissions would not exceed thresholds established by the SJVAPCD or 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 for. The impact is less than significant.

In addition to the SJVAPCD criteria air pollutant thresholds, SJVAPCD Rule 9510, Indirect Source Review, aims to fulfill the SJVAPCD's emission reduction commitments in the PM_{10} and Ozone Attainment Plans. This rule applies to the following construction projects within the jurisdiction of the SJVAPCD:

- 50 residential units,
- 2,000 square feet of commercial space,
- 25,000 square feet of light industrial space,
- 100,000 square feet of heavy industrial space,
- 20,000 square feet of medical office space,
- 39,000 square feet of general office space,
- 9,000 square feet of educational space,
- 10,000 square feet of government space,
- 20,000 square feet of recreational space, or
- 9,000 square feet of space not identified above.

This rule also applies to any transportation or transit project where construction exhaust emissions equal or exceed two tons of NO_x or two tons of PM_{10}.

Since the Project does not include the construction of a permanent building and is not a transportation project, the Proposed Project would not be required to comply with this rule. Additionally, the Project is proposing a 211-kw solar energy generation facility. One of the obvious benefits of solar energy is that the production of electricity from these sources involves almost no direct emissions of criteria air pollutant emissions. In contrast, fossil fuel–fired electric generation from coal, oil, or natural gas results in substantial direct emissions that contribute to adverse impacts on the environment. For instance, electric generation from fossil fuel–fired power plants contributes 22 percent of all NO_x emissions in the U.S. according to the U.S. Department of Energy (California Department of Energy 2008). Renewable energy-generating facilities reduce emissions by decreasing the need for energy from fossil fuel–based power plants in the state, which is considered a beneficial impact statewide.

4.3.2.2 Project Operational-Generated Criteria Air Quality Emissions

Operational emissions impacts are long-term air emissions impacts that are associated with any changes in the permanent use of the Project Site by onsite stationary and offsite mobile sources that substantially increase emissions. The Project proposes a solar energy generation system. Once the system is installed, the Project would not be a greater source of operational emissions beyond current conditions. Therefore, Proposed Project operations would not contribute to on- or offsite emissions. Furthermore, the operation of the Project would create renewable energy over its planned lifetime and decrease the need for energy from fossil fuel–based power plants in the state, which is considered a beneficial impact to statewide air quality. The energy produced by the Project would displace the criteria pollutant emissions which would otherwise be produced by existing business-as-usual power generation resources (including natural gas and coal).

As demonstrated above, the Proposed Project would not exceed the SJVAPCD significance thresholds and would not be a source of emissions once construction is completed. Therefore, this impact is less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

Less than significant impact.

Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. The nearest sensitive receptor to the Project Site is a single-family residence located 0.75 mile to the west.

4.3.2.3 Construction-Generated Air Contaminants

Construction-related activities would result in temporary, short-term Project-generated emissions of Diesel Particulate Matter (DPM), ROG, NO_x, CO, and PM_{10} from the exhaust of off-road, heavy-duty diesel equipment for site preparation (e.g., clearing, grading); paving; and other miscellaneous activities. The portion of Merced County encompassing Los Banos is designated as a nonattainment area for the state standards of O_3, PM_{10}, and $PM_{2.5}$ and the federal standards of O_3 and $PM_{2.5}$ (CARB 2022). Thus, existing O_3 $PM_{2.5}$, and PM_{10} levels in the SJVAB are at unhealthy levels during certain periods. However, as shown in Table 4.3-1, the Project would not exceed the SJVAPCD significance thresholds for construction emissions and therefore no regional health effects from Project criteria pollutants would occur.

Per SJVAPCD guidance, this analysis employs the SJVAPCD Prioritization Calculator health risk screening tool to assess the potential health risk-related effects of Project construction. The SJVAPCD Prioritization Calculator identifies a Prioritization score based on the Project emission potency at the vicinity sensitive residential receptors. A prioritization score of 10 or greater, as determined by this screening protocol, is potentially significant and indicates that mitigation should be imposed, or a detailed Health Risk Assessment should be performed.

In addition to cancer risk, the significance thresholds for toxic air contaminant exposure requires an evaluation of non-cancer risk stated in terms of a hazard index. A chronic hazard index of 1.0 is considered individually significant. It should be noted that there is no acute health hazard for DPM, which is the only significant air toxic associated with construction for this Project. Thus, the maximum acute index for construction of the Project is zero.

As previously described, the nearest sensitive receptor to the Project Site is single-family residence located approximately 0.75 mile to the west.

The calculated carcinogenic risk and highest maximum chronic hazard indexes at the nearby sensitive residential receptor due to Project construction is depicted in Table 4.3-2. In addition, a printout of the SJVAPCD Prioritization Calculator with Project Construction CalEEMod outputs as inputs used to calculate the values below can be found in Appendix A of this document.

Table 4.3-2. Health Risk Summary

Exposure Scenario	Maximum Cancer Risk at Residence	Maximum Chronic Hazard Index at Residence	Maximum Acute Hazard Index at Residence
Project Construction	0.312	0.054	0.00
SJVAPCD Screening Threshold	*10.0*	*1.0*	*1.0*
Exceed SJVAPCD Screening Threshold?	**No**	**No**	**No**

Source: San Joaquin Valley Air Pollution Control District (SJVAPCD) Prioritization Calculator. Refer to Appendix A for Model Data Outputs.

As shown in Table 4.3-2, impacts related to both cancer risk and non-cancer risk (chronic and acute hazard indexes) because of Project construction would not surpass the screening thresholds at the nearby sensitive residential receptors. Therefore, Project construction would not result in a potentially significant contribution to regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants.

4.3.2.4 Valley Fever

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

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

When soil containing this fungus is disturbed by ground-disturbing activities such as digging or grading, by vehicles raising dust, or by the wind, the fungal spores get into the air. When people breathe the spores into their lungs, they may get valley fever. Fungal spores are small particles that can grow and reproduce in the body. The highest infection period for valley fever occurs during the driest months in California, between June and November. Infection from valley fever during ground-disturbing activities can be partially mitigated through the control of Project-generated dust. As noted, Project-generated dust would be controlled by adhering to SJVAPCD dust-reducing measures (Regulation VIII), which includes the preparation of a SJVAPCD-approved dust control plan describing all fugitive dust control measures that are to be implemented before, during, and after any dust-generating activity.

With minimal site grading (mass grading is not required for the installation of a solar array) and conformance with SJVAPCD Regulation VIII, dust from the construction of the Project would not add significantly to the existing exposure level of people to this fungus, including construction workers. In summary, Project construction would not result in a potentially significant contribution to regional

concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants.

4.3.2.5 Operational Air Contaminants

Operation of the Proposed Project would not result in the development of any substantial sources of air toxics. There would be no stationary sources associated with Project operations; nor would the Project attract additional mobile sources that spend long periods queuing and idling at the site. Onsite Project emissions would not result in significant concentrations of pollutants at any sensitive receptors. Therefore, the Project would not be a substantial source of TACs. The Project will not result in a high carcinogenic or non-carcinogenic risk during operation.

This impact would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Less than significant impact.

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant

reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

During construction, the Proposed Project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site. However, these emissions are short-term in nature and will rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Additionally, odors would be localized and generally confined to the construction area. Therefore, construction odors would not adversely affect a substantial number of people to odor emissions.

Land uses commonly considered to be potential sources of obnoxious odorous emissions include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The Proposed Project does not include any uses identified as being associated with odors. The solar field would not emit odors.

This impact would be less than significant.

4.3.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.4 Biological Resources

At the request of the DGS, ECORP Consulting, Inc. conducted a biological resources assessment (BRA) and a Special Status Plant Survey Report for the Proposed Project. The purpose of the BRA was to collect information on the biological resources present or with the potential to occur in the Project Study Area (Project Area plus the Buffer Area)[1], assess potential biological impacts related to Project activities, and identify potential mitigation measures to inform and support the Project's CEQA documentation for biological resources. The Biological Resources Assessment (BRA) is included as Appendix B of this Initial Study and provides the information utilized in the following sections. The Special Status Plant Survey Report presents findings of both the early and late season rare plant surveys and is included in Appendix B, Attachment C.

4.4.1 Environmental Setting

The Study Area is located within relatively flat terrain situated at an elevational range of approximately 90 to 95 feet AMSL in the San Joaquin Valley subregion of the California floristic province. The average winter low temperature in the vicinity of the Study Area is 39.4 degrees Fahrenheit (˚F) and the average summer high temperature is 93.1˚F. Average annual precipitation is approximately 9.95 inches, which falls as rain (ECORP 2023b).

The Study Area includes the Project Area and the Buffer Area (Appendix B). The solar array area, which makes up the majority of the Project Area, is located within an undeveloped alkaline grassland. The trenching area is located within developed areas (i.e., roads, parking areas) that are part of the CDFW

[1] The BRA uses *Study Area* to represent the Project Site. Study Area and Project Site are interchangeable.

headquarters for the Los Banos Wildlife Area. The Buffer Area includes portions of the alkaline grassland, small portions along the edge of a Fremont cottonwood (*Populus fremontii*) woodland, developed areas, and a ditch used for water conveyance.

The Study Area is in the southeast corner of the Los Banos Wildlife Area. Developed portions of the Study Area are used as part of the CDFW headquarters, and undeveloped areas are minimally used for facility maintenance (piling and burning of debris). Lands to the northeast are largely undeveloped natural and created wetlands, alkaline grassland, and riparian habitat managed mostly to provide wintering habitat for migratory birds. Lands to the south are largely used for agriculture. (see Appendix B for representative Site photos).

4.4.1.1 Vegetation Communities and Land Cover Types

Vegetation communities or land cover types observed within the Study Area include alkaline grassland, Fremont cottonwood woodland, and developed/disturbed areas. These are described below.

Alkaline Grassland

The majority of the Study Area is alkaline grassland. The alkaline grassland is dominated by a mosaic of grasses with scattered forbs and shrubs. Lower-elevation areas were dominated by saltgrass (*Distichlis spicata*) and alkali heath (*Frankenia salina*). Soft chess (*Bromus hordeaceus*) was scattered throughout the grassland and was dominant in higher-elevation areas. Patches of poison hemlock were observed in lower-elevation areas and areas that were previously disturbed. Scattered shrubs were present at low cover and included Anderson thornbush (*Lycium andersonii*) and silverscale saltbush (*Atriplex argentea*). Areas of disturbance were present where vegetation piles have been burned in the past or are currently piled for burning. This vegetation type most resembles the *Distichlis spicata* Herbaceous Alliance (CNPS 2023b).The Site reconnaissance was not conducted during the optimum identifiable period for most plant species and the alkaline grassland could not be keyed to the alliance-level during the site reconnaissance.

Fremont Cottonwood Woodland

The edge of a Fremont cottonwood woodland is located within the Buffer Area north of the access road and east of the developed facility (Figure 1-1). Fremont cottonwood and willows (*Salix* sp.) are present in this area and the understory is dominated by poison hemlock (*Conium maculatum*) and intermediate wheatgrass (*Elymus hispidus*). This vegetation type is consistent with the Fremont Cottonwood Forest and Woodland Alliance (ECORP 2023b).

Developed/Disturbed

The developed areas within the Study Area include a dirt access road, asphalt surface parking areas, and garages that are part of the Los Banos Wildlife Area headquarters. These developed areas are largely devoid of vegetation. The disturbed areas for the road shoulders are dominated by intermediate wheatgrass and alkali heath.

4.4.1.2 Wildlife Observations

Wildlife observed within or near the Study Area during the site reconnaissance includes California quail (*Callipepla californica*), red-tailed hawk (*Buteo jamaicensis*), Anna's hummingbird (*Calypte anna*), and northern mockingbird (*Mimus polyglottos*). A pair of red-tailed hawks were observed courting near the Study Area and a raptor nest was observed approximately 200 feet northeast of the Study Area. The red-tailed hawks may utilize the nest. Additionally, a pair of Swainson's hawks (*Buteo swainsoni*) were observed by CDFW staff building a nest in a tree adjacent to a parking area for the Los Banos Wildlife Area approximately 750 feet west of the Study Area (ECORP 2023b).

4.4.1.3 Aquatic Resources

Wetlands

Based on the results of the aquatic resources delineation, no wetlands are located within the Study Area. Much of the solar array area was dominated by hydrophytic vegetation but lacked hydric soils and wetland hydrology.

The California Aquatic Resources Inventory (CARI) data maps the majority of the Study Area as a Depressional Seasonal Unnatural Emergent Wetland (Figure 4 of Appendix B). The CARI is a statewide map of surface waters and related habitats combining multiple national and regional datasets, including the National Wetlands Inventory and the National Hydrography Dataset. CARI includes aquatic resource features mapped using a variety of remote sensing and modeling techniques. As such, these aquatic features may or may not exist as represented. In addition, CARI data varies in detail, accuracy, and age, and is meant to be used as a tool to assist with an aquatic resource delineation but not as the only source of information (ECORP 2023b).

The wetland determination data forms are included in Appendix B.

Non-Wetland Waters

One ditch is located within the Study Area (Figure 5, Photo 2 in Appendix B). As described previously, the Study Area includes the Project Area and the Buffer Area. The ditch runs east-west through the southern portion of the Buffer Area just south of the solar array area. The ditch within the Study Area has a native soil bed and bank and appears to have been constructed in upland terrain by excavation. At the time of the site visit, the ditch was dominated by cattail (*Typha* sp.).

Other vegetation included patches of rush (*Juncus* sp.), poison hemlock, common smartweed (*Persicaria hydropiper*), hairy water clover (*Marsilea vestita*), and western marsh cudweed (*Gnaphalium palustre*). The ordinary high-water mark was delineated where the hydrophytic vegetation transitions to upland species.

4.4.1.4 Evaluation of Species Identified in the Literature Search

The BRA (Appendix B) lists all the special-status plant and wildlife species identified in the literature review as potentially occurring within the vicinity of the Study Area. Included in the BRA are the listing status for

each species, a brief habitat description, and an evaluation on the potential for each species to occur within the Study Area.

Below is a summary of the special status species that are identified in the BRA.

4.4.1.5 Plants

A total of 32 special-status plant species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (See BRA, Appendix B). Of those, 14 species are considered to be absent from the Study Area due to the lack of suitable habitat (See BRA, Appendix B). The following 18 plants have California Natural Diversity Database- (CNDDB) documented occurrences within five miles of the project site: Alkali milk-vetch (*Astragalus tener* var. *tener*), Heartscale (*Atriplex cordulata* var. *cordulata*), Crownscale *(Atriplex coronata* var. *coronata),* Lost Hills crownscale (*Atriplex coronata* var. *vallicola*), Brittlescale (*Atriplex depressa*), Lesser saltscale (*Atriplex minuscula*), Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*), Hispid bird's-beak (*Chloropyron molle* ssp. *hispidum*), Recurved larkspur (*Delphinium recurvatum*), Idria buckwheat (*Eriogonum vestitum*), Spiny-sepaled button-celery (*Eryngium spinosepalum*), Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*), Large-flowered leptosiphon (*Leptosiphon grandiflorus*), Little mousetail (*Myosurus minimus* ssp. *apus*), Prostrate vernal pool navarretia (*Navarretia prostrata*), California alkali grass (*Puccinellia simplex*), Sanford's arrowhead (*Sagittaria sanfordii*), and Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*),

4.4.1.6 Special-Status Wildlife

A total of 38 special status animals including amphibians, reptiles, birds, invertebrates, and mammals were identified through CNDDB and U.S. Fish and Wildlife Service (USFWS) searches (see Appendix B).

Five special-status amphibian species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Appendix B). Of those, three species are considered to be absent from the Study Area due to the lack of suitable habitat and/or because it is outside of the known geographic range for the and following two species have low potential to occur within the Study Area: California tiger salamander (*Ambystoma californiense*) and western spadefoot (*Spea hammondii*).

Five special-status reptile species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Appendix B). Of those, two species are considered to be absent from the Study Area due to the lack of suitable habitat and/or because it is outside of the known geographic range for the species and the following three species have low potential to occur within the Study Area: northwestern pond turtle, northern California legless lizard (*Anniella pulchra),* and giant garter snake (*Thamnophis gigas*).

A total of 27 special-status bird species were identified as having the potential to occur within the Study Area based on the literature review (See Appendix B). Of those, 15 species were determined to be absent from the Study Area due to the lack of suitable habitat and/or due to the Study Area being outside of the known geographic range of the species and the following 12 species have the potential to occur within the Study Area: northern harrier (*Circus hudsonius*), Swainson's hawk (*Buteo swainsoni), f*erruginous hawks (*Buteo regalis),* Bald eagle (*Haliaeetus leucocephalus*), prairie falcons (*Falco mexicanus*), Golden eagle

(*Aquila chrysaetos*), Mountain plover (*Charadrius montanus*), Long-billed curlew (*Numenius americanus*), burrowing owl (*Athene cunicularia*), California horned lark (*Eremophila alpestris*), loggerhead shrike (*Lanius ludovicianus*), and tricolored blackbird (*Agelaius tricolor*).

Seven special-status invertebrate species were identified as having potential to occur in the vicinity of the study area based on the literature review (See Appendix B). Of those, six species were determined to be absent from the study area due to lack of suitable habitat and/or due to the Study Area being outside of the known geographic range and only the Crotch bumble bee *(Bombus crotchii)* was found to have a low potential to occur within the project area.

Five special-status mammal species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Appendix B). Of those, three species were determined to be absent from the Study Area because the Study Area is outside of the known geographic range for the species and the following two species have low potential to occur within the Study: San Joaquin kit fox (*Vulpes macrotis*) and American badger (*Taxidea taxus*).

4.4.1.7 Wildlife Movement/Corridors and Nursery Sites

The Study Area falls within an Essential Habitat Connectivity area mapped by the CDFW (ECORP 2023b). The Study Area is a small area near a developed headquarters. The developed headquarters is surrounded by undeveloped lands. While the Study Area may provide movement corridors for wildlife, it is not expected to support critical wildlife movement corridors or potential nursery sites. Wildlife may move through the Study Area, although undeveloped areas further from the headquarters likely provide more important movement corridors.

For the purposes of this analysis, nursery sites include but are not limited to concentrations of nest or den sites such as heron rookeries or bat maternity roosts. This data is available through CDFW's Biogeographic Information and Observation System database or as occurrence records in the CNDDB and is supplemented with the results of the site reconnaissance. No nursery sites have been documented within the Study Area (ECORP 2023b) and none were observed during the Site reconnaissance.

4.4.2 Biological Resources (IV) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

Less Than Significant Impact With Mitigation Incorporated..

No special-status species are known to occur within the Study Area. However, there is a possibility that special-status species could be present or could move into the Study Area prior to construction. Potential effects to special-status species are summarized in the following sections.

4.4.2.1 Special-Status Plants

ECORP biologists Krissy Walker-Berry and Roxanne Kessler conducted the early season survey on April 27, 2023, and ECORP biologist Krissy Walker-Berry conducted the late season survey on July 11, 2023. The surveys were conducted in accordance with guidelines promulgated by USFWS (2000), and CDFW (2018), California Native Plant Society (2001)(Appendix B, Attachment C). During the surveys, the biologists walked meandering transects throughout the Survey Area, including all suitable habitat for target species, and identified all plant species to the lowest possible taxonomic level required to assess rarity. No special-status plant species were observed during the survey. A list of all plant species observed within the Survey Area is included in Appendix B, Attachment C. Therefore, no mitigation is required.

4.4.2.2 Special-Status Amphibians

There is low potential for one federally and State-listed amphibian species, California tiger salamander, to occur in the Study Area. Additionally, there is low potential for one CDFW Species of Special Concern (SSC), western spadefoot, to occur. Potential impacts are described for each species in the following sections.

In the unlikely event that special-status amphibians occur onsite, they may be temporarily displaced by Project construction and may be directly or indirectly impacted by the Project. Additionally, a small amount of potential upland habitat would be removed or altered in the footprint of the solar array.

Implementation of recommendations BIO-2 through BIO-5 described below would avoid or minimize potential effects to special-status amphibians. These include a pre-construction wildlife survey and avoidance measures if necessary, worker awareness environmental training, demarcation of Project limits to avoid offsite impacts, and measures to prevent entrapment. With implementation of these measures, the Project is not expected to significantly impact special-status amphibians.

4.4.2.3 Special-Status Reptiles

There is potential for one federally and State-listed reptile species, giant garter snake, to occur in the Study Area. Additionally, there is potential for two CDFW SSC, northwestern pond turtle and Northern California legless lizard, to occur. Potential impacts are described for each species in the following sections.

In the event that special-status reptiles occur onsite, they may be temporarily displaced by Project construction and may be directly or indirectly impacted by the Project. Additionally, a small amount of potential upland habitat would be removed or altered in the footprint of the solar array.

Implementation of recommendations BIO-2through BIO-5 described below would avoid or minimize potential effects to special-status reptiles. These include a pre-construction wildlife survey and avoidance measures if necessary, worker awareness environmental training, demarcation of Project limits to avoid offsite impacts, and measures to prevent entrapment. With implementation of these measures, the Project is not expected to significantly impact special-status reptiles.

4.4.2.4 Special-Status and Other Protected Birds

There is potential foraging habitat, but no nesting habitat, for two State-listed bird species (Swainson's hawk, tricolored blackbird) within the Study Area.

There is potential or marginal nesting habitat for three non-listed special-status bird species (northern harrier, California horned lark, loggerhead shrike) within the Study Area and foraging habitat for multiple other non-listed special-status bird species (Appendix B). Additionally, a variety of other birds that are protected under the Migratory Bird Treaty Act and the California Fish and Game Code may nest within or adjacent to the Study Area.

Birds may be temporarily displaced from the Project Area during construction and nesting birds within or in the vicinity of the Project may be directly or indirectly impacted by the Project. Additionally, a small amount of potential nesting and foraging habitat would be removed or altered in the footprint of the solar array. Due to the small footprint of the solar arrays and the short duration of Project construction, mortality of special-status birds is not expected.

Implementation of recommendations BIO-1 and BIO-3 thru 4 described below would avoid or minimize potential effects on special-status birds and other protected birds. These include a pre-construction nesting-bird survey and avoidance measures if necessary, worker awareness environmental training, and demarcation of Project limits to avoid offsite impacts. With implementation of these measures, the Project is not expected to significantly impact special-status birds.

4.4.3 Special-Status Invertebrates

One candidate for State-listing, Crotch bumble bee, has low potential to occur in the Study Area. The alkaline grassland provides low-quality nesting, foraging, and overwintering habitat for the Crotch bumble bee. Because this species is a generalist forager and bees may nest and overwinter under thatch or in abandoned rodent burrows and locations change each year, temporary and permanent impacts due to removal of these habitats would not be expected to contribute substantially to the overall decline of this species unless an active nest or overwintering gyne (future queen) were to be impacted. Impacts to Crotch bumble bee would be less than significant with the implementation of Mitigation Measure BIO-6.

4.4.3.1 Special-Status Mammals

One federally and State-listed mammal, San Joaquin kit fox, has low potential to occur in the Study Area. Additionally, there is low potential for one CDFW SSC, American badger, to occur.

In the unlikely event that special-status mammals occur onsite they may be temporarily displaced by Project construction and may be directly or indirectly impacted by the Project. Additionally, a small

amount of marginal potential movement/foraging habitat would be removed or altered in the footprint of the solar array.

Implementation of recommendations BIO-2 through BIO-5 and BIO 7 described below would avoid and/or minimize potential effects on special-status mammals. These include a pre-construction wildlife survey and avoidance measures if necessary, worker awareness environmental training, demarcation of Project limits to avoid offsite impacts, and measures to prevent entrapment and avoid attraction of wildlife to the Project site. With implementation of these measures, the Project is not expected to significantly impact special-status mammals.

Therefore, with the implementation of the aforementioned mitigation measures, impacts to species identified above would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

Less Than Significant Impact With Mitigation Incorporated..

A small portion of a Fremont cottonwood woodland, which may be considered both riparian habitat and a sensitive natural community, is located within the Study Area (see Sections 4.1.3 and 4.4 of the BRA). However, the woodland is within the Buffer Area for the Project. No impacts are proposed within the Buffer Area.

Alkaline grassland is located within the Study Area and was not keyed to the alliance level. The alkaline grassland may have characteristics of a sensitive natural community. However, this area is a relatively small area that is isolated from other similar habitats by development. Therefore, even if the alkaline grassland is consistent with a sensitive alliance, impacts to the small amount of land are not expected to have a substantial adverse effect on sensitive communities.

Implementation of recommendation BIO-4 below would avoid potential impacts to riparian habitat and sensitive natural communities. This measure includes demarcation of Project limits to avoid offsite impacts. With implementation of this measure, the Project is not expected to impact riparian habitat or substantially impact sensitive natural communities. Implementation of this mitigation measure would result in a less than significant impact.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐

Less Than Significant Impact With Mitigation Incorporated.

Based on the aquatic resources delineation and the current Project limits, the Project would have no impact on federally protected wetlands; however, the ditch within the Study Area may be considered a Water of the U.S. and/or State. The ditch is within the Buffer Area and the Project is not proposing impacts to the ditch.

Implementation of recommendations BIO-4, BIO-8, and BIO-9 described below would avoid or minimize potential effects to Waters of the U.S. and State. These include measures to avoid offsite impacts. With implementation of these measures, the Project is not expected to impact Waters of the U.S. or State. Implementation of this mitigation measure would result in a less than significant impact.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐

Less Than Significant Impact.

Project construction is likely to temporarily disturb and displace most wildlife from the Study Area. Some wildlife such as birds or nocturnal species are likely to continue to use the habitats opportunistically for the duration of construction. Once construction is complete, wildlife movements are expected to resume. Therefore, the Project is not expected to substantially interfere with wildlife movement.

There are no documented nursery sites and no nursey sites were observed within the Study Area during the site reconnaissance. Therefore, the Project is not expected to impact wildlife nursery sites. There would be a less than significant impact.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒

No Impact

The Project is within the Los Banos Wildlife Area on land owned by CDFW. There are no known local policies or ordinances relevant to the Project. The Project is not expected to conflict with a management plan. As such, no impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	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?	☐	☐	☐	☒

No Impact.

The Study Area is not covered by any local, regional, or State conservation plan. Therefore, the Project would not conflict with a local, regional, or State conservation plan. There would be no impact.

4.4.4 Mitigation Measures

Following are the minimization and mitigation measures to further reduce or eliminate Project-associated impacts to special-status wildlife species..

BIO-1: **Nesting Bird Survey.** If construction is to occur during the nesting season (generally February 1 - August 31), conduct a pre-construction nesting-bird survey of all suitable nesting habitat within 14 days prior to construction. The survey shall be conducted within a 500-foot radius of Project work areas for raptors and within a 100-foot radius for other nesting birds. If any active nests are observed, these nests shall be designated an environmentally sensitive area and protected by an avoidance buffer established in coordination with CDFW until the breeding season has ended or until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival.

Timing/Implementation: Prior to construction (only during nesting season)

Implementation/Responsibility/Verification: Developer/Project Biologists

BIO-2: **Special-Status Wildlife Survey.** A qualified biologist shall conduct a pre-construction special-status wildlife survey in the Project Area (including impacts areas, access roads, and

staging areas) between 30 and 15 days prior to ground- or vegetation-disturbing construction activities. The survey shall be conducted within 200 feet of all areas of ground or vegetation disturbance and shall be conducted for the following species: California tiger salamander, western spadefoot, northwestern pond turtle, Northern California legless lizard, giant garter snake, San Joaquin kit fox, and American badger. The survey shall follow accepted procedures for these species and shall map any occurrences or habitat features (i.e., dens or burrows) with sign of special-status species. If no special-status species are detected, construction may proceed in unoccupied habitat. If special-status species are detected, the following measures shall apply:

- If a special-status species is detected within or near the Project Area during the pre-construction survey and there is potential for Project activities to impact the species, a qualified biological monitor shall be present during all activities that may impact the species (e.g., ground or vegetation disturbance).
- Special-status wildlife detected prior to or during construction shall be allowed to move out of the work area of their own volition. If an individual must be relocated, a qualified biologist with required permits or approvals must relocate the individual out of harm's way to the nearest suitable habitat at least 100 feet from the Project work area where it was found.

If a kit fox or badger den is detected within 200 feet of the work area, it shall be designated an environmentally sensitive area and protected by an avoidance buffer of 200 feet for non-natal dens. A buffer distance for natal dens shall be established in consultation with USFWS and/or CDFW. Avoidance buffers shall be maintained until a qualified biologist determines the den is no longer active. Any demarcation of the dens or avoidance zone shall not prevent access to the den by kit foxes or badgers.

Timing/Implementation: *Prior to and during construction.*

Implementation/Responsibility/Verification: Developer/Project Biologists

BIO3: **Worker Environmental Awareness Training.** A qualified biologist shall conduct mandatory worker environmental awareness training for all contractors, work crews, and any onsite personnel to aid workers in recognizing special-status species and other sensitive biological resources that may occur onsite. The training shall include identification of the special-status species with potential to occur and their habitats, a description of the regulatory status of sensitive resources, and review of the limits of construction, environmentally sensitive areas, and measures required to reduce impacts to biological resources. The Project shall retain a qualified biologist with any required permits on an as-needed basis to assist with potential biological issues that may arise during construction (i.e., wildlife relocation).

Timing/Implementation: *Prior to construction*

Implementation/Responsibility/Verification: Developer/Project Biologists

BIO-4: **Impact Limits and Avoidance Areas.** The Project impact limits shall be clearly demarcated prior to construction and all workers shall be made aware of the impact limits and avoided areas. If orange construction fencing is to be used, it shall be placed such that there is a one-foot gap between the ground and the bottom of the fencing to prevent ground-dwelling animals from being caught in the fencing. No work shall occur outside of the Project impact limits. All vehicles and equipment shall be restricted to the Project impact limits and/or existing designated access roads and staging areas. Project-related vehicles shall observe a speed limit of 15 miles per hour during the day and 10 miles per hour at night in construction areas and on access roads where it is safe and feasible to do so, except on county roads and State and federal highways.

Timing/Implementation: *Prior to and during construction*

Implementation/Responsibility/Verification: Developer/Project Biologists

BIO-5: **Inadvertent Entrapment Prevention.** To prevent inadvertent entrapment of special-status wildlife during construction, all excavated, steep-walled holes or trenches more than two-feet deep shall be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape or the USFWS/CDFW should be contacted for guidance.

Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way.

Timing/Implementation: *During construction.*

Implementation/Responsibility/Verification: Developer

BIO-6: **Crotch Bumble Bee Survey**. Because Crotch bumble bee nest locations are chosen on an annual basis and the site provides marginal nesting habitat, a CDFW-approved Crotch bumble bee biologist shall conduct three weekly preconstruction nesting surveys with focus on detecting active nesting colonies with the third and final survey conducted within 24-hours immediately prior to ground disturbing activities that are scheduled to occur during the flight season (February through October). Surveys shall be completed at a minimum of one person-hour of searching per three acres of suitable habitat during suitable weather conditions (sustained winds less than 8 mph, mostly sunny to full sun, temperatures between 65 and 90 degrees Fahrenheit) at an appropriate time of day for detection (at least an hour after sunrise and at least two hours before sunset, though ideally between 9am-1pm). If no nests are found but the species is present, a full-time qualified biological monitor shall be present during initial vegetation or ground disturbing activities that are scheduled to occur

during the queen flight period (February through March), colony active period (March through September), and/or gyne flight period (September through October). The Crotch bumble bee biologist shall immediately notify CDFW of the detection as further coordination may be required to avoid or mitigate certain impacts. If an active Crotch bumble bee nest is detected, an appropriate no disturbance buffer zone (including foraging resources and flight corridors essential for supporting the colony) shall be established around the nest to reduce the risk of disturbance or accidental take and the designated biologist shall coordinate with CDFW to determine if an Incidental Take Permit under Section 2081 of the California ESA will be required. Nest avoidance buffers may be removed at the completion of the flight season and/or once the qualified Crotch bumble bee biologist deems the nesting colony is no longer active and CDFW agrees with the determination.

If initial grading is phased or delayed for any reason, the 24-hour preconstruction nesting survey will be repeated prior to ground-disturbing activities that are scheduled to occur during the same flight season (February through October). Three preconstruction Crotch bumble bee nesting surveys shall be required in subsequent years of construction whenever vegetation and ground disturbing activities are scheduled to occur during the flight season (February through October) if nesting habitat is still present or has re-established and will be affected.

Timing/Implementation: Three weekly preconstruction nesting surveys

Implementation/Responsibility/Verification: Developer/Project Biologists

BIO-7: **Refuse Removal.** To avoid attracting special-status mammals to the Project site, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from the Project site during construction.

Timing/Implementation: *During construction.*

Implementation/Responsibility/Verification: *Developer*

BIO-8: **Erosion Control BMPs.** Erosion control measures should be placed between avoided aquatic resources and the outer edge of the impact limits prior to commencement of construction activities and should be maintained until construction is completed and soils have been stabilized.

Timing/Implementation: *Prior to and during construction.*

Implementation/Responsibility/Verification: *Developer*

BIO-9: **Fueling Containment BMPs.** Any fueling in the Study Area should use appropriate secondary containment techniques to prevent spills and should occur at least 150 feet from potential aquatic resources.

Timing/Implementation: *During construction.*

Implementation/Responsibility/Verification: *Developer*

4.5 Cultural Resources

ForeFront Power, LLC retained ECORP Consulting, Inc. in 2023 to conduct an archaeological resources inventory for the Los Banos Wildlife Area Solar Project in the City of Los Banos in Merced County, California. A survey of the Project Area was required to identify potentially eligible archaeological resources (i.e., archaeological sites and historic buildings, structures, and objects) that could be affected by the Project.

Sections 6253, 6254, and 6254.10 of the California Code authorize state agencies to exclude archaeological site information from public disclosure under the Public Records Act. In addition, the California Public Records Act (Government Code Section 6250 et seq.) and California's open meeting laws (The Brown Act, Government Code Section 54950 et seq.) protect the confidentiality of Native American cultural place information. Because the disclosure of information about the location of cultural resources is prohibited by the Archaeological Resources Protection Act of 1979 (16 U.S. Code 552 [USC] 470HH) and Section 307103 of the National Historic Preservation Act (NHPA), it is exempted from disclosure under Exemption 3 of the federal Freedom of Information Act (5 USC 552)] Likewise, the Information Centers of the California Historical Resources Information System (CHRIS) maintained by the California Office of Historic Preservation prohibit public dissemination of records search information. In compliance with these requirements, the results of this cultural resource investigation were prepared as a confidential document, which is not intended for public distribution in either paper or electronic format. As such, the Cultural Resources Inventory Report is not included in this IS/MND.

4.5.1 Environmental Setting

The Project Area is in the San Joaquin Valley region within the greater Central Valley. The surrounding land is characterized by flat agricultural fields and natural undeveloped land incised by the San Joaquin River and various sloughs and streams. The elevations range from 92 to 95 feet AMSL. The Project Area is located within the property of the Los Banos Wildlife Area Headquarters, which consists of paved and gravel roads with areas of sparse to dense vegetation. The Project Area abuts Henry Miller Avenue to the south. Mud Slough and the San Joaquin River are located approximately 1 and 5 miles northeast of the Project Area, respectively. A segment of Devon Drain, an earthen ditch, is located along the southern boundary of the Project Area.

4.5.1.1 Area of Potential Effects

The Area of Potential Effects (APE) consists of the horizontal and vertical limits of a project and includes the area within which significant impacts or adverse effects to Historical Resources or Historic Properties could occur as a result of the Project. The APE is defined for projects subject to regulations implementing Section 106 (federal law and regulations). For projects subject to the California Environmental Quality Act (CEQA) review, the term *Project Area* is used rather than *APE*. The terms *Project Area* and *APE* are interchangeable for the purpose of this document.

The horizontal APE consists of all areas where activities associated with a project are proposed and, in the case of this Project, equals the Project Area subject to environmental review under the National

Environmental Policy Act and CEQA. This includes areas proposed for installation, vegetation removal, grading, trenching, staging, paving, and other elements in the official Project description. The horizontal APE is illustrated in Figure 2 of Appendix C (not included due to confidentiality) and represents the survey coverage area, which measures 2.24 acres.

The vertical APE is described as the maximum depth below the surface to which excavations for Project foundations and facilities will extend. Therefore, the vertical APE for this Project includes all subsurface areas where archaeological deposits could be affected. The subsurface vertical APE varies across the Project Area. It could extend as deep as 20 feet below the current surface for electrical conduits and wire installation; therefore, a review of geologic and soils maps was necessary to determine the potential for buried archaeological sites that cannot be seen on the surface.

The vertical APE also is described as the maximum height of structures that could impact the physical integrity and integrity of setting of cultural resources, including districts and traditional cultural properties. For this Project, the above-surface vertical APE is estimated to be 20 feet above the surface, which is the maximum of structures associated with the solar array installation.

4.5.2 Cultural Resources Records Search

ECORP requested a records search for the property at the Central California Information Center (CCIC) of the CHRIS at California State University, Stanislaus on March 1, 2023 (Appendix C). The purpose of the records search was to determine the extent of previous surveys within a 0.5-mile (800-meter) radius of the Proposed Project Area, and whether previously documented pre-contact or historic archaeological sites, architectural resources, or traditional cultural properties exist within this area. CCIC staff completed and returned the records search to ECORP on March 10, 2023.

In addition to the official records and maps for archaeological sites and surveys in Merced County, the following historic references were also reviewed: Built Environment Resource Directory; Historic Property Data File for Merced County; the National Register Information System; Office of Historic Preservation, California Historical Landmarks; California Points of Historical Interest; Directory of Properties in the Historical Resources Inventory; Caltrans Transportation Library, Digital Collections of Historic Bridges and Tunnels; Caltrans State Bridge Survey; and *Historic Spots in California* (Appendix C).

Other references examined include a RealQuest Property Search, historic General Land Office (GLO) land patent records, and review of historic maps and aerial photographs for any indications of property usage and built environment (Appendix C).

In addition to the records search, ECORP contacted the California NAHC on March 1, 2023 to request a search of the Sacred Lands File for the Project Area (Appendix C). This search determines whether the California Native American tribes within the Project Area have recorded Sacred Lands, because the Sacred Lands File is populated by members of the Native American community with knowledge about the locations of tribal resources. In requesting a search of the Sacred Lands File, ECORP solicited information from the Native American community regarding TCRs, but the responsibility to formally consult with the Native American community lies exclusively with the federal and local agencies under applicable state and

federal laws. The lead agencies do not delegate government-to-government authority to any private entity to conduct tribal consultation.

Furthermore, ECORP mailed letters to the Merced County Historical Society and the Los Banos Milliken Museum Society on March 15, 2023 to solicit comments or obtain historical information that the repositories might have regarding events, people, or resources of historical significance in the area (Appendix C).

4.5.2.1 Ethnography

Prior to the arrival of European-Americans to what was to become California, indigenous groups speaking more than 100 different languages and occupying a variety of ecological settings inhabited the state. When the first European explorers entered the regions between 1772 and 1821, an estimated 100,000 people, about one-third of the state's native population, lived in the Central Valley. Ethnographically, present-day Los Banos lies within the Northern Valley Yokuts territory. The Northern Valley Yokuts are bounded on the north by the Bay and Plains Miwok territories, the Costanoan on the west, the Northern, Central, and Southern Miwok on the east, and the Southern Valley Yokuts to the south. The San Joaquin River forms the central spine of the Northern Valley Yokuts territory that runs north collecting water from primary drainages that flow southwest from the Sierra Nevada. Los Banos lies in an area dominated ethnographically by the *Nopchinchi* Tribelet, who inhabited the area west of the San Joaquin River near Las Banos Creek and Little Panoche Creek. The environment consisted of marshland flanking rivers and streams separated by more arid plains with sparse vegetation. Further information regarding the Native Americans of California and potential for impacts to tribal cultural resources is provided in Section 4.18 below.

4.5.2.2 Regional Pre-Contact History

The first European to visit California was Spanish maritime explorer Juan Rodriguez Cabrillo in 1542. Colonization of California began with the Spanish Portolá land expedition. The expedition, led by Captain Gaspar de Portolá of the Spanish army and Father Junipero Serra, a Franciscan missionary, explored the California coast from San Diego to the Monterey Bay Area in 1769. As a result of this expedition, the Spanish established missions, presidios (forts) and pueblos (towns) to convert the Native American population. The Franciscan missionary friars established 21 missions in Alta California (the area north of Baja California) beginning with Mission San Diego in 1769 and ending with the mission in Sonoma established in 1823. The purpose of the missions and presidios was to establish Spanish economic, military, political, and religious control over the Alta California territory. No missions were established in the Central Valley. The Spanish took little interest in the Central Valley area and did not establish any missions or settlements.

After Mexico became independent from Spain in 1821, what is now California became the Mexican province of Alta California with its capital at Monterey. In in 1827, American trapper Jedediah Smith traveled along the Sacramento River and into the San Joaquin Valley to meet other trappers of his company who were camped there; however, no permanent settlements were established by the fur trappers. The Mexican Period lasted from 1821 to 1848 (Appendix C).

John Sutter, a European immigrant, built a fort at the confluence of the Sacramento and American rivers in 1839 and petitioned the Mexican governor of Alta California for a land grant, which he received in 1841. Sutter built a flour mill and grew wheat near the fort. Gold was discovered in the flume of Sutter's lumber mill at Coloma on the South Fork of the American River in January 1848. The discovery of gold initiated the 1849 California Gold Rush, which brought thousands of miners and settlers to the Sierra Nevada foothills east and southeast of Sacramento (Appendix C).

The American Period began when the Treaty of Guadalupe Hidalgo was signed between Mexico and the U.S. in 1848. As a result of the treaty, Alta California became part of the U.S. as the territory of California. Rapid population increase occasioned by the Gold Rush of 1849 allowed California to become a state in 1850. Most Mexican land grants were confirmed to the grantees by U.S. courts, but usually with more restricted boundaries which were surveyed by the U.S. Surveyor General's office. Land outside of the land grants became federal public land, which was surveyed into sections, quarter-sections, and quarter-quarter sections. The federal public land could be purchased at a low fixed price per acre or could be obtained through homesteading (Appendix C).

4.5.2.3 Local Pre-Contact History

The San Joaquin Valley, the adjacent Sierra Nevada foothills to the east, and the Coast Range to the west, have long and complex cultural histories with distinct regional patterns that extend back more than 11,000 years. The presence of the distinctive basally thinned and fluted projectile points found on the margins of extinct lakes in the San Joaquin Valley represents the first evidence for the presence of pre-contact people in the region. These projectile points, often compared to Clovis points, have been found at three localities in the San Joaquin Valley including along the Pleistocene shorelines of former Tulare Lake. Based on evidence from these sites and other well-dated contexts elsewhere, the Paleo-Indian hunters used these spear points during a narrow time range of 11,550 to 8,550 years Before Present (BP) (Appendix C).

As a result of climate change at the end of the Pleistocene, a period of extensive deposition occurred throughout the lowlands of central California, burying many older landforms, and providing a distinct break between Pleistocene and subsequent occupations during the Holocene. Another period of deposition, also a product of climate change, had similar results around 7,550 BP, which buried some of the oldest archaeological deposits discovered in California (Appendix C).

The Archaic Period is further divided into three sub-periods, the lower Archaic, the Middle Archaic and the Upper Archaic. The Archaic Period was characterized by an increase in plant exploitation for subsistence, more elaborate burial accoutrements, and increase in trade network complexity.

The Emergent Period is most notably marked by the introduction of the bow and arrow, the emergence of social stratification linked to wealth, and more expansive trade networks signified by the presence of clam disk beads that were used as currency.

4.5.2.4 Regional History

The first European to visit California was Spanish maritime explorer Juan Rodriguez Cabrillo in 1542. Cabrillo was sent north by the Viceroy of New Spain (Mexico) to look for the Northwest Passage. Cabrillo visited San Diego Bay, Catalina Island, San Pedro Bay, and the northern Channel Islands. The English adventurer Francis Drake visited the Miwok Native American group at Drake's Bay or Bodega Bay in 1579. Sebastian Vizcaíno explored the coast as far north as Monterey in 1602. He reported that Monterey was an excellent location for a port.

Colonization of California began with the Spanish Portolá land expedition. The expedition, led by Captain Gaspar de Portolá of the Spanish army and Father Junipero Serra, a Franciscan missionary, explored the California coast from San Diego to Monterey Bay in 1769. As a result of this expedition, Spanish missions to convert the native population, presidios (forts), and pueblos (towns) were established. The Franciscan missionary friars established 21 missions in Alta California (the area north of Baja California) beginning with Mission San Diego in 1769 and ending with the mission in Sonoma established in 1823. The nearest missions to the Project Site were in the vicinity of San Francisco Bay and included Mission San Francisco de Asis (Dolores) established in 1776 on the San Francisco Peninsula, Mission Santa Clara de Asis at the south end of San Francisco Bay in 1777, Mission San Jose in 1797, Mission San Rafael, established as an *asistencia* in 1817 and a full mission in 1823, and Mission San Francisco Solano in Sonoma in 1823. Presidios were established at San Francisco and Monterey.

After Mexico became independent from Spain in 1821, what is now California became the Mexican province of Alta California with its capital at Monterey. The Mexican government closed the missions in the 1830s and former mission lands, as well as previously unoccupied areas, were granted to retired soldiers and other Mexican citizens for use as cattle ranches. Much of the land along the coast and in the interior valleys became part of Mexican land grants or ranchos. There were small towns at San Francisco (then known as Yerba Buena) and Monterey during the Mexican period. The Mexican Period includes the years 1821 to 1848.

John Sutter, a European immigrant, built a fort at the confluence of the Sacramento and American rivers in 1839 and petitioned the Mexican governor of Alta California for a land grant, which he received in 1841. Sutter built a flour mill and grew wheat near the fort. Gold was discovered in the flume of Sutter's lumber mill at Coloma on the South Fork of the American River in January 1848. The discovery of gold initiated the 1849 California Gold Rush, which brought thousands of miners and settlers to the Sierra foothills east and southeast of Sacramento.

The American Period began when the Treaty of Guadalupe Hidalgo was signed between Mexico and the United States in 1848. As a result of the treaty, Alta California became part of the United States as the territory of California. Rapid population increase occasioned by the Gold Rush of 1849 allowed California to become a state in 1850 (Appendix C).

4.5.2.5 Project Area History

Los Banos, which translates to *the baths* in Spanish, derives its name from pools located at the headwaters of a creek in the hills of southwestern Merced County. The Franciscan missionary Felipe Arroyo de la Cuesta of Mission San Juan Bautista frequented the pools during the early 19th century. The creek flowed north and east from the Diablo Range to wetlands drained by the San Joaquin River.

Henry Miller, a German immigrant, arrived in California in 1850 and prospered as a butcher in San Francisco. Rising meat prices during the 1850s prompted Miller to acquire a small herd of cattle which grazed on the outskirts of the city. In 1863 Miller ventured into the San Joaquin Valley seeking to enlarge his herd. He stopped at Los Banos Creek and negotiated for the purchase of 7,500 head of cattle and an 8,835-acre portion of Rancho Sanjon de Santa Rita. On the same trip he met Charles Lux, who became his business partner. Miller & Lux became California's largest ranching and landowning enterprise. By 1869, the firm owned more than 160,000 acres in Merced County alone, including more than 100 miles along the western bank of the San Joaquin River.

In 1889, the Southern Pacific Railroad laid tracks down the western side of the San Joaquin Valley. The railroad purchased a 300-acre alfalfa field from Henry Miller in southwestern Merced County. Through its development subsidiary, the Pacific Improvement Company, the railroad staked out a grid of streets, blocks, and building lots and established a depot called *Los Banos*. The firm also built the town's early water and power infrastructure.

Agricultural production on the outskirts of Los Banos fueled the town's early growth. Coinciding with the arrival of the railroad, a landscape of alfalfa fields and dairy farms sustained by a network of canals and ditches emerged in the vicinity of Los Banos. Hardware stores, feed stores, and other establishments along H and I streets catered to farmers and ranchers who conducted business in town. Lumber imported on the railroad facilitated residential and commercial growth in town and in the countryside. By the turn of the century, the population of Los Banos reached 800, while the rural population in the vicinity of town exceeded 2,500. The City of Los Banos was incorporated in 1907 to provide for a modernized sewer system and other improvements. Agriculture remained the basis of the town's prosperity through the early 21st century (Appendix C).

4.5.2.6 Los Banos Wildlife Area History

In 1929, the State of California Fish and Game Commission acquired 3,000 acres northeast of Los Banos formerly used by Miller & Lux as grazing lands; this included sections of the original Rancho Sanjon de Santa Rita land grant. In 1954, state officials designated it a wildlife area. Additional acreage acquired through the 20th century brought Los Banos Wildlife Area to its current 6,200-acre configuration. It is home to wintering waterfowl, western pond turtles, striped skunks, beavers, and muskrats as well as over 2,000 species of migratory birds (Appendix C).

4.5.2.7 Records Search

The records search consisted of a review of previous research and literature records on file with the CCIC for previously recorded resources, and aerial photographs and maps of the vicinity.

Five previous cultural resource investigations have been conducted in or within 0.5 mile of the Project Area, covering approximately 80 percent of the total area surrounding the Project Area within the records search radius. Of the five studies, a small portion of one study overlaps the eastern end of the Project Area. These studies revealed the presence of pre-contact sites associated with Native American occupation of the vicinity, and historic-era cultural resources consisting of water conveyance systems and a roadway. The previous studies were conducted as many as 34 years ago under obsolete standards; therefore, ECORP conducted a pedestrian survey of the Project Area under current protocols.

In 2017, ICF International and the California High Speed Rail Authority completed the *California High-Speed Rail Authority, San Jose to Merced Project Section, Deliberative and Confidential Draft Historic Architectural Survey Report* as part of the California High-Speed Rail Project. The southwesternmost corner of the 2017 study overlaps the eastern portion of the current Project Area. No cultural resources were recorded in the Project Area as a result of the 2017 investigation.

The records search also determined that five previously recorded pre-contact and historic-era cultural resources are located within 0.5 mile of the Project Area. Of these, two are believed to be associated with Native American occupation of the vicinity and three are historic-era sites associated with transportation and early water conveyance systems that were likely used for European-American farming activities. There are no previously recorded cultural resources within Project Area.

The Archaeological Determinations of Eligibility indicates that a previously recorded pre-contact site is located approximately 0.4 mile from the Project Area. This site was recorded in 1989 by Brian Dillon as a possible small village site on the western bank of Mud Slough consisting of lithic bowl mortars, manos, choppers, a projectile point fragment, and a lithic scatter.

The National Register Information System failed to reveal any eligible or listed properties within the Project Area. The nearest National Register properties are located approximately 4 miles southwest of the Project Area in the City of Los Banos.

ECORP reviewed resources listed as *California Historical Landmarks* by the Office of Historic Preservation on February 27, 2023. The nearest listed landmark is the Canal Farm Inn in the City of Los Banos, located approximately 4.1 miles southwest of the Project Area.

Historic Spots in California mentioned that Los Banos, which translates to *the baths*, originated from the deep clear pools of water near present-day Los Banos Creek. The Author also mentioned the town of Los Banos began as Lone Willow Station in 1859 and became a way station for the various travel routes throughout the Central Valley. In the 1870s, Henry Miller and Charles Lux established the Miller and Lux Corporation. Their Los Banos Division was located at Canal Farm Inn. The town of Los Banos was known for fruit and dairy products and was the principal town of the western side of the San Joaquin Valley.

Lastly, the author mentioned that Merced County had vast natural wildlands and preserves, which included the Los Banos Wildlife Area (Appendix C).

Historic GLO land patent records from the BLM's patent information database revealed that the southeasternmost corner of Section 36 and the southwesternmost corner of Section 31 were granted to the State of California under the authority of the March 3, 1853 California Enabling Act (10 Statute 244).

A RealQuest online property search for APN 070-202-012-000 revealed that the parcel comprises 99 acres of exempt government-owned property; however, the Project Area only encompasses 2.24 acres of the larger 99-acre parcel. No other property history information was on file with RealQuest.

The Caltrans Bridge Local and State Inventories did not list any historic bridges in or within 0.5-mile of the Project Area (Appendix C).

The *Handbook of North American Indians* indicates the nearest Native American village is *Yeurata,* which is located 2.25 miles from the Project Area. Additionally, the *Nopchinchi* territory that occupied the land near the San Joaquin River and its various tributaries and drainages is located approximately 9.5 miles from the Project Area (Appendix C).

4.5.3 Cultural Resources (V) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☐	☒	☐

Less than significant impact.

ECORP surveyed the Project Area for cultural resources on March 27, 2023. The Project Area is situated within CDFW's Los Banos Wildlife Area Headquarters facility. The Project Area is composed of a portion of the headquarters and contains the locations of the proposed trench alignment and solar arrays. The Project Area also contains architectural resources associated with the CDFW headquarters: three metal buildings, an unpaved road, and a segment of Devon Drain (an earthen ditch). The trench alignment bisects a portion of the unpaved road. The gravel surface of the road impedes visibility of the natural ground surface. The area for the proposed solar arrays is covered with dense grasses, weeds, shrubby vegetation, and numerous pools of water, which impede visibility of the natural ground surface. Small patches of exposed soil due to voids of vegetation and rodent burrows were thoroughly inspected for any indication of subsurface deposits or surface manifestations of cultural material. Project Area photographs are provided in Appendix C.

As a result of previous investigations by other firms, no cultural resources have been previously recorded within the Project Area. As a result of the 2023 field survey, ECORP identified and recorded three previously unrecorded architectural resources within the Project Area: LB-1, a utility shop; LB-2, a garage; and LB-3, an unpaved road. Additionally, ECORP identified two architectural resources which may, upon

further research, meet the 50-year-old threshold to be evaluated for the National Register of Historic Places or California Register of Historical Resources: a metal warehouse and a segment of Devon Drain (an earthen ditch). Likewise, the Project Area may overlap a larger rural historic landscape (i.e., a historic district) that includes the entire Los Banos Wildlife Area. The National Park Service identifies "conservation (including natural reserves)" areas as a type of rural historic landscape. Site descriptions follow and confidential Department of Parks and Recreation site records are provided in Appendix C.

The three previously unrecorded historic-era cultural resources (LB-1, LB-2, and LB-3) have not been evaluated using National Register of Historic Places and California Register of Historical Resources eligibility criteria. Therefore, it is not currently known whether or not any of these are considered Historical Resources under CEQA or Historic Properties under Section 106 NHPA (if applicable). The process of evaluation requires a combination of archival research and archaeological excavation if sites are not presumed eligible. However, due to the Project-specific characteristics including the installation of a ground-mounted solar array being installed in an area currently undeveloped, with no proposed changes being made to these historic-era cultural resources, this impact would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐

Less Than Significant Impact With Mitigation Incorporated..

As discussed previously, a records search consisting of a review of previous research and literature and historical aerial photographs and maps of the vicinity was conducted for the Project Site.

The inventory included a records search, literature review, and field survey. The records search results indicated that one previous cultural resources study overlaps the Project Area. As a result of the study, no cultural resources have been previously recorded in the Project Area. Therefore, there would be a less than significant impact to archaeological resources.

Due to the presence of alluvium along Mud Slough and the San Joaquin River, which are approximately 1 and 5 miles northeast of the Project Area, respectively, and given the likelihood of pre-contact archaeological sites located along perennial waterways, there exists a low to moderate potential for buried pre-contact archaeological sites in the Project Area. The nearby sloughs and the San Joaquin River would have provided a habitat for resources that Native Americans would have exploited; therefore, the area has a moderate likelihood of containing buried pre-contact cultural resources. However, there is a low potential for intact buried pre-contact archaeological sites in the Project Area due to the disturbances caused by the construction of the San Luis Canal immediately west of the Project Area, Devon Drain within the southern portion of the Project Area, the roadways, and the duck ponds on the southern side of Henry Miller Avenue to the south of the Project Area. Additionally, the presence of clay throughout the top 62 inches of soil reduces the likelihood of subsurface cultural deposits because clay takes thousands of years to form. Overall, the potential for subsurface cultural deposits is moderate throughout the Project

Area. However, ground disturbance associated with development of the Project Site has the potential to impact previously unknown, subsurface historic resources should any be present. Mitigation measure CUL-1 is provided to reduce potential impacts to a level that is considered less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

Potentially significant impact.

As discussed above, there are no known formal or informal cemeteries within the Project Site. Regardless, there is a possibility of the unanticipated and accidental discovery of human remains during ground-disturbing Project-related activities. Therefore, mitigation measure CUL-1 is provided to reduce potential impacts to a level that is considered less than significant.

4.5.4 Mitigation Measures

CUL-1: **Implement Measures to Protect Unanticipated Cultural, Archaeological, and/or Tribal Cultural Resources Discoveries.** The following mitigation measure is intended to address the evaluation and treatment of inadvertent/unanticipated discoveries of potential tribal cultural resources (TCRs), archaeological, or cultural resources during a project's ground disturbing activities.

- If any suspected archaeological or cultural resources are discovered during ground disturbing construction activities, all work shall cease within 100 feet of the find, or an agreed upon distance based on the project area and nature of the find. A professional archaeologist who meets the Secretary of Interior's Standards for Archaeology will make recommendations for further evaluation and treatment, as necessary.
- If any suspected TCRs are discovered during ground disturbing construction activities, all work shall cease within 100 feet of the find, or an agreed upon distance based on the project area and nature of the find. A Tribal Representative from a California Native American tribe that is traditionally and culturally affiliated with a geographic area shall be immediately notified and shall determine if the find is a TCR (PRC §21074). The Tribal Representative will make recommendations for further evaluation and treatment, as necessary.
- When avoidance is infeasible, preservation in place is the preferred option for mitigation of TCRs, or archaeological or cultural resources under CEQA protocols, and every effort shall be made to preserve the resources in place, including through project redesign, if feasible. Culturally appropriate treatment may be, but is not limited to, processing materials for reburial, minimizing handling of cultural objects, leaving objects in place within the landscape, or returning objects to a location within the project area where

they will not be subject to future impacts. Permanent curation of TCRs will not take place unless approved in writing by the California Native American Tribe(s) that is traditionally and culturally affiliated with the project area.

- The contractor shall implement any measures deemed by the CEQA lead agency to be necessary and feasible to preserve in place, avoid, or minimize impacts to the resource, including, but not limited to, facilitating the appropriate tribal treatment of the find, as necessary. Treatment that preserves or restores the cultural character and integrity of a TCR may include Tribal Monitoring, culturally appropriate recovery of cultural objects, and reburial of cultural objects or cultural soil.
- Work at the discovery location cannot resume until all necessary investigation and evaluation of the discovery under the requirements of the CEQA, have been satisfied.

Human Remains

- If the find includes human remains, or remains that are potentially human, he or she shall ensure reasonable protection measures are taken to protect the discovery from disturbance (AB 2641). The archaeologist shall notify the Fresno County Coroner (per § 7050.5 of the Health and Safety Code). The provisions of § 7050.5 of the California Health and Safety Code, § 5097.98 of the California PRC, and AB 2641 will be implemented. If the Coroner determines the remains are Native American and not the result of a crime scene, the Coroner will notify the NAHC, which then will designate a Native American Most Likely Descendant (MLD) for the project (§ 5097.98 of the PRC). The designated MLD will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC can mediate (§ 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further disturbed (§ 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work may not resume within the no-work radius until the lead agencies, through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.

Timing/Implementation: *During construction*

Implementation/Responsibility/Verification: *Developer and Department of General Services*

4.6 Energy

4.6.1 Environmental Setting

California relies on a regional power system comprised of a diverse mix of natural gas, renewable, hydroelectric, and nuclear generation resources. Natural gas provides California with a majority of its electricity followed by renewables, large hydroelectric and nuclear (California Energy Commission 2022).

PG&E provides electricity and natural gas to Merced County. It generates or buys electricity from hydroelectric, nuclear, renewable, natural gas, and coal facilities. PG&E provides natural gas and electricity to most of the northern two-thirds of California, from Bakersfield and Barstow to near the Oregon, Nevada and Arizona State Line. It provides 5.2 million people with electricity and natural gas across 70,000 square miles. In 2019, PG&E announced that 100 percent of the company's delivered electricity comes from Greenhouse Gas emission-free sources, including renewables, nuclear, and hydropower (PG&E 2019).

Potential energy-related impacts associated with this Project include the depletion of nonrenewable resources (e.g., oil, natural gas, coal) and emissions of pollutants during the construction. Since the Proposed Project is a solar PV power generation system, there will be no operational energy uses, and thus will not be discussed in this analysis. Discussion of the impact will focus on the single source of energy that is relevant to the Proposed Project: the equipment-fuel necessary for Project construction.

4.6.1.1 Energy Consumption

Electricity use is measured in kilowatt-hours (kWh). Natural gas is measured in therms. Vehicle fuel use is typically measured in gallons (e.g., of gasoline or diesel fuel), although energy use for electric vehicles is measured in kWh. Total automotive fuel consumption in Merced County from 2018 to 2022 is shown in Table 4.6-1. As shown, automotive fuel consumption decreased since 2018.

Table 4.6-1. Automotive Fuel Consumption in Merced County 2018-2022

Year	Total Fuel Consumption (gallons)
2022	199,024,286
2021	198,214,880
2020	182,824,507
2019	203,359,628
2018	201,306,148

Source: California Air Resources Board (CARB) 2023

4.6.2 Energy (VI) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐

Less than significant impact.

Operations of the Proposed Project would not result in the consumption of electricity or natural gas and thus, would not contribute to the County wide usage. Instead, the Project would directly support

California's Renewable Portfolio Standard goal of increasing the percentage of electricity procured by renewable sources. The one quantifiable source of energy consumed by the Project includes the equipment fuel necessary for construction. For the purpose of this analysis, Project increases in construction fuel consumption are compared with the countywide fuel consumption in 2022, the most recent full year of data. The amount of total construction-related fuel used was estimated using ratios provided in the Climate Registry's General Reporting Protocol for the Voluntary Reporting Program, Version 2.1.

Addressing energy impacts requires an agency to make a determination as to what constitutes a significant impact. There are no established thresholds of significance, statewide or locally, for what constitutes a wasteful, inefficient, and unnecessary consumption of energy for a proposed land use. For the purposes of this analysis, the amount of fuel necessary for Project construction is calculated and compared to that consumed in Merced County.

Table 4.6-2. Proposed Project Energy and Fuel Consumption

Energy Type	Annual Energy Consumed	Percentage Increase Countywide
Vehicular/Equipment Fuel Consumption (Gallons)		
Construction Calendar Year One	4,463	0.002

Source: ECORP Consulting, Inc. Appendix D.
Notes: The Project increase construction-related fuel consumption is compared with the countywide construction-related fuel consumption in 2022, the most recent full year of data.

As shown in Table 4.6-2, the Project's gasoline fuel consumption during the first calendar year of construction is estimated to be 4,463 gallons of fuel. This would increase the annual gasoline fuel use in the county by 0.002 and 0.0006 percent, respectively, during Project construction. As such, Project construction would have a nominal effect on local and regional energy supplies, especially over the long-term. No unusual Project characteristics would necessitate the use of construction equipment that would be less energy efficient than at comparable construction sites in the region or the state. Construction contractors would purchase their own gasoline and diesel fuel from local suppliers and would judiciously use fuel supplies to minimize costs due to waste and subsequently maximize profits. Additionally, construction equipment fleet turnover and increasingly stringent state and federal regulations on engine efficiency combined with state regulations limiting engine idling times and requiring recycling of construction debris, would further reduce the amount of transportation fuel demand during Project construction. For these reasons, it is expected that construction fuel consumption associated with the Project would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature.

Once construction is completed the Project would be remotely controlled. No employees would be based at the Project Site. Operations of the Project would not generate any fuel consumption as it would not be contributing to any mobile sources. As such, fuel consumption associated with vehicle trips generated by

the Project during operation would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region.

For these reasons, this impact would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

No Impact.

The purpose of the Proposed Project is the construction of a renewable energy facility. Once in operation, it will decrease the need for energy from fossil fuel–based power plants in the state. The result would be a net increase in electricity resources available to the regional grid, generated from a renewable source. Therefore, the Project would directly support the Renewable Portfolio Standard goal of increasing the percentage of electricity procured from renewable sources.

4.6.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.7 Geology and Soils

4.7.1 Environmental Setting

The Project Site is located within the San Joaquin Valley in the Great Valley Geomorphic Province (Great Valley), which includes the area known as the Great Central Valley of California. The Great Valley extends 400 miles north-south and 60 miles east-west and is encompassed by the Coast Ranges (metamorphic), the Klamath Ranges (metamorphic), the Cascade Range (volcanic), and the Sierra Nevada Range (granitic and metamorphic). The Great Valley consists of an elongated structural trough that has been filled with a sequence of sedimentary deposits ranging in age from Jurassic to recent. Geophysical evidence suggests that the Great Valley is underlain at depth with granitic rocks of the Sierra Nevada Province. Formed during the late Mesozoic period (208 to 65 million years ago), the valley was originally part of the ocean floor. The subduction of the Proto-Pacific plate beneath the North American plate, and subsequent uplift of the coastal ranges in the Cenozoic Period (65 to 2 million years ago), caused an extraordinarily flat area to be enclosed by mountain ranges. Marine conditions existed in the valley for millions of years until further tectonic movements and climate change gradually drained the area of water (CDFW 2023). The majority of rocks and deposits found within the Great Valley Geomorphic Province are sedimentary. The age of these rocks and deposits ranges from Upper Jurassic (between 154 and 135 million years ago to recent. (California Geological Survey [CGS] 2002).

4.7.1.1 Site Soils

According to the National Resources Conservation Service (NRCS) via the Web Soil Survey database, the Project Site is composed of one soil unit: 170 Dospalos clay loam, partially drained (see Table 4.7-1). The Web Soil Survey also identifies drainage, flooding, erosion, runoff, frost action, plasticity, and the linear extensibility potential for the Project soils. According to this survey, the Project soils are poorly drained, have a slow to very slow runoff potential, and no frost action. The Project Site soils also have a slight erosion potential and high linear extensibility (shrink-swell) (USDA 2023).

Table 4.7-1. Project Site Soil Characteristics

Soil (Map Unit Symbol, Map Unit Name)	Percent-age of Site	Drainage	Flooding Frequency Class	Frost Action[1]	Runoff Potential[2]	Linear Extensibility[3]	Erosion Hazard[4]	Plasticity Rating[5]
170 Dospalos clay loam, partially drained	100%	Poorly drained	None	None	C/D (slow/very slow)	6.2%, high	Slight	21.8%

Source: Natural Resources Conservation Service (NRCS) 2023

Notes:

1. Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.
2. Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation.
   Group A: Soils having a high infiltration rate (low runoff potential) when thoroughly wet.
   Group B: Soils having a moderate infiltration rate when thoroughly wet.
   Group C: Soils having a slow infiltration rate when thoroughly wet.
   Group D: Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet.
3. Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3%, moderate if 3 to 6%, high if 6 to 9%, and very high if more than 9%. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design is commonly needed.
4. The ratings are both verbal and numerical. The hazard is described as "slight," "moderate," "severe," or "very severe." A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions; "moderate" indicates that some erosion is likely and that erosion-control measures may be needed; "severe" indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and "very severe" indicates that significant erosion is expected, loss of soil productivity and offsite damage are likely, and erosion-control measures are costly and generally impractical.
5. Plasticity index is one of the standard Atterberg limits used to indicate the plasticity characteristics of a soil. It is defined as the numerical difference between the liquid limit and plastic limit of the soil. It is the range of water content in which a soil exhibits the characteristics of a plastic solid. The plastic limit is the water content that corresponds to an arbitrary limit between the plastic and semisolid states of a soil. The liquid limit is the water content, on a percent by weight basis, of the soil (passing #40 sieve) at which the soil changes from a plastic to a liquid state. Soils that have a high plasticity index have a wide range of moisture content in which the soil performs as a plastic material. Highly and moderately plastic clays have large plasticity index values. Plasticity index is used in classifying soils in the Unified and American Association of State Highway and Transporting Officials classification systems. For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

4.7.1.2 Regional Seismicity and Fault Zones

In California, special definitions for active faults were devised to implement the Alquist-Priolo Earthquake Fault Zoning Act of 1972, which regulates development and construction in order to avoid the hazard of surface fault rupture. The State Mining and Geology Board established policies and criteria in accordance with the act and defines an active fault as one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault was considered to be any fault that showed evidence of surface displacement during Quaternary time (last 1.6 million years). Because of the large number of potentially active faults in California, the State Geologist adopted additional definitions and criteria in an effort to limit zoning to only those faults with a relatively high potential for surface rupture. Thus, the term *sufficiently active* was defined as a fault for which there was evidence of Holocene surface displacement. This term was used in conjunction with the term *well-defined*, which relates to the ability to locate a Holocene fault as a surface or near-surface feature (CGS 2011).

According to the CGS Seismic Hazards Program: Overlapping Landslide and Liquefaction Zones map, the Project Site is not located within a mapped geologic hazard zone designated by the State (CGS 2023a). The Project Site is not located on any known *active* earthquake fault trace. In addition, the Project Site is not contained within the Alquist-Priolo Earthquake Fault Zone. Therefore, fault rupture is not considered a hazard for the Project. The Project Site is not subject to significant geologic hazards such as significant seismic shaking as a result of an earthquake, seismic-induced soil liquefaction, lateral spreading, or landslides and slope instability (CGS 2023b).

4.7.1.3 Paleontological Resources

ECORP conducted a query of the UCMP catalog records, a review of regional geologic maps from the CGS, a review of local soils data, and a review of existing literature on paleontological resources of Merced County. The purpose of the assessment was to determine the sensitivity of the Project Area, whether known occurrences of paleontological resources are present within or immediately adjacent to the Project Area, and whether implementation of the Project could result in significant impacts to paleontological resources. Paleontological resources include mineralized (i.e., fossilized) or unmineralized bones, teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains.

The results of the search of the UCMP indicated that 270 paleontological specimens were recorded from 36 identified localities and 215 unidentified localities in Merced County. Paleontological resources include fossilized remains of birds, mammals, reptiles, and amphibians (UCMP 2023).

4.7.2 Geology and Soils (VII) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant w Mitigation Incorporate	Less than gnificant Impact	No Impact
a) Directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☒	☒
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐

a) Less than significant impact.

i) No Impact.

The Proposed Project Site is located approximately 12 miles east of the O'Neill fault system. According to the California Geological Survey, Fault Activity Map of California (CGLS 2023) this fault was active during the past 700,000 years. The Project Site is not within a currently established State of California Earthquake Fault Zone for surface fault rupture hazards. No active or potentially active faults are known to pass directly beneath the Site. By CGS definition, an active fault is one with surface displacement within the last 11,000 years. A potentially active fault has demonstrated evidence of surface displacement within the past 1.6 million years. Faults that have not moved in the last 1.6 million years are typically considered inactive. The project would not place structures or dwellings within a fault line or fault zoning mapped area; therefore, there would be no impact related to fault rupture.

ii) Less than significant impact.

Depending upon the magnitude, proximity to epicenter, and subsurface conditions (e.g., bedrock stability and the type and thickness of underlying soils), ground shaking damage could vary from slight to intensive. According to CGS' Earthquake Shaking Potential for California mapping, the Proposed Project Site is located in an area with a moderate likelihood of experiencing ground shaking (CGS 2023c). According to the CGS Seismic Hazard Zone Map, the Project Site is not subject to significant geologic hazards such as significant seismic shaking (CGS 2023c). The Proposed Project would have a less than significant impact related to strong ground shaking.

iii) Less than significant impact.

Liquefaction occurs when loose sand and silt saturated with water behaves like a liquid when shaken by an earthquake. Liquefaction can result in the following types of seismic-related ground failure:

- Loss of bearing strength – soils liquefy and lose the ability to support structures,
- Lateral spreading – soils slide down gentle slopes or toward stream banks,
- Flow failures – soils move down steep slopes with large displacement,
- Ground oscillation – surface soils, riding on a buried liquefied layer, are thrown back and forth by shaking,
- Flotation – floating of light buried structures to the surface,
- Settlement – settling of ground surface as soils reconsolidate, and
- Subsidence – compaction of soil and sediment.

Liquefaction potential has been found to be greatest where the groundwater level and loose sands occur within a depth of about 50 feet or less. The Department of Conservation provides mapping for areas susceptible to liquefaction in California. According to this mapping, the Project Site is not located in an area identified for the risk of liquefaction (CGS 2023a). As such, the Proposed Project would result in less than significant impacts with regard to seismic-related ground failure, including liquefaction.

iv) Less than significant impact.

The Project Site is relatively flat with elevations ranging between 90 to 95 feet AMSL throughout the Site. The Project Site has minimal elevation gain and the area does not have steep hillsides or other formations susceptible to landslides during a seismic event. As such, the potential for landslides would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

Less than significant impact.

As previously shown in Table 4.7-1, most of the Project Site's soils have a slight erosion potential. The Proposed Project includes the construction of a new ground-mounted solar system, with construction involving grading, excavation, and soil hauling, which would disturb soils and potentially expose them to wind and water erosion.

Any development involving clearing, grading, or excavation that causes soil disturbance of 1 or more acres, or any project involving less than 1 acre that is part of a larger development plan and includes clearing, grading, or excavation, is subject to National Pollutant Discharge Elimination System (NPDES)

State General Permit (Order No. 2009-0009-DWQ) provisions. Any development of this size, including the Project Site, would be required to prepare and comply with an approved Stormwater Pollution Prevention Plan (SWPPP) that provides a schedule for the implementation and maintenance of erosion control measures and a description of the erosion control practices, including appropriate design details and a time schedule. The SWPPP would consider the full range of erosion control Best Management Practices (BMPs), including any additional site-specific and seasonal conditions. Erosion control BMPs include, but are not limited to, the application of straw mulch, hydroseeding, the use of geotextiles, plastic covers, silt fences, and erosion control blankets, as well as construction site entrance and outlet tire washing. The State General Permit also requires that those implementing SWPPPs meet prerequisite qualifications that would demonstrate the skills, knowledge, and experience necessary to implement SWPPPs. The NPDES requirements would significantly reduce the potential for substantial erosion or topsoil loss to occur in association with new development. In addition, the Proposed Project would be required to use BMPs to control runoff from all new development and thus limit erosion.

Since erosion impacts are often dependent on the type of development, intensity of development, and amount of lot coverage of a particular project site, impacts can vary. However, compliance with NPDES and SWPPP requirements would ensure that soil erosion and related impacts would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐

Less than significant impact.

As discussed previously, the Project Site has little potential for landslides.

Lateral spreading is a form of horizontal displacement of soil toward an open channel or other *free* face, such as an excavation boundary. Lateral spreading can result from either the slump of low cohesion and unconsolidated material or, more commonly, by liquefaction of either the soil layer or a subsurface layer underlying soil material on a slope, resulting in gravitationally driven movement. One indicator of potential lateral expansion is frost action. Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing (USDA 2023). As indicated in Table 4.7-1 above, the Web Soil Survey identifies the Project Site as having soils with no frost action potential. Additionally, as discussed in Item a) iii) above, the Project Site is identified as not being susceptible to liquefaction. As such, the potential for impacts due to lateral spreading would be less than significant.

With the withdrawal of fluids, the pore spaces within the soils decrease, leading to a volumetric reduction. If that reduction is significant enough over an appropriately thick sequence of sediments, regional ground

subsidence can occur. This typically only occurs within poorly lithified sediments and not within competent rock.[2] This can occur as a result of high-volume water, oil, or gas extraction operations. No oil, gas, or high-volume water extraction wells are known to be present in the Project vicinity. According to the United States Geological Survey (USGS) Areas of Land Subsidence in California webpage, the Project Site is located in an area of land subsidence due to groundwater pumping (USGS 2023). However, as the Project entails the construction of solar arrays, with no occupation of structures, there is no impact on the environment or persons by constructing these arrays. As such, the potential for impacts due to subsidence would be less than significant.

Collapse occurs when water is introduced to poorly cemented soils, resulting in the dissolution of the soil cementation and the volumetric collapse of the soil. In most cases, the soils are cemented with weak clay (argillic) sediments or soluble precipitates. This phenomenon generally occurs in granular sediments situated within arid environments. Collapsible soils will settle without any additional applied pressure when sufficient water becomes available to the soil. Water weakens or destroys bonding material between particles that can severely reduce the bearing capacity of the original soil. The collapse potential of the Project Site soil is considered low due to the high clay content of Dospalos clay loam. Additionally, as the Project proposes the installation of a ground-mounted solar array configuration, impacts associated with off-site landslide, lateral spreading, subsidence, liquefaction or collapse is negligible.

Because of the distance from active faults and the nature of the Project, the potential for settlement or collapse at the Project Site is considered unlikely. As such, there is a less than significant impact in this area.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐

Less than significant impact.

Expansive soils are types of soil that shrink or swell as the moisture content decreases or increases. Structures built on these soils may experience shifting, cracking, and breaking damage as soils shrink and subside or expand. Expansive soils can be determined by a soil's linear extensibility. There is a direct relationship between linear extensibility of a soil and the potential for expansive behavior, with expansive soil generally having a high linear extensibility. Thus, granular soils typically have a low potential to be expansive, whereas clay-rich soils can have a low to high potential to be expansive. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent, moderate if 3 to 6 percent, high if 6 to 9 percent, and very high if greater than 9 percent. If the linear extensibility is greater than 3 percent,

[2] The processes by which loose sediment is hardened to rock are collectively called lithification.

shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. As previously shown in Table 4.7-1, the majority of Project Site soils exhibit a linear extensibility value of 6.2 percent. Soils with linear extensibility at this range correlate to having a high expansion potential, respectively.

However, due to the nature of the Proposed Project being the installation of a ground-mounted solar array, with no potential for human occupancy, the Project would have a less than significant impact in this area.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

No Impact.

Due to the nature of the Project being the installation of a ground-mounted solar array, the Proposed Project does not require any wastewater sewer system and would not require the construction of septic tanks or alternative wastewater disposal systems. Thus, there is no impact associated with Project Site soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Potentially significant impact.

A search of the UCMP failed to indicate the presence of paleontological resources in the Project Area. Although paleontological resources sites were not identified in the Project Area, there is the possibility that unanticipated paleontological resources will be encountered during ground-disturbing Project-related activities. As such, mitigation measure GEO-1 is included to reduce impacts to unknown paleontological resources to a less than significant level.

4.7.3 Mitigation Measures

GEO-1 **Paleontological Discovery.** If paleontological or other geologically sensitive resources are identified during any phase of project development, the construction manager shall cease operation at the site of the discovery and immediately notify the DGS. DGS shall retain a qualified paleontologist to provide an evaluation of the find and to prescribe mitigation measures to reduce impacts to a less-than-significant level. In considering any suggested

mitigation proposed by the consulting paleontologist, DGS shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, land use assumptions, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for paleontological resources is carried out.

Timing/Implementation: *During construction*

Implementation/Responsibility/Verification: *Developer and Department of General Services*

4.8 Greenhouse Gas Emissions

4.8.1 Environmental Setting

Greenhouse Gas (GHG) emissions are released as byproducts of fossil fuel combustion, waste disposal, energy use, land use changes, and other human activities. This release of gases, such as Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), and chlorofluorocarbons, creates a blanket around the earth that allows light to pass through but traps heat at the surface, preventing its escape into space. While this is a naturally occurring process known as the greenhouse effect, human activities have accelerated the generation of GHGs beyond natural levels. The overabundance of GHGs in the atmosphere has led to an unexpected warming of the earth and has the potential to severely impact the earth's climate system.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH_4 traps more than 25 times more heat per molecule than CO_2, and N_2O absorbs 298 times more heat per molecule than CO_2. Often, estimates of GHG emissions are presented in Carbon Dioxide Equivalents (CO_2e). Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

The CEQA Guidelines Appendix G thresholds for GHG's do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA. With respect to GHG emissions, the CEQA Guidelines Section 15064.4(a) states that lead agencies "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions resulting from a project. The CEQA Guidelines note that an agency has the discretion to either quantify a project's GHG emissions or rely on a "qualitative analysis or other performance-based standards." (14 CCR 15064.4(b)). A lead agency may use a "model or methodology" to estimate GHG emissions and has the discretion to select the model or methodology it considers "most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change." (14 CCR 15064.4(c)). Section 15064.4(b) provides that the lead agency should consider the following when determining the significance of impacts from GHG emissions on the environment:

1. The extent a project may increase or reduce GHG emissions as compared to the existing environmental setting.
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4(b)).

In addition, Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence" (14 CCR 15064.7(c)). The CEQA Guidelines also clarify that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impact analysis (see CEQA Guidelines Section 15130(f)). As a note, the CEQA Guidelines were amended in response to Senate Bill 97. In particular, the CEQA Guidelines were amended to specify that compliance with a GHG emissions reduction plan renders a cumulative impact insignificant.

Per CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that would avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plans [and] plans or regulations for the reduction of greenhouse gas emissions." Put another way, CEQA Guidelines Section 15064(h)(3) allows a lead agency to make a finding of less than significant for GHG emissions if a project complies with adopted programs, plans, policies and/or other regulatory strategies to reduce GHG emissions.

To provide guidance to local lead agencies on determining significance for GHG emissions in CEQA documents, the SJVAPCD provides a tiered approach in assessing significance of project specific GHG emission increases as shown below.

- Projects complying with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less-than-significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the lead agency with jurisdiction over the affected resource and supported by a CEQA-compliant environmental review document adopted by the lead agency. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement Best Performance Standards (BPS).

- Projects implementing BPS would not require quantification of project-specific GHG emissions. Consistent with CEQA Guidelines, such projects would be determined to have a less-than-significant individual and cumulative impact for GHG emissions.
- Projects not implementing BPS would require quantification of project-specific GHG emissions and demonstration that project-specific GHG emissions would be reduced or mitigated by at least 29 percent, and compared to Business-as-Usual (BAU), including GHG emission reductions achieved since the 2002-2004 baseline period, consistent with GHG emission reduction targets established in the 2017 Scoping Plan. Projects achieving at least a 29 percent GHG emission reduction compared to BAU would be determined to have a less-than-significant individual and cumulative impact for GHGs.

The BPS and the BAU portion of the SJVAPCD tiered approach are problematic based on the 2015 California Supreme Court *Center for Biological Diversity v. Department of Fish and Wildlife* (2015) 62 Cal. 4th 2014, 213, 221, 227 (Newhall Ranch) decision, which stated that a GHG-related impact determination based on the BAU approach is "not supported by a reasoned explanation based on substantial evidence." Additionally, the SJVAPCD thresholds were adopted to achieve statewide GHG-reduction goals for the year 2020, and the Proposed Project would not be built until after the year 2020. Therefore, for the purposes of this analysis Project GHG emissions are quantified and compared to the thresholds issued by California Air Pollution Control Officer's Association (CAPCOA), which is an association of the air pollution control officers from all 35 local air quality agencies throughout California, including the SJVAPCD. CAPCOA recommends a significance threshold of 900 metric tons annually. This threshold is based on a capture rate of 90 percent of land use development projects, which in turn translates into a 90 percent capture rate of all GHG emissions. The 900 metric ton threshold is considered by CAPCOA to be low enough to capture a substantial fraction of future projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions.

In the Newhall Ranch decision, following its review of various potential GHG thresholds proposed in an academic study [Crockett, *Addressing the Significance of Greenhouse Gas Emissions: California's Search for Regulatory Certainty in an Uncertain World* (July 2011), 4 Golden Gate U. Envtl. L. J. 203], the California Supreme Court identified the use of numeric bright-line thresholds as a potential pathway for compliance with CEQA GHG requirements. The study found numeric bright line thresholds designed to determine when small projects were so small as to not cause a cumulatively considerable impact on global climate change was consistent with CEQA. Specifically, Public Resources Code section 21003(f) provides it is a policy of the state that "[a]ll persons and public agencies involved in the environmental review process be responsible for carrying out the process in the most efficient, expeditious manner in order to conserve the available financial, governmental, physical and social resources with the objective that those resources may be better applied toward the mitigation of actual significant effects on the environment." The Supreme Court-reviewed study noted, "[s]ubjecting the smallest projects to the full panoply of CEQA requirements, even though the public benefit would be minimal, would not be consistent with implementing the statute in the most efficient, expeditious manner. Nor would it be consistent with

applying lead agencies' scarce resources toward mitigating actual significant climate change impacts." (Crockett, *Addressing the Significance of Greenhouse Gas Emissions: California's Search for Regulatory Certainty in an Uncertain World* (July 2011), 4 Golden Gate U. Envtl. L. J. 203, 221, 227.).

4.8.2 Greenhouse Gas Emissions (VIII) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐

Less than significant impact.

4.8.2.1 Project Construction Generated GHG Emissions

A potent source of GHG emissions associated with the Proposed Project would be combustion of fossil fuels during construction activities. Construction-related activities that would generate GHG emissions include worker commute trips, haul trucks carrying supplies and materials to and from the Project Site, and off-road construction equipment (e.g., dozers, loaders, excavators). Table 4.8-1 illustrates the specific construction generated GHG emissions that would result from construction of the Project. Once construction is complete, the generation of these GHG emissions would cease.

Table 4.8-1. Construction-Related Greenhouse Gas Emissions

Emission Source	CO_2e (Metric Tons/Year)
Construction Calendar Year One	45
CAPCOA's Potentially Significant Threshold	*900*
Exceed Significance Threshold?	**No**

Source: California Emissions Estimator Model (CalEEMod) Version 2022.1. Refer to Appendix A for Model Data Outputs.

As shown in Table 4.8-1, Project construction would result in the generation of approximately 45 metric tons of CO_2e over the course of the first calendar year of construction. Once construction is complete, the generation of these GHG emissions would cease. Therefore, Project GHG emissions would not exceed the CAPCOA significance threshold.

4.8.2.2 Project Operation Generated GHG Emissions

Operational GHG emissions impacts are long-term that are associated with changes in the permanent use of the Project Site by onsite stationary and offsite mobile sources that substantially increase emissions. The Project proposes the installation of a solar PV power system. Once upgrades are complete, the Project

would not be a greater source of operational emissions beyond current conditions. Therefore, Proposed Project operations would not contribute to on- or offsite emissions.

Impacts would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

The Project would not conflict with any adopted plans, policies, or regulations adopted for the purpose of reducing GHG emissions. As discussed previously, the Proposed Project-generated GHG emissions would not surpass either the CAPCOA GHG significance threshold, which was developed in consideration of statewide GHG reduction goals. Additionally, once construction is complete, the Project would be a producer of renewable energy, which generates substantially less GHG emissions compared with the more common types of fossil-fueled energy generation facilities.

GHG emissions generated by energy sources account for all stages of the life cycle i.e., (including mining, construction), which are referred to as the cumulative GHG emissions and are usually expressed in grams of CO_2e per unit of busbar electricity (i.e., gCO_2/kWh_e). When comparing various fossil-fueled energy generators, the GHG emissions generated are dependent on the type of fuel (i.e., gas, oil, coal). GHG emissions generated by some of the more common types of fossil-fueled plants and solar-power plants are summarized in Table 4.8-2.

Table 4.8-2. Life-Cycle Greenhouse Gas Emissions for Various Types of Energy Generators

Fossil-Fueled ($gCO2_e/kWhe^1$)	
Coal	950 to 1,250
Oil	500 to 1,200
Gas	440 to 780
Solar	43 to 73[3]

Source: Weisser 2007
Notes:
[1]$gCO_2e/kWhe$ = grams of CO_2e per unit of busbar electricity.
[2]Emissions are based on lifecycle of energy source including mining, construction, operation, etc.
[3]Solar PV life-cycle emissions result from using fossil-fuel-based energy to produce the materials for solar cells, modules, and systems, as well as directly from smelting, production, and manufacturing facilities.
CO2e = Carbon Dioxide Equivalents; PV = Photovoltaic

As shown in Table 4.8-2, solar plants generate far less GHG life-cycle emissions (approximately 83 to 94 percent less) than fossil-fueled energy plants. Therefore, the Proposed Project would contribute to the continued reduction of GHG emissions in the interconnected California and western U.S. electricity

systems, as the energy produced by the Project would displace GHG emissions that would otherwise be produced by existing business-as-usual power generation resources (including natural gas, coal, arid renewable combustion resources).

For these reasons, the Project would not conflict with any applicable plan, policy or regulation related to the reduction in GHG emissions. There is no impact.

4.8.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.9 Hazards and Hazardous Materials

4.9.1 Environmental Setting

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

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

A hazardous material is defined in Title 22, Section 662601.10, of the California Code of Regulations as follows:

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

The release of hazardous materials into the environment could potentially contaminate soils, surface water, and groundwater supplies.

Under Government Code Section 65962.5, both the California Department of Toxic Substance Control (DTSC) and the State Water Resources Control Board (SWRCB) are required to maintain lists of sites known to have hazardous substances present in the environment. Both agencies maintain up-to-date lists on their websites. A search of the DTSC (2023) and the SWRCB (2023) identified no open cases of hazardous waste violations within 1 mile of the Project Site.

The USEPA maintains the Enforcement and Compliance History Online (ECHO) program. The ECHO website provides environmental regulatory compliance and enforcement information for approximately 800,000 regulated facilities nationwide. The ECHO website includes environmental permit, inspection, violation, enforcement action, and penalty information about USEPA-regulated facilities. Facilities included on the Site are CAA stationary sources; Clean Water Act facilities with direct discharge permits, under the NPDES; generators and handlers of hazardous waste, regulated under the Resource Conservation and Recovery Act; and public drinking water systems, regulated under the Safe Drinking Water Act. ECHO also includes information about USEPA cases under other environmental statutes. When available, information is provided on surrounding demographics, and ECHO includes other USEPA environmental data sets to provide additional context for analyses, such as Toxics Release Inventory data. According to the ECHO program, the Project Site is not listed as having a hazardous materials violation (USEPA 2023).

4.9.2 Hazards and Hazardous Materials (IX) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐

Less than significant impact.

Construction may include the use of hazardous materials given that construction activities involve the use of heavy equipment, which uses small and incidental amounts of oils and fuels and other potentially flammable substances. The level of risk associated with the accidental release of hazardous substances is not considered significant due to the small volume and low concentration of hazardous materials used during construction. The construction contractor would be required to use standard construction controls and safety procedures that would avoid and minimize the potential for accidental release of such substances into the environment. Standard construction practices would be observed such that any materials released are appropriately contained and remediated as required by local, state, and federal law.

Therefore, potential construction-related impacts for creating a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials from the Proposed Project would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐

Less than significant impact.

As discussed in Issue a), the Project would not result in the routine transport, use, disposal, handling, or emission of any hazardous materials that would create a significant hazard to the public or the environment. Potential construction-related hazards could be created during the course of Project construction at the Site, given that construction activities involve the use of heavy equipment, which uses small and incidental amounts of oils and fuels and other potentially flammable substances. The level of risk associated with the accidental release of hazardous substances is not considered significant due to the small volume and low concentration of hazardous materials used during construction. The construction contractor would be required to use standard construction controls and safety procedures that would avoid and minimize the potential for accidental release of such substances into the environment. Standard construction practices would be observed such that any materials released are appropriately contained and remediated as required by local, state, and federal law.

All hazardous materials on the Project Site would be handled in accordance with State regulations. Long-term impacts associated with handling, storing, and disposing of hazardous materials from Project operation would be less than significant because any hazardous materials used for operations would be in small quantities.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐

Less than significant impact.

The Project Site is located approximately 2.16 miles north of the Grasslands Elementary School, which is located at 1951 Mission Drive within the City of Los Banos. The school would not be within 0.25 miles of the Project Site. The construction and operation of the Proposed Project would not include uses that would emit hazardous emissions or include activities that use acutely hazardous materials. Any hazardous materials used on Site would be typical of construction land uses and would not create hazardous emissions that could adversely affect nearby schools. Once the solar arrays expire, they will be disposed of in a manner consistent with local regulations regarding the disposal of hazardous material. The impact would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒

No Impact.

Under Government Code Section 65962.5, both the DTSC and the SWRCB are required to maintain lists of sites known to have hazardous substances present in the environment. Both agencies maintain up-to-date lists on their websites. A search of the DTSC and SWRCB lists identified that the Proposed Project Site is not located on or adjacent to a hazardous materials site. Given that there are no existing hazardous waste sites within or directly adjacent to the Project Site, the Project will have no impact in this area.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	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?	☐	☐	☐	☒

No Impact.

The Project Site is located approximately 3.8 miles northeast of the Los Banos Municipal Airport. Because the Project Site is not located within 2 miles of an airport, there would be no safety hazard to people working in the Project Area due to proximity to planes overhead and in the immediate vicinity. Therefore, no impact would occur.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

No Impact.

Standard evacuation routes have not been designated in Merced County or Los Banos. However, the Merced County Office of Emergency Services has an online link to the Merced County Multi-Jurisdictional Hazard Mitigation Plan which identifies resources, information, and strategies for reducing risk from

natural hazards. Elements and strategies in the plan were selected because they meet a program requirement and because they best meet the needs of the planning partners and their citizens. According to the plan, and new as of 2021, the County is encouraging and continuing to establish countywide evacuation zones, sections, and routes. The plan did not include specific evacuation routes in the County but did address the need for crucial response and evacuations in the event of a significant wildfire or flooding and has budgeted for this evacuation planning effort through 2024.

All construction activities of the Proposed Project would not impede the use of surrounding roadways in an emergency evacuation. The Project would be limited to periodic maintenance and inspection activities a few times per year and would not generate a substantial number of people or vehicle trips within the area that could otherwise impede emergency response or evacuation efforts within the Project Area. Based on required compliance with the most recent California Fire Code and County Public Works requirements, the Project would not substantially impair an adopted emergency response plan or emergency evacuation plan. Implementation of the Proposed Project would result in no impact in this area.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

Less than significant impact.

The risk of wildfire is related to a variety of parameters, including fuel loading (vegetation), fire weather (winds, temperatures, humidity levels and fuel moisture contents), and topography (degree of slope). Steep slopes contribute to fire hazard by intensifying the effects of wind and making fire suppression difficult. Fuels such as grass are highly flammable because they have a high surface area-to-mass ratio and require less heat to reach the ignition point; while fuels such as trees have a lower surface area-to-mass ratio and require more heat to reach the ignition point.

Fire Hazard Severity Zone (FHSZ) mapping is performed by the California Department of Forestry and Fire Protection (CAL FIRE) and is based on factors such as fuels, terrain, and weather. According to the CAL FIRE, FHSZ mapping, the Project Site is located in an area with no risk of wildfire (CAL FIRE 2023). In addition, the proposed project would not result in development that would increase population or residential development in the area. Therefore, the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fire and would result in a less than significant impact with respect to exposure to risks associated with wildland fires.

4.9.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.10 Hydrology and Water Quality

4.10.1 Environmental Setting

4.10.1.1 Regional Hydrology

Surface/Ground Water

According to the Watershed Boundary Dataset (2023), a seamless and national hydraulic unit dataset, the Project Site is located within the Middle San Joaquin-Lower Chowchilla Watershed and is part of the Delta Mendota Subbasin, which in turn is a within the greater San Joaquin Valley Groundwater Basin (DWR 2023). The Delta-Mendota Subbasin is in the San Joaquin Valley Groundwater Basin, located along the western edge of the San Joaquin Valley, and includes portions of San Joaquin, Stanislaus, Merced, Fresno, and Madera Counties. The northern boundary begins just south of Tracy in San Joaquin County. The eastern boundary generally follows the San Joaquin River and Fresno Slough. The southern boundary is near the small town of San Joaquin. The subbasin is bounded on the west by the Coast Range (DWR 2007).

The Central Valley Regional Water Quality Control Board (RWQCB) monitors surface water quality through implementation of the Basin Plan and designates beneficial uses for surface water bodies and groundwater within Merced County. The California Basin Plan Beneficial Use Viewer (RWQCB 2023) does not list any surface water bodies with beneficial uses within the Project Site but does state that all groundwater in Region 5 is considered as suitable or potentially suitable for municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply (RWQCB 2019).

4.10.1.2 Project Site Hydrology and Onsite Drainage

Surface Water

The less than 1.7-acre Project Site is relatively flat with elevations ranging between approximately 90 to 95 feet AMSL throughout the Site. The northern portion of the Site, consisting of the area proposed for the electrical transmission line connecting the solar arrays to the CDFW headquarters, generally slopes towards the southern boundary of the headquarters (Henry Miller Avenue). The southern portion of the Site, consisting of the area proposed to contain the solar arrays, slopes south towards the drainage canal traversing parallel to, and flowing under (via an existing culvert) Henry Miler Avenue. This drainage canal connects to the Santa Fe Canal approximately 0.60 mile south of the Site.

A 100-year floodplain surrounds the Project Site, extending from Henry Miller Avenue to the south and including all of the CDFW headquarters and wildlife refuge to the north. According to the BRA conducted for the Site, aquatic resources are present within the Study Area and consist of wetland features (ECORP 2023a). See section 4.4.2.2. above and Appendix B for further information and visual depictions regarding onsite aquatic resources.

Groundwater

Merced County depends heavily on groundwater for its water needs. Historical water data shows the use of surface water supplied by the irrigation districts is decreasing during droughts, while the pumping of groundwater for irrigation has been increasing. Several consequences can occur if aquifer levels continue to decline, including land subsidence, reduction of drought protection, increased regulatory control, higher energy costs, and reduction in agricultural production.

The following 2030 Merced County General Plan policies seek to protect Merced County's long-term water supply (Merced County 2013).

Policy W-1.1: Countywide Water Supply - Ensure that continued supplies of surface and groundwater are available to serve existing and future uses by supporting water districts and agencies in groundwater management and water supply planning; requiring that new development have demonstrated long-term water supply; and assisting both urban and agricultural water districts in efforts to use water efficiently.

Policy W-2.7: NPDES Enforcement - Monitor and enforce provisions of the U.S. Environmental Protection Agency NPDES program to control non-point source water pollution.

4.10.2 Hydrology and Water Quality (X) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐

Less than significant impact.

Without implementation of appropriate control measures, grading involved in preparing the Project Site for construction would decrease vegetative cover and potentially increase the rate and quantity of stormwater runoff. This would result in accelerated soil erosion and sediment delivery to the on-site waterway and off-site areas. This could increase the quantity of suspended solids in local waterways and contribute to elevated turbidity in portions of the Middle San Joaquin-Lower Chowchilla Watershed north of the Project Site.

Pursuant to the requirements of the County's General Plan Policies (General Plan Policies W-1.1 and W-2.7), Policy W-1.1 requires projects to support water districts and agencies in groundwater management and water supply planning. The Regional Water Quality Control Board discharge standards, including identifying specific measures for minimizing project related erosion, would satisfy this General Plan Policy. Policy W-2.7 requires projects to conform to the U.S. Environmental Protection Agency NPDES program to control non-point source water pollution. Conformance with standard RWQCB best management

practices minimize erosion impacts. Through the required NPDES Permit, projects are evaluated for potential soil erosion impacts on a site-by-site basis. As impacts are dependent on the type of development, intensity of development, and amount of lot coverage of a particular project, impacts due to soil erosion can vary. However, compliance with adopted erosion control standards and NPDES and SWPPP requirements, as well as implementation of the proposed General Plan policies listed above, would ensure that the Proposed Project soil erosion-related impacts are less than significant (Merced County 2013).

Additionally, prior to initiation of construction activities, the applicant would be required to demonstrate coverage for Project activities under the SWRCB's NPDES General Permit for Storm Water Discharges Associated with Construction Activities. To obtain coverage under the permit, the Project applicant would submit a Notice of Intent with the required permit fee and prepare a SWPPP for review by the Central Valley Regional Water Quality Control Board. The SWPPP would include the following four major elements:

1. Identify pollutant sources, including sources of sediment, which may affect the quality of stormwater discharges from the construction site.
2. Identify non-stormwater discharges.
3. Identify, construct, implement in accordance with a time schedule, and maintain BMPs to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site during construction.
4. Identify, construct, implement in accordance with a time schedule, and assign maintenance responsibilities for post-construction BMPs to be installed during construction that are intended to reduce or eliminate pollutants after construction is completed.

In addition, dischargers are also required to inspect construction sites before and after storms to identify stormwater discharge from construction activity, and to identify and implement controls where necessary.

Typical BMPs that would be appropriate to implement at the Project Site may include: scheduling or limiting activities to certain times of the year; implementing dust control procedures throughout the site; stabilizing cut and fill slopes as soon as possible; controlling erosion through a variety of means such as mulch and compost blankets, riprap, and installation of sediment retention structures (such as a sediment retention basin); and sediment control through the use of measures such as storm drain inlet protection, vegetated buffers, fiber rolls and berms, sediment fencing, and straw or hay bales.

Other temporary BMPs would ensure *good housekeeping* at the Project Site during construction. These would include cleaning construction equipment and preventing the leakage of fluids, storing materials away from surface water, protecting sensitive areas with sediment barriers or other containment methods, controlling laying of concrete and washing of related equipment, and collecting debris and gravel associated with paving operations. Adequate temporary storm drainage controls would be provided, including on-site drainage containment, the placement of silt fences around construction areas, and constructing temporary sediment basins, as necessary.

Compliance with the provisions contained in the SWPPP approved by the RWQCB would reduce potential impacts to water quality due to construction activities to less than significant by ensuring that all appropriate and necessary BMPs are implemented to avoid or minimize the discharge of pollutants and sediment to surface water.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐

Less than significant impact.

The Proposed Project would not increase the demand for groundwater in the County. The Project proposes to install a new solar array system to increase the use of renewable energy at the CDFW headquarters. Therefore, the Project would have a less than significant impact on groundwater supply.

Additionally, the Proposed Project would have the potential to remove a portion of the less than 1.7acre Project Site's potential groundwater recharge area due to the development of this area with impervious surfaces. However, this area would be limited to the footings for the individual panels and would represent a small portion of the overall site. All rainfall on this small amount of impervious surface would be directed towards the drainage canal at the southern boundary of the Project Site. Therefore, the Project would have a less than significant impact on groundwater recharge.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	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 or through the addition of impervious surfaces, in a manner that would:				
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☒	☐

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☒	☐

i) Less than significant impact.

Construction activities within the Project Site would result in soil disturbances. For those activities that disturb 1 acre or more of land, an NPDES Construction General Permit would be required prior to the start of construction. To comply with the requirements of the NPDES Construction General Permit, these projects will be required to file a Notice of Intent with the State of California and submit a SWPPP defining BMPs for construction and post-construction-related control of the Proposed Project Site runoff and sediment transport. Requirements for the SWPPP include incorporation of both erosion and sediment control BMPs as discussed previously. Preparation of and compliance with a required SWPPP will reduce potential runoff, erosion, and siltation associated with construction and operation.

As such, the effects of the Proposed Project on on-site and off-site erosion and siltation would be less than significant.

ii-iii) Less than significant impact.

Implementation of the Proposed Project may result in an increase of the rate or amount of surface runoff as the Site is developed. As discussed above, this area of impervious surface is insignificant in size and all surface runoff would be directed to the drainage canal at the southern boundary of the Project Site. As such, the Project would have a less than significant impact in this area.

iv) Less than significant impact.

Federal Emergency Management Agency (FEMA) flood hazard map 06047C0850G indicates that the FEMA-designated 100-year floodplain, denoted as Zone A on the FEMA flood map, occurs through the Project Site. The FEMA-designated floodplains were mapped based on regional topography and drainage data and do not reflect site-specific conditions. However, as the Project consists of a solar array system, with no occupied buildings proposed, there would be no redirection or impediment of flood flows onsite. As such, the Project would have a less than significant impact in this area.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐

Less than significant impact.

While the Project Site is located within the dam inundation area of Little Panoche Reservoir, the Proposed Project does not include any buildings that would be occupied by workers or residents. The Project Site would be visited two to four times per year for maintenance purposes. No employees would be required onsite regularly as the solar array system would be remotely controlled to the greatest extent possible. Based on the discussion above, there would be a less than significant impact.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Less than significant impact.

The Project Site is located within the Water Quality Control Plan (Basin Plan) for the Central Valley Region - Sacramento River Basin (DWR 2023a). However, as stated under Item C) above, the Project is obliged to comply with water quality protection requirements of the NPDES Construction General Permit BMPs for construction and post-construction-related control of the Proposed Project Site runoff and sediment transport. Compliance with these requirements would eliminate the potential for conflicts with the water quality control plan. As such, the Project would have a less than significant impact in this area.

4.10.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.11 Land Use and Planning

4.11.1 Environmental Setting

The less than 1.7-acre Site is within the area of the County zoned General Agriculture (A-1) and designated Agricultural (A)in the 2030 Merced County General Plan land use policy (Figure LU-1; Merced County 2013). The General Plan Land Use Element provides the primary guidance on issues related to land use and land use intensity. The element provides designations for land in the County and outlines goals and policies concerning development and use of land. In concert with the General Plan, the Merced County Code establishes zoning districts in the County and specifies allowable uses and development standards for each district. Under State law, each jurisdiction's zoning ordinance must be consistent with its general plan.

Land Use Element Policy LU-2.7, Rural Energy Production, specifically recognizes solar projects in Agriculture-designated areas:

> *Policy LU-2.7: Rural Energy Production (RDR/SO): Allow the development of ethanol production, co-generation, solar, and wind facilities in Agricultural and*

Foothill Pasture areas that produce renewable energy, support agricultural-related industries, and/or use agricultural waste, provided that such uses do not interfere with agricultural practices or conflict with sensitive habitats or other biological resources.

4.11.2 Land Use and Planning (XI) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☒	☐

Less than significant impact.

The existing and proposed land uses surrounding the Project Site are generally agricultural to the northwest, west, and south of the Project Site. the CDFW Los Banos Wildlife Area is located northeast of the Site, and directly adjacent is Henry Miller Avenue (near the southern boundary of the Project Site). The zoning designation surrounding the Project Site is entirely General Agriculture (A-1).

The Project Site is currently mostly vacant, aside from several CDFW facility buildings that the approximately 520-foot electrical conduit trench alignment will be meandering through to tie into the step-down transformer and switch gear that are proposed for installation and upgrading. There are no established communities on Site that the Proposed Project would disrupt or divide. Although there is a residential community 0.90 mile to the south of the Site, beyond agricultural land, the construction of a solar array on the largely vacant Project Site would not disrupt or divide the existing neighborhoods. Because the land uses proposed by the Project would be a solar array system supplying clean renewable energy to the CDFW headquarters and consistent with current uses surrounding the Project Site, this impact would be less than significant.

Would the Project:	Potentially Significant Impact	Less than ignificant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

No Impact.

As explained above, the Project is consistent with the Merced County General Plan land use designations. The Project would rely on the General Plan policies and actions, especially those adopted to assist in the protection of the environment. As analyzed in each section of this IS/MND, the Project would not conflict with any applicable land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impact would occur.

4.11.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.12 Mineral Resources

4.12.1 Environmental Setting

The State-mandated Surface Mining and Reclamation Act of 1975 requires the identification and classification of mineral resources in areas within the State subject to urban development or other irreversible land uses that could otherwise prevent the extraction of mineral resources. These designations categorize land as Mineral Resource Zones (MRZ) MRZ-1 through MRZ-4.

Merced County is rich in nonfuel mineral and soil resources; however, there are very few traditional hard rock mines in operation today. The County's mineral resources are primarily sand and gravel, which are ample in the County. However, according to the Department of Mines and Reclamation (2023), as well as the CGS (2023a), the Project Site is not located within a Surface Mining and Reclamation Act study area. The closest mining location is a concrete aggregate resource mine and is located approximately 6.7 miles southwest of the Site. There is currently no mining activity occurring within the Project vicinity. Furthermore, the Merced County General Plan does not identify any MRZs within the Los Banos Wildlife Area (Merced County 2013).

4.12.2 Mineral Resources (XII) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

No Impact.

As discussed above, the County's existing General Plan does not identify any mineral resources in the Project vicinity, including on the Project Site. Therefore, no impacts would occur to mineral resources.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

No Impact.

The Project Site is not identified as a mineral resource recovery site in the Merced County General Plan. There would be no impact in this area.

4.12.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.13 Noise

4.13.1 Environmental Setting

4.13.1.1 Noise Fundamentals

Noise is generally defined as sound that is loud, disagreeable, or unexpected. The selection of a proper noise descriptor for a specific source is dependent on the spatial and temporal distribution, duration, and fluctuation of the noise. The noise descriptors most often encountered when dealing with traffic, community, and environmental noise include the average hourly noise level (in L_{eq}) and the average Daily Noise Levels/Community Noise Equivalent Level (in L_{dn}/CNEL). The L_{eq} is a measure of ambient noise, while the L_{dn} and CNEL are measures of community noise. Each is applicable to this analysis and defined as follows:

- **Equivalent Noise Level (L_{eq})** is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- **Day-Night Average (L_{dn})** is a 24-hour average L_{eq} with a 10-dBA *weighting* added to noise during the hours of 10:00 pm to 7:00 am to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 A-weighted decibel (dBA) L_{dn}.
- **Community Noise Equivalent Level (CNEL)** is a 24-hour average L_{eq} with a 5-dBA weighting during the hours of 7:00 pm to 10:00 pm and a 10-dBA weighting added to noise during the hours of 10:00 pm to 7:00 am to account for noise sensitivity in the evening and nighttime, respectively.

Noise can be generated by a number of sources, including mobile sources, such as automobiles, trucks and airplanes, and stationary sources, such as construction sites, machinery, and industrial operations.

Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics

(Federal Highway Administration [FHWA] 2011). Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed (FHWA 2011).

The manner in which older structures in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows (Caltrans 2002). The exterior-to-interior reduction of newer structures is generally 30 dBA or more (Harris Miller Miller & Hanson Inc. 2006).

4.13.1.2 Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60- to 70-dBA range, and high, above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA). Regarding increases in dBA, the following relationships should be noted in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1.0 dBA cannot be perceived by humans.
- Outside of the laboratory, a 3.0-dBA change is considered a just-perceivable difference.
- A change in level of at least 5.0 dBA is required before any noticeable change in community response would be expected. An increase of 5.0 dBA is typically considered substantial.
- A 10.0-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

4.13.1.3 Noise Sensitive Land Uses Noise Receptors

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and

prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses. The nearest sensitive receptor to the Project Site is a single-family residence located 0.75 mile west of the Project Site.

4.13.1.4 Vibration Fundamentals

Ground vibration can be measured several ways to quantify the amplitude of vibration produced, including through Peak Particle Velocity (PPV) or root mean square velocity. These velocity measurements measure maximum particle at one point or the average of the squared amplitude of the signal, respectively. Vibration impacts on people can be described as the level of annoyance and can vary depending on an individual's sensitivity. Generally, low-level vibrations may cause window rattling but do not pose any threats to the integrity of buildings or structures.

4.13.1.5 Existing Ambient Noise Environment

There are several significant noise sources in Merced County. According to the Merced County General Plan's Health and Safety Element, the major noise sources in the County are from traffic on local highways, railroads, aircrafts, commercial land uses, and recreation/outdoor areas. The Project Site is located in a rural, wildlife area not located in the vicinity of any of these types of land uses, though is affected by traffic noise on private roads. Beyond these sources, the existing ambient noise environment at the Project Site is influenced by the typical sources of noise associated with rural land uses.

The American National Standards Institute (ANSI) Standard 12.9-2013/Part 3 "Quantities and Procedures for Description and Measurement of Environmental Sound – Part 3: Short-Term Measurements with an Observer Present" provides a table of approximate background sound levels in Ldn, daytime Leq, and nighttime Leq, based on land use and population density. The ANSI standard estimation divides land uses into six distinct categories. Descriptions of these land use categories, along with the typical daytime and nighttime levels, are provided in Table 4.13-1. At times, one could reasonably expect the occurrence of periods that are both louder and quieter than the levels listed in the table. ANSI notes, "95% prediction interval [confidence interval] is on the order of +/- 10 dB." The majority of the Project Area would be considered ambient noise Category 6.

Table 4.13-1. ANSI Standard 12.9-2013/Part 3 A-Weighted Sound Levels Corresponding to Land Use and Population Density

Category	Land Use	Description	People per Square Mile	Typical L_{dn}	Daytime L_{eq}	Nighttime L_{eq}
1	Noisy Commercial & Industrial Areas and Very Noisy Residential Areas	Very heavy traffic conditions, such as in busy, downtown commercial areas; at intersections for mass transportation or other vehicles, including elevated trains, heavy motor trucks, and other heavy traffic; and at street corners where many motor buses and heavy trucks accelerate.	63,840	67 dBA	66 dBA	58 dBA
2	Moderate Commercial & Industrial Areas and Noisy Residential Areas	Heavy traffic areas with conditions similar to Category 1, but with somewhat less traffic; routes of relatively heavy or fast automobile traffic, but where heavy truck traffic is not extremely dense.	20,000	62 dBA	61 dBA	54 dBA
3	Quiet Commercial, Industrial Areas and Normal Urban & Noisy Suburban Residential Areas	Light traffic conditions where no mass-transportation vehicles and relatively few automobiles and trucks pass, and where these vehicles generally travel at moderate speeds; residential areas and commercial streets, and intersections, with little traffic, compose this category.	6,384	57 dBA	55 dBA	49 dBA
4	Quiet Urban & Normal Suburban Residential Areas	These areas are similar to Category 3, but for this group, the background is either distant traffic or is unidentifiable; typically, the population density is one-third the density of Category 3.	2,000	52 dBA	50 dBA	44 dBA
5	Quiet Residential Areas	These areas are isolated, far from significant sources of sound, and may be situated in shielded areas, such as a small-wooded valley.	638	47 dBA	45 dBA	39 dBA
6	Very Quiet Sparse Suburban or rural Residential Areas	These areas are similar to Category 4 but are usually in sparse suburban or rural areas; and, for this group, there are few if any nearby sources of sound.	200	42 dBA	40 dBA	34 dBA

Source: The American National Standards Institute (ANSI) 2013

4.13.2 Noise (XIII.) Environmental Checklist and Discussion

Would the Project result in	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐

Less Than Significant Impact.

As previously described, noise-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise sensitive and may warrant unique measures for protection from intruding noise. The nearest sensitive receptor to the Project Site is a single-family residence located 0.75 miles west of the Project Site.

4.13.2.1 Onsite Construction Noise Impacts

Construction noise associated with the Proposed Project would be temporary and would vary depending on the specific nature of the activities being performed. Noise generated would primarily be associated with the operation of off-road equipment for onsite construction activities as well as construction vehicle traffic on area roadways. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., site preparation, excavation, paving). Noise generated by construction equipment, including earth movers, pile drivers, and portable generators, can reach high levels. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). During construction, exterior noise levels could negatively affect sensitive land uses in the vicinity of the construction site.

Merced County General Plan contains recommendations to control noise sources in the County. Specifically, the General Plan Noise Element contains Objective N1.1, which states that construction noise must be limited to the houses of normal business operation. Furthermore, the Merced County Municipal Code Section 10.60.040 *Specific Prohibited Acts*, states that it is prohibited to operate any tools or equipment used in construction, drilling, earthmoving, excavating, or demolition work between 6:00 p.m. and 7:00 a.m. the weekday or at any time on a weekend day or legal holiday, except for emergency work. The Project would be required to comply with the Merced County Noise Element and Municipal Code requirements.

To estimate the worst-case onsite construction noise levels that may occur at the nearest noise-sensitive receptors and in order to evaluate the potential health-related effects (physical damage to the ear) from

construction noise, the construction equipment noise levels were calculated using the Federal Highway Administration's Roadway Noise Construction Model and compared against the construction-related noise level threshold established in the Criteria for a Recommended Standard: Occupational Noise Exposure prepared in 1998 by the National Institute for Occupational Safety and Health (NIOSH). A division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The NIOSH construction-related noise level threshold starts at 85 dBA for more than 8 hours per day; for every 3-dBA increase, the exposure time is cut in half. This reduction results in noise level thresholds of 88 dBA for more than 4 hours per day, 92 dBA for more than 1 hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. For the purposes of this analysis, the lowest, more conservative threshold of 85 dBA L_{eq} is used as an acceptable threshold for construction noise at the nearby sensitive receptors. The anticipated short-term construction noise levels generated for the necessary equipment is presented in Table 4.13-2.

Table 4.13-2. Construction Average (dBA) Noise Levels at Nearest Residential Receptors

Equipment	Estimated Exterior Construction Noise Level at Existing Residences (dBA)	Construction Noise Standards (dBA L_{eq})	Exceeds Standards?
Site Preparation	45.6	*85*	**No**
Grading	46.6	*85*	**No**
Building Construction	48.0	*85*	**No**
Trenching	41.8	*85*	**No**

Source: Construction noise levels were calculated by ECORP using the FHWA Roadway Noise Construction Model (Federal Highway Administration [FHWA] 2006). Refer to Appendix E for Model Data Outputs.

Notes: Construction equipment used during construction derived from the California Emissions Estimator Model (CalEEMod), version 2022.1. CalEEMod is designed to calculate air pollutant emissions from construction activity and contains default construction equipment and usage parameters for typical construction projects based on several construction surveys conducted in order to identify such parameters. Construction noise was measured from the western boundary of the Project Site, which is 0.75 mile, or 3,966 feet from the residence to the west of the Project Site.

dBA= A-weighted decibels; L_{eq} = The equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.

As shown in Table 4.13-2, Project onsite construction activities would not exceed the NIOSH threshold of 85 dBA L_{eq} at the nearest noise-sensitive receptors.

4.13.2.2 Offsite Construction Traffic Noise Impacts

Construction associated with the Project would result in additional traffic (e.g., worker commutes and material hauling) on adjacent roadways over the period that construction occurs. According to the California Emissions Estimator Model, which is designed to model emissions for land use development projects based on several construction surveys conducted in order to identify such parameters, including

those generated by worker commute trips and vendor trips, construction would not instigate more than 8 trips in a single day. According to the Caltrans *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (2013), doubling of traffic on a roadway is required to result in an increase of 3 dB (outside of the laboratory, a 3-dBA change is considered a just-perceivable difference). The Project would not permanently double the traffic on roadways. Additionally, it is noted that construction is temporary, and construction-related trips would cease upon completion of construction.

4.13.2.3 Operational Noise Impacts

The Project would result in the implementation of a solar PV power system. The main stationary operational noise associated with the Project would be from the proposed transformers, inverters, substation, and transmission lines. ECORP staff has conducted noise measurements at an existing solar energy generation facility in order to develop a sampling of potential noise levels associated with solar energy generation activities. These measurements were taken with a Larson Davis SoundExpert LxT precision sound level meter, which satisfies the ANSI for general environmental noise measurement instrumentation. Prior to the measurements, the SoundExpert LxT sound level meter was calibrated according to manufacturer specifications with a Larson Davis CAL200 Class I Calibrator. Based on these measurements, a solar energy generation facility can be expected to generate noise levels of 47.1 dBA at the source, which is below the Merced County non-transportation source daytime and nighttime noise standards of 55 dBA and 50 dBA, respectively, contained in the Merced County General Plan Health and Safety Element.

As previously described, sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dBA for each doubling of distance from a stationary or point source (FHWA 2011), such as a solar energy generation system. Conservatively assuming no noise attenuation at 25 feet from the proposed solar energy generation system, Project noise levels would attenuate to 41.1 dBA at 50 feet from the solar energy generation system. At 100 feet, noise levels would be reduced another 6 dBA to 35.1 dBA. At 200 feet, noise levels would be reduced to 29.1 dBA. Project noise would continue to attenuate and would be negligible at the closest receptor. There would be a less than significant impact.

Would the Project result in	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐

Less Than Significant Impact.

4.13.2.4 Construction Vibration Impacts

Excessive groundborne vibration impacts result from continuously occurring vibration levels. Increases in groundborne vibration levels attributable to the Proposed Project would be primarily associated with short-term construction-related activities. Construction on the Project Site would have the potential to

result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance.

Construction-related ground vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks. It is not anticipated that pile drivers would be necessary during Project construction. Vibration decreases rapidly with distance, and it is acknowledged that construction activities would occur throughout the Project Site and would not be concentrated at the point closest to sensitive receptors. Groundborne vibration levels associated with construction equipment are summarized in Table 4.13-3.

Table 4.13-3. Typical Construction Equipment Vibration Levels

Equipment Type	Peak Particle Velocity at 25 Feet (inches per second)
Large Bulldozer	0.089
Pile Driver	0.170
Caisson Drilling	0.089
Loaded Trucks	0.076
Rock Breaker	0.089
Jackhammer	0.035
Small Bulldozer/Tractor	0.003
Vibratory Roller	0.210

Source: California Department of Transportation (Caltrans) 2020; Federal Transit Administration (FTA) 2018

Merced County does not regulate vibrations associated with construction. However, a discussion of construction vibration is included for full disclosure purposes. For comparison purposes, the Caltrans (2020) recommended standard of 0.3 inches per second PPV with respect to the prevention of structural damage for older residential buildings is used as a threshold. This is also the level at which vibrations may begin to annoy people in buildings.

The nearest structure of concern to the construction site, with regard to groundborne vibrations, is a wastewater treatment plant and the associated structures and buildings, which is approximately 470 feet from the Project Site.

Based on the representative vibration levels presented for various construction equipment types in Table 4.13-3 and the construction vibration assessment methodology published by the Federal Transit Administration (FTA, 2018), it is possible to estimate the potential project construction vibration levels. The FTA provides the following equation:

$$[PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}]$$

Table 4.13-4 presents the expected Project related vibration levels at a distance of 470 feet.

Table 4.13-4. Construction Vibration Levels at 470 Feet

Receiver PPV Levels (in/sec)[1]							Peak Vibration	Threshold	Exceed Threshold
Large Dozer	Pile Driver	Drilling & Rock Breaker	Loaded Trucks	Roller	Jack-hammer	Small Dozer			
0.001	0.002	0.001	0.001	0.003	0.0004	0.00	0.002	0.3	No

Note: in/sec = inches per second; PPV = Peak Particle Velocity

As shown in Table 4.13-4, groundborne vibrations attenuate rapidly from the source due to geometric spreading and material damping. Geometric spreading occurs because the energy is radiated from the source and spreads over an increasingly large distance while material damping is a property of the friction loss which occurs during the passage of a vibration wave. Vibration as a result of construction activities would not exceed 0.3 PPV. Thus, Project construction would not exceed the recommended threshold. This impact is less than significant.

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the Project Area to excessive noise levels?	☐	☐	☐	☒

No Impact.

The Project Site is located approximately 3.8 miles northeast of the closest airport, Los Banos Municipal Airport. Aircraft noise does not significantly impact the Project Site area and would not expose people visiting or working on the Project Site to excess airport noise levels. No impact would occur.

4.13.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.14 Population and Housing

4.14.1 Environmental Setting

According to the California Department of Finance (DOF), which provides estimated population and housing unit demographics by year throughout the State, the City's population increased 11.7 percent between 2010 and 2023 from 255,399 to 285,337. The DOF estimates that there were 91,465 total housing

units in the County, the County had a 5.0 percent vacancy rate and the average number of persons per household was 3.20 as of January 1, 2023 (DOF 2023).

4.14.2 Population and Housing (XIV) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐

Less than significant impact.

The Proposed Project is the installation of a solar array to provide the CDFW headquarters with clean renewable energy. There are no buildings proposed that would occupy residents, nor would there be any extensions of road or other infrastructure that could have an indirect induction of unplanned population growth in the vicinity. Therefore, implementation of the Proposed Project would not directly contribute to a substantial unplanned increase in population within the County. This impact would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Less than significant impact.

No housing is located on the Site. Therefore, the Project would have no impact in this area.

4.14.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.15 Public Services

4.15.1 Environmental Setting

Public services include fire protection, police protection, parks and recreation, and schools. Generally, impacts in these areas are related to an increase in population from a residential development. Los Banos General Plan Policy PFS-6.1 provides Police Department staffing levels for both sworn Sheriff Deputies and civilian support staff in order to provide quality law enforcement services in the County. Further, Policy PFS-7.1 states that the County strives to maintain fire department staffing levels and response times

consistent with National Fire Protection Association standards: 80 seconds Turnout time; 4 minutes for the first engine to arrive on scene; 6 minutes for second company to arrive on scene; 8 minutes for low and medium hazards: initial full alarm on scene; and 10 minutes, 10 seconds for high hazard/high-rise: initial full alarm. Finally, the County coordinates with the school districts, colleges, and universities to provide for the educational and literary needs of the County residents, as well as encouraging the development of quality childcare services and facilities throughout the County (Merced County 2013).

4.15.1.1 Fire Services

The Merced County Fire Department (MCFD) provides a range of services and programs aimed at protecting the lives and property of the people of Merced County from the adverse effects of fire, medical emergencies, exposure to hazardous materials, or other dangerous conditions in the County, as well as to the Project Site. Los Banos Volunteer Fire Department (OVFD) responds to various emergency and non-emergency incidents including, but not limited to, all types of fire; medical emergencies; public assists and hazardous situations. As of January 2023, the MCFD has 19 stations situated throughout the County, 191 Paid Call Fire Fighters, with stations located in areas that ensure the minimum response times to service calls in accordance with GP Policy PFS-7.8. According to the MCFD's 2018 Annual Report (the most recent report available) There were 15,892 calls, 7,938 of those being medical aide calls, 819 structural fires. (Merced County 2018). The Fire Station closest to the Site is located at 525 H Street, approximately 3.0 miles southwest of the Project Site.

4.15.1.2 Police Services

The Merced County Sheriff's office provides law enforcement services to the Project Site. The Merced County Sheriff's Office is responsible for protecting the life and property of the residents living in the unincorporated areas of the County. The Sherriff's Office is located at 700 West 22nd Street, approximately 23 miles northeast of the Project Site. The nearest Sherriff's Office is the Jess "Pooch" Bowling Justice Center located at 445 I Street in Los Banos, approximately 3.2 miles southwest of the Project Site.

4.15.1.3 Schools

There are a total of 20 school districts with 90 schools serving a diverse population of more than 58,000 students from TK to 12th grade (Merced County Office of Education 2023), one community college district with two campuses, and one public university in Merced County. Public primary education is overseen by the Merced County Office of Education, a regional agency whose mission is to provide educational leadership, resources, and service to assist school districts to be effective facilitators of learning for all pupils. In addition to the core programs offered, these districts provide many other social, health, and education-related programs and services for children, parents, and educators. New growth will also bring demand for new or expanded library facilities in the County (Merced County 2013).

4.15.1.4 Parks

Merced County contains several County, State, and Federal parks and recreation areas and public open space areas. There are approximately 114,000 acres of park and recreation facilities in the County that offer a variety of amenities such as picnicking, swimming, boating, hunting, bird watching, playgrounds, sports fields, and hiking. The County aims, through Goal RCR-1 of the GP, to preserve, enhance, expand, and manage the County's diverse system of regional parks, trails, recreation area, and natural resources for the enjoyment of present and future residents and park visitors.

4.15.1.5 Other Public Facilities

Other public facilities include County libraries and childcare services for the residents of Merced County. Policy PFS-8.8 encourages the expansion of library facilities and services as necessary to meet the needs of future growth. The County also encourages the development of quality childcare services and facilities throughout the County. For example, Policy PFS-9.1 support childcare centers in business parks and other appropriate locations in the County with adequate safeguards in order to provide a needed service for working parents and a benefit to the community. Policy PFS-9.6 maximizes e the use and productivity of parks and recreation facilities by encouraging childcare facilities to be located adjacent to or nearby to allow children who are under care and supervision to use the public space (Merced County 2013).

4.15.2 Public Services (XV) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	☐	☐	☐	☒
Fire Protection?	☐	☐	☐	☒
Police Protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other Public Facilities?	☐	☐	☐	☒

Less than significant impact.

4.15.2.1 Fire Protection

Implementation of the Proposed Project would not result in an increased demand for fire protection and emergency services. The Project Site is located approximately 3.0 miles northeast of the County's nearest fire station. The Project Site is currently served by the City of Los Banos for fire protection and the installation of the proposed solar array would not increase the response time required for the OVFD. Therefore, this impact is less than significant.

4.15.2.2 Police Services

Implementation of the Proposed Project would not result in an increased demand for law enforcement services. The nearest Sherriff's Office is the Jess "Pooch" Bowling Justice Center located at 445 I Street in Los Banos, approximately 3.2 miles southwest of the Project Site. The Project Site is currently served by the County Sheriff's office for law enforcement services and the installation of the proposed solar array would not increase the need for police protection. Therefore, this impact is less than significant.

4.15.2.3 Schools

The Proposed Project would not result in an increase in the existing student population. The Project proposes the installation of a new clean energy solar array to service the CDFW and would not increase the County's population that would require school services. This impact would be less than significant.

4.15.2.4 Parks

The Proposed Project would not increase the overall population of the County that would result in the need for expanded parkland. Therefore, the Project's impacts relating to parks would be less than significant.

4.15.2.5 Other Public Facilities

The Proposed Project would not increase the overall population of the County that would result in the need for expanded public facilities such as childcare services or libraries. Therefore, the Project's impacts relating to other public facilities would be less than significant.

4.15.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.16 Recreation

4.16.1 Environmental Setting

Merced County contains several County, State, and Federal parks and recreation areas and public open space areas. The County aims to achieve its vision for creating and providing recreation opportunities and

facilities that provide economic, health, and open space benefits to County residents. There are approximately 114,000 acres of park and recreation facilities in the County that offer a variety of amenities such as picnicking, swimming, boating, hunting, bird watching, playgrounds, sports fields, and hiking. Through the Goals and Policies promulgated in the GP, the County strives to preserve, enhance, expand, and manage Merced County's diverse system of regional parks, trails, recreation areas, and natural resources for the enjoyment of present and future residents and park visitors. Policy RCR-1.1 encourages the continuation and expansion of existing public recreation land uses, including, but not limited to, public beaches, parks, recreation areas, wild areas, and trails. While Policy RCR-1.2 requires new County park locations and improvements to existing parks to be financed through the implementation of the Local Recreational Park Land Space and Fee Obligation Ordinance. Policy RCR-1.3 encourages a minimum of three acres of neighborhood, community, or regional parkland per each 1,000 persons in the County (Merced County GP).

4.16.2 Recreation (XVI) Materials Checklist

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐

Less than significant impact.

As stated in the previous Section, the proposed solar array system installation for the CDFW headquarters would not increase the use of existing neighborhood, regional or other recreational facilities that could cause substantial physical deterioration. Therefore, the Project's impacts relating to recreational facilities deteriorating would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☒	☐

Less than significant impact.

The Project includes the installation of a clean energy solar array system for the CDFW Los Banos Wildlife Area just outside of the City of Los Banos. The Project does not include any recreational facilities, nor occupancies that would require the construction or expansion of recreational facilities. The Project itself will supply clean solar energy to the wildlife headquarters, which in and of itself is an existing recreational facility containing wetlands and riparian environments that provide habitat for wildlife, including bird

refuge that the public can visit and enjoy recreational activities such as bird-watching. In essence, the Project itself is an alteration of an existing recreational facility's electrical generation capabilities; however, the implementation of the Project, once completed, would not require the construction or expansion of additional recreational facilities. Therefore, Project impacts relating to the inclusion, construction, or expansion of recreational facilities would be less than significant.

4.16.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.17 Transportation

4.17.1 Environmental Setting

4.17.1.1 Existing Street and Highway System

The County maintains a variety of roadways which have differing characteristics. These roadways include everything from low-volume rural local roadways serving agricultural areas to high-volume urban expressways serving large urban areas. All of these roadways play a vital role in how people and goods are transported throughout the County. Regional access to the Project Site would be provided via I-5 and Henry Miller Avenue, of which the Site fronts on its southern boundary. Henry Miller Avenue is identified as a major collector street in the 2030 GP. Major Collector streets are roadways that serve urban communities not directly served by an arterial roadway. Major collectors should be spaced at intervals consistent with travel demand throughout rural areas to adequately serve the agricultural community (Merced County 2013).

4.17.1.2 Transit Service, Pedestrian and Bicycle Facilities

Public transit is an increasingly important component of the Merced County transportation network. It provides an alternative to automobile travel and more travel options for youth, elderly, low-income individuals, and mobility-impaired citizens. In response to rising congestion and the need to reduce the use of fossil fuels in order to clean the air, it has become a priority to expand transit options throughout the County. This includes creating multi-modal transportation centers that link auto, transit, rail, bicycle, and pedestrian modes of travel and encourage ridesharing (i.e., carpooling). The County aims to maintain a public transit system that provides an alternative to automobile travel, supports ridesharing, and meets the needs of the entire community. A comprehensive network of bikeways and pedestrian trails that are safe, convenient, and accessible is an integral component of Merced County's transportation infrastructure (Merced County 2013).

Merced County Transit (MCT) operates both regularly scheduled Fixed Route and Dial-A-Ride (door-to-door) transit services throughout all of Merced County, including the Project Site. Transportation centers include the park-n-ride lot, the Greyhound Bus Station and the Los Banos Airport. The transit service, called "The Bus" operates 15 route lines and demand response services with two fixed city routes as well as a connector route to the City of Merced. The Bus offers service within the City of Los Banos via five routes located within the City's limits, with the closest stop being approximately 2.8 miles south of the

Project Site. The Bus service generally runs from Monday through Friday, 7 a.m. to 6 p.m. and on Saturday from 9:30 a.m. to 5:30 p.m. There is no service on Sunday. The frequency between buses during both peak and off-peak hours of operation is 30 minutes. The MCT equipped all fixed route transit buses with bike racks that provide bicycle riders with greater transit access and connectivity. Many of the outlying residential areas are not served by transit (City of Los Banos 2009).

The *Merced County Association of Governments 2022 Update* to the *Regional Transportation Plan* and *Sustainable Communities Strategy* (RTP/SCS] (2022), which includes the Project Site, addresses current regional goals and priorities for the County and its evolving communities. The plan seeks to ensure that the Merced County transportation system will continue to operate efficiently in the future with sufficient capacity to meet demand and that mobility options are available for all County residents. The RTP/SCS provides a number of areas in the County for future bike lanes, including one proposed on Henry Miller Avenue, of which the Project Site's proposed solar array system fronts on its southern boundary. As the Los Banos Wildlife Area, of which the Project Site is contained within, encompasses a network of paved and unpaved roadways meandering through the marches, wetlands, and riparian areas that birds and other wildlife take refuge inside, this proposed bike path could become a means for future residents and visitors to the County to view this protected area and enjoy the wildlife in its natural habitat. However, the area surrounding the Project Site does not currently include bike lanes or shared use paths.

4.17.2 Transportation (XVII) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐

Less than significant impact.

The Project proposes the installation of a clean energy solar array system to provide electricity to the CDFW Los Banos Wildlife Area and does not include the construction of roadways, nor would the Project impede on any roadways within the Project Vicinity, that would otherwise conflict with a program, plan, ordinance, or policy addressing the circulation system of the area. The Project would have a less than significant impact in this area.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐

Less than significant impact.

The Project does not include any structures that would require occupancies during operation. The only projected vehicle trips associated with the Project would be during the construction component, and the miniscule trips associated with maintenance visits conducted two to four times annually. Vehicle miles travelled associated with construction activities are included in the County's General Plan EIR and would not be included in this analysis. Therefore, the Project would have a less than significant impact in this area.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐

Less than significant impact.

The Proposed Project would not substantially increase hazards to vehicle safety due to increased traffic at locations with geometric design features (e.g., sharp curves or dangerous intersections). The Project is the installation of a solar array system for the CDFW headquarters and does not include any internal roadways. The Project does not introduce incompatible users (e.g., farm equipment) to a roadway or transportation facility not intended for those users. The Project's impact with regard to roadway design and users is less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Result in inadequate emergency access?	☐	☐	☒	☐

Potentially significant impact.

The Project Site will be accessed via Henry Miller Avenue and existing internal access roads contained within the CDFW Headquarters onsite. Additionally, The facility's unpaved roadway, will provide access to the undeveloped land where the solar array system would be installed. Therefore, the Project would have a less than significant impact regarding emergency access.

4.17.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.18 Tribal Cultural Resources

A Cultural Resources Inventory Report was prepared by ECORP (2023c) for the Proposed Project to determine if cultural resources, including tribal cultural resources, were present in or adjacent to the Project Area and assess the sensitivity of the Project Area for undiscovered or buried cultural resources. The information provided below is an abridged version of this report and is provided here to afford a brief context of the potential cultural resources in the Project Area.

The analysis of cultural resources was based on a records and literature search conducted at the CCIC of the CHRIS at California State University, Stanislaus on March 1, 2023, a literature review, historical maps and photographs review, and a field survey on March 27, 2023. The literature search included the results of previous surveys within a 0.5-mile radius of the Proposed Project location.

In addition to the record search, ECORP contacted the NAHC on March 1, 2023, to request a search of the Sacred Lands File for the APE. In requesting a search of the Sacred Lands File, ECORP solicited information from the Native American community regarding TCRs, but the responsibility to formally consult with the Native American community lies exclusively with the federal and local agencies under applicable state and federal laws. The lead agencies do not delegate government-to-government authority to any private entity to conduct tribal consultation. On June 27, 2023, general request for information letters were sent to the following representative listed for the tribes on the NAHC response letter: Amah Mutsun Tribal Band, Dumna Wo-Wah Tribal Government, Northern Valley Yokuts Tribe, Santa Rosa Rancheria Tachi, Southern Sierra Miwuk Nation, Tule River Indian Tribe, and Wuksache Indian Tribe/Eshom Valley Band. To date the project has not received responses.

4.18.1 Environmental Setting

Ethnographically, present-day Los Banos lies within the Northern Valley Yokuts territory. The Northern Valley Yokuts are bounded on the north by the Bay and Plains Miwok territories, the Costanoan on the west, the Northern, Central, and Southern Miwok on the east, and the Southern Valley Yokuts to the south. The San Joaquin River forms the central spine of the Northern Valley Yokuts territory that runs north collecting water from primary drainages that flow southwest from the Sierra Nevada. Los Banos lies in an area dominated ethnographically by the *Nopchinchi* Tribelet, who inhabited the area west of the San Joaquin River near Las Banos Creek and Little Panoche Creek. The environment consisted of marshland flanking rivers and streams separated by more arid plains with sparse vegetation. Despite the hot summers of the Central Valley, the abundance of animal life made settlements attractive in the region. Rivers were well stocked with fish, mussels, and pond turtles, with migratory birds nesting along riverbanks. Elk and pronghorn sheep roamed the plains and edges of the marshland, while smaller mammals were omnipresent and included jackrabbits, ground squirrels, and quail (ECORP 2023c).

Archaeological evidence indicates that the Yokuts were relative latecomers to the region, moving northward from the main bend in the San Joaquin River and displaced Costanoan and Miwok groups in their path. The Northern Valley Yokuts were firmly established by the early 19th century when Spanish expeditions were making exploratory incursions into the interior of California. By that time, the population was estimated to be 30,000, with the main concentrations along the San Joaquin River and its main

tributaries. They were organized in territorial tribelets of up to 300 people. The Yokuts practiced traditional burning methods in the meadows to increase the harvest of seeds (ECORP 2023c).

The Yokuts lived in permanent villages on built-up mounds along the river. Structures with round to oval, hard-packed dirt floors 2 feet below ground surface have been documented in Merced and Fresno counties. These have been interpreted as single family dwellings constructed with light wooden poles joined at the top and covered with tule mats. Sweathouses and ceremonial assembly chambers have also been documented in Northern Valley Yokuts territory (ECORP 2023c).

Technological skills included basket making and the production of ground stone items like mortars and pestles used for acorn processing. Lithic tool technology consisted of projectile points, knives, scrapers, and expedient tools like hammer stones and choppers. Lithic materials used for these items included chert, jasper, chalcedony, and obsidian. Funerary customs included flexed inhumation burial or cremation; the latter was used for those who died away from home, for shamans, or high-status individuals (ECORP 2023c).

The Northern Valley Yokuts first encountered Spanish exploratory missions in the early 1800s. The biggest impact to Yokuts culture came with the start of the mission system in the first quarter of the 19th century when large numbers of Yokuts peoples were taken to the San José, Santa Clara, Soledad, San Juan Bautista, and San Antonio missions. At approximately 40 miles southwest of Los Banos, San Juan Bautista is the closest mission to the area. The succeeding period is characterized by Native Americans running away from the harsh mission system and being pursued by punitive expeditions. Bands of ex-mission Native Americans allied with unconverted groups and began to raid mission territories, stealing herds of cattle and horses for meat. These raids continued into the Mexican Period, which was marked by a drastic decline of the native population particularly from the malaria epidemic in 1833 (ECORP 2023c).

The American Period after 1848 marked a further decline in the native population in Northern Yokuts territory. The native groups were first subjected to gold prospectors passing through their territory bringing with them a new wave of diseases. Finally, these loose groups were pushed aside by European-American settlers who decided to farm in the Central Valley (ECORP 2023c).

4.18.2 Tribal Cultural Resources (XVIII) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a 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:				

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.	☐	☒	☐	☐

Less Than Significant with Mitigation Incorporated. .

As conveyed in the *Cultural Resources Inventory Report* conducted by ECORP Consulting, Inc., no known tribal cultural resources were identified at the Project Site or within a 0.5-mile radius during the records search and literature review performed. On March 27, 2023, ECORP performed a field investigation of the Project Site and APE, which concluded that no cultural resources were observed onsite. Additionally, the NAHC records search of the NAHC Sacred Lands File was completed for the Proposed Project revealing a negative search result for sacred lands within the Project Site. On June 27, 2023, general request for information letters were sent to each representative listed for the tribes on the NAHC response letter; to date, the project has not received any responses.

No known tribal cultural resources have been identified within the Project Site. The Project Site has not been identified as either a site, feature, place, cultural landscape, sacred place, or object with cultural value to a California Native American tribe. However, unanticipated, and accidental discovery of California Native American tribal cultural resources are possible during Project implementation, especially during excavation, and have the potential to impact unique cultural resources. As such, mitigation measure CUL-1 has been included to reduce the potential for impacts to tribal cultural resources to a less than significant level.

4.18.3 Mitigation Measures

With implementation of CUL-1, no additional mitigation measures are required.

4.19 Utilities and Service Systems

4.19.1 Environmental Setting

The City of Los Banos Public Works Department is responsible for water, wastewater, and storm drainage for the Project Site. The City contracts with Mid Valley Disposal (MVD) to provide solid waste, mixed recyclables, and organic waste collection services for the Site (CDFW 2023).

4.19.1.1 Water Service

The City of Los Banos produces its water supply solely from groundwater and distributes it to its residential, commercial, institutional, and industrial customers. As of 2020, the City supplied 8,309 acre feet of water via 12,792 connections. Most of the water (58 percent) is supplied to single-family residences. Commercial properties account for 13 percent of the water used, landscape customers 7 percent, multi-family residences 4 percent, and water losses 18 percent.

The City's water distribution system consists of 13 groundwater wells, 142 miles of water pipelines – ranging in size from four to 30 inches in diameter, an elevated water tank with a capacity of 100,000 gallons, and one aboveground 5-million-gallon water storage tank equipped with four booster pumps with a total pumping capacity of 10,500 Gallons Per Minute (gpm). The City maintains thousands of water valves and hydrants throughout the city and has plans to construct additional wells in the future (2024) with increasing water demands. The City's Water Management Plan (WMP) assumed a population of 90,400 people by 2030, and the plan provides needed expansions in the City's distribution system to meet this demand. The City's General Plan 2042 projects a much smaller population increase of 72,500 people by 2042.

The City of Los Banos relies solely on groundwater sources and extracts its water supply from 13 active groundwater wells capable of pumping up to 14,875 gpm. The groundwater is extracted from the Delta-Mendota Subbasin, which is part of the larger San Joaquin Valley Basin. The Delta-Mendota Subbasin is in critical overdraft and management of the aquifer is addressed in the 2019 Groundwater Sustainability Plan.

The use of recycled water is technically feasible but not economical. To use recycled water for outdoor landscaping and irrigation, the City would need to add a tertiary treatment system to the wastewater treatment plant (WWTP) and construct a "purple pipe" water distribution system. However, the City currently provides WWTP effluent for irrigation of approximately 180 acres of pastureland within the city limits and 237 acres of pastureland outside of the city limits. According to the City's WMP, future expansion of the WWTP would expand the ability to provide effluent for irrigation to about 720 acres.

The City is currently exploring the procurement of surface water supplies. If surface water supplies are obtained, they could only be used for groundwater recharge or for non-potable uses since the city does not have a surface water treatment plant. Projects that the city tends to complete before 2025 include a new groundwater well and booster pump station, a 2.5-million-gallon storage tank, and permanent hexavalent chromium treatment facilities, if needed (CDFW 2023).

4.19.1.2 Wastewater

The City operates and maintains the sewer collection system. The sewer collection system consists of approximately 131 miles of sewer mains and operates largely by gravity. The system also includes 13 lift stations, 1,273 sewer maintenance holes, and 245 sewer cleanouts. The average wastewater flow rate was 2.75 mgd in 2019, with a maximum flow rate of 2.9 mgd. 22 Over the last ten years, flow rates have decreased slightly and have remained relatively stable for the last several years.

Residential customers make up over 55 percent of the current flow but there are several large food processing plants within the city that average about 880,000 gpd of industrial wastewater, or about 30 percent of the total discharge. The sewer lines range in size from 4 inches up to 30 inches in diameter.

Wastewater Treatment Plant

The City owns and operates its own wastewater treatment plant located at 17963 Henry Miller Avenue, directly across Henry Miller Avenue from the Project Site. Wastewater collected within the city is discharged to a series of unlined treatment and disposal ponds with reuse for irrigation on approximately 397 acres of pasture on land owned by the city. An expansion project was recently completed, which has increased the permit influent rate from 2.5 to 4.9 mgd.

As part of the treatment process, effluent is recirculated between the treatment and storage/disposal ponds. Screened influent entering the system flows to the recirculating pump station, where it is mixed with treated effluent and sent to the treatment ponds. Treated effluent is applied as irrigation water on land adjacent to the WWTP; these pasture areas are used for livestock grazing of non-milking animals. The pasture areas are surrounded by a 12-inch berm and equipped with a tailwater return system, which collects excess runoff and returns it to the WWTP at the recirculating station for the ponds. The WWTP relies on evapotranspiration, evaporation, and percolation for effluent disposal. At current flow rates, there is sufficient storage within the pond system to store all effluent during the wet season for a normal year and a 100-year wet year (CDFW 2023).

4.19.1.3 Storm Drainage

The City of Los Banos owns and maintains the storm drain system that is located throughout the city. The storm drain system consists of over 79 miles of storm drains ranging in size from six to 66 inches in diameter. It also operates 12 stormwater pump stations throughout the City. The City streets serve as collectors for most of the stormwater, and a network of drainage ditches and storm drains convey the runoff to detention basins. The runoff from the detention basins is then conveyed via gravity or pump stations to the Central California Irrigation District (CCID) and Goleta Water District (GWD) canals, although a few neighborhoods have direct discharge to the canals.

The original agreements between CCID and GWD regarding stormwater discharge from the City into their canals were renegotiated in 2005 and 2007 to provide sufficient capacity for stormwater runoff as development within the city increased. Currently, the City discharges to CCID's Main Canal and GWD's San Luis Canal and Santa Fe Canal (located directly adjacent to the CDFW headquarters' western boundary). In general, the existing storm drain system has sufficient capacity to convey runoff generated during design

storms. However, the 2010 Stormwater Master Plan stated that in some locations, such as the downtown area, storm drains either do not have adequate capacity and can contribute to flooding or they are connected to the wastewater collection system. Improvements to the storm drain system in this area have since been implemented so that the stormwater runoff no longer flows into the wastewater collection system. These storm drain improvements achieved multiple benefits, including reducing wastewater flow to the WWTP, relieving flooding in the downtown area, and eliminating the need for future wastewater capital projects (CDFW 2023).

The nearest drainage ditch to the Project Site is located directly adjacent to the Site's southern boundary.

4.19.1.4 Solid Waste

As of July 2021, the City has entered into a new solid waste collection agreement with MVD. The MVD provides weekly service to containers with three separate carts for trash, mixed recyclables and organic waste. Under the new contract, trash is sent to Billy Wright Landfill for disposal.

However, MVD has their own recycling and organics processing facilities and will process these materials directly. The closest MVD materials recycling facility and transfer station to Los Banos is located at 15300 W. Jensen Avenue in Kerman, California. It was recently expanded to increase tonnage from 500 to 1,500 tons/day and to include construction and demolition debris processing and crushing, green waste chipping, grinding and composting, and anaerobic digesters.

4.19.1.5 Landfill

The trash collected by MVD in Los Banos is shipped to Billy Wright Landfill. The landfill is owned and operated by Merced County Regional Waste Management Authority (MCRWMA) and is regulated under Waste Discharge Requirements (WDRs) Order No. R5-2011-0061. The landfill is located at 17173 South Billy Wright Road, approximately 9.5 miles southwest of the Project Site. Approximately 172 acres are dedicated to landfill operations, with a maximum permitted throughput of 1,500 tons/day and a remaining capacity of 11 million tons. The estimated closure date is December 31, 2054.

Solid Waste Diversion and Recycling

Compliance with Assembly Bill (AB) 939 is measured by comparing the California Department of Resources Recycling and Recovery target disposal rates for residents and employees to actual disposal rates. The latest reported target disposal rates for the MCRWMA, of which Los Banos is a member, in 2020 were 10.7 pounds per day (ppd) for residents and 38.8 ppd for employees. The actual disposal rates were 6 ppd for residents and 21 ppd for employees. Therefore, solid waste diversion goals for Los Banos and Merced County are in compliance with AB 939 (CDFW 2023).

4.19.1.6 Electricity/Natural Gas Services

Electricity

Electric service in this portion of the City is provided by PG&E. PG&E's power is generated in fossil-fueled plants, hydroelectric powerhouses, geothermal generators, a nuclear power plant, and ten combustion

turbines. PG&E also buys power from independent power producers and other utilities. PG&E provides service to approximately 5.1 million customers in Northern and Central California and has approximately 106,681 circuit miles of electric distribution lines and 18,466 circuit miles of interconnected transmission lines (PG&E 2023).

PG&E's services are provided in accordance with California Public Utilities Commission rules and regulations. Electric connections would be provided to the site from the existing transmission network in the Project vicinity. The Project applicant would be responsible for the costs associated with extension of electrical service infrastructure to the Project Site.

Natural Gas

PG&E supplies natural gas to homes and businesses in the Project Area. PG&E has 42,141 miles of distribution pipelines supplying 4.5 million natural gas customers. Extension of the natural gas infrastructure by PG&E is financed through the collection of developer fees and through consumer payment for service (PG&E 2023).

4.19.2 Utilities and Service Systems (XIX) Environmental Checklist and Discussion

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐

Less than significant impact.

The Project proposes the installation of a clean-energy solar array system to supply electricity to the existing CDFW headquarters, with no occupational component that would require or result in the relocation or construction of new or expanded water, wastewater treatment, storm water drainage, electric power, natural gas, or telecommunications facilities. The very nature of the Proposed Project is to generate clean energy onsite to reduce the use of fossil fuels and the overall electrical grid. The only potential generation of wastewater associated with the Project would come from the brief construction period; however, this amount would be negligible and would cease upon completion of the Proposed Project. As such, the Project impacts associated with solid waste generation would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐

Less than significant impact.

Water demand for the project would primarily be associated with dust control during project construction. It has been estimated that approximately 45,000 gallons would be required. Water would either be supplied from onsite supplies or provided by the contractor. Once construction is complete, water demand would be limited to occasional cleaning of the panels and would require minimal quantities. The project would not have an appreciable impact on local water supplies and this impact would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐

Less than significant impact.

Refer to Item a) above.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐

Less than significant impact.

The Project proposes the installation of a clean-energy solar array system to supply electricity to the existing CDFW headquarters, with no occupational component that would generate solid waste. The only potential generation of solid waste would come from the brief construction period; however, this amount would be negligible and would cease upon completion of the Proposed Project. As such, the Project impacts associated with solid waste generation would be less than significant.

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Less than significant impact.

Where feasible, the Proposed Project comply with all local, state, and federal statutes regarding solid waste, including Chapter 8.04 Solid Waste and Chapter 8.06 Recycling, of the Merced County Municipal Code. No operations-generated acutely toxic or otherwise hazardous materials are expected to be generated by the proposed solar Project. This impact is considered less than significant.

4.19.3 Mitigation Measures

No significant impacts were identified and no mitigation measures are required.

4.20 Wildfire

4.20.1 Environmental Setting

The risk of wildfire is related to a variety of parameters, including fuel loading (vegetation), fire weather (e.g., winds, temperatures, humidity levels and fuel moisture contents), and topography (degree of slope). Steep slopes contribute to fire hazard by intensifying the effects of wind and making fire suppression difficult. Fuels such as grass are highly flammable because they have a high surface area-to-mass ratio and require less heat to reach the ignition point, while fuels such as trees have a lower surface area-to-mass ratio and require more heat to reach the ignition point.

Aside from the component of the Site that includes the electrical conduit trench and connection to the CDFW headquarters' existing electrical panel, the Project Site is relatively flat and dominated by vacant undeveloped land. As discussed in Section 4.16, the area is not designated as a Very High Fire Hazard Severity Zone (VHFHSZ [CAL FIRE 2023]).

4.20.2 Wildfire (XX) Environmental Checklist and Discussion

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

No Impact.

The Project Site is not in an area designated by CAL FIRE as a VHFHSZ. Furthermore, no VHFHSZs are located nearby. Also, the Project Site is not located in a State Responsibility Area (SRA) (CAL FIRE 2023). The Project would have no impact in this area.

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒

No Impact.

The Project Site is not in an area designated by CAL FIRE as a VHFHSZ. Furthermore, no VHFHSZs are located nearby. Also, the Project Site is not located in an SRA (CAL FIRE 2023). The Project would have no impact in this area.

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒

No Impact.

The Project Site is not in an area designated by CAL FIRE as a VHFHSZ. Furthermore, no VHFHSZs are located nearby. Also, the Project Site is not located in an SRA (CAL FIRE 2023). The Project would have no impact in this area.

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

No Impact.

The Project Site is not in an area designated by CAL FIRE as a VHFHSZ. Furthermore, no VHFHSZs are located nearby. Also, the Project Site is not located in an SRA (CAL FIRE 2023). The Project would have no impact in this area.

4.20.3 Mitigation Measures

No significant impacts were identified, and no mitigation measures are required.

4.21 Mandatory Findings of Significance

4.21.1 Mandatory Findings of Significance (XXI) Environmental Checklist and Discussion

Does the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐

Less than Significant Impact with Mitigation Incorporated.

With Mitigation measures described in Section 4.4 Biological Resources, 4.5 Cultural Resources,4.7 Geology and Soils, and 4.18 Tribal Cultural Resources, the Project would not have a significant impact on fish and wildlife species or their habitat or eliminate important examples of major periods of California history or prehistory.

Does the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐

Less than Significant with Mitigation Incorporated.

As described in the impact analysis of this IS/MND, potentially significant impacts to biological resources, cultural resources, geology, and tribal cultural resources have been identified and mitigation measures have been proposed to offset any project specific contribution to cumulative impacts. Current and proposed projects in the project area would also implement mitigation, as necessary. All other impacts from the Proposed Project are short term in nature and associated with construction activities on the project site and, therefore, would not be cumulatively considerable. No other cumulative impacts were identified.

Does the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Less than Significant with Mitigation Incorporated.

Direct and indirect impacts to human beings would be less than significant with the implementation of mitigation measures listed in this IS/MND.

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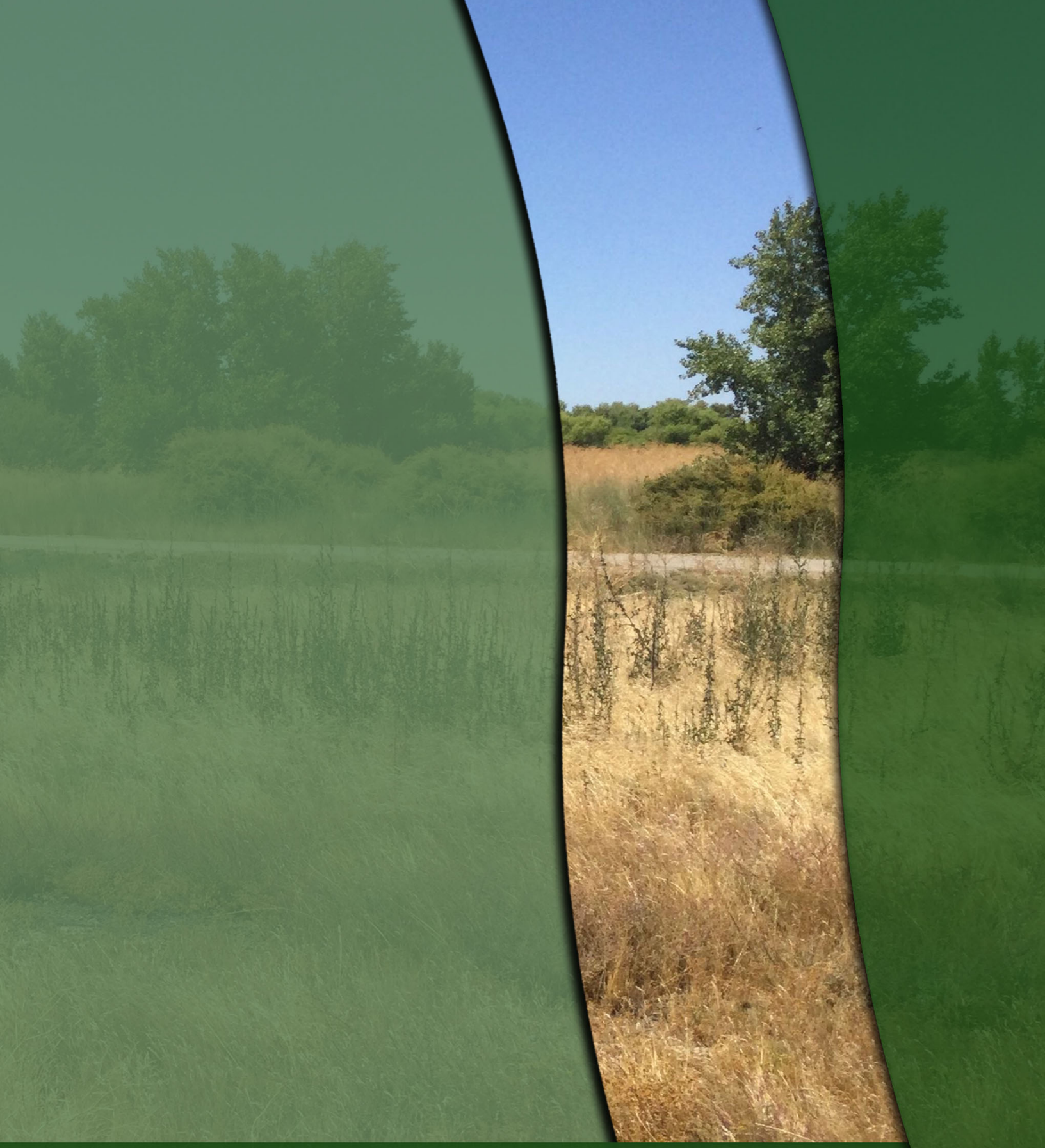

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ECORP Consulting, Inc. March 23, 2023

Appendix B-1 – Biological Resource Assessment for Los Banos Wildlife Area Solar Ground Mount Project
ECORP Consulting, Inc. September 16, 2021

Appendix B-2 – Special Status Plant Survey Letter Report for the Los Banos Wildlife Area Solar Project ECORP Consulting, Inc. August 7, 2023

Appendix C – Archaeological and Architectural History Resources Inventory Report for the Los Banos Wildlife Area State Fish Hatchery Facility
ECORP Consulting, Inc. June 2023

Appendix D – Energy Assessment for Los Banos Wildlife Area Solar Ground Mount Project
ECORP Consulting, Inc. March 23, 2023

Appendix E – Noise Assessment for Los Banos Wildlife Area Solar Ground Mount Project
ECORP Consulting, Inc. March 21, 2023

APPENDIX A

Emissions and Greenhouse Gas for Los Banos Wildlife Area Solar Ground Mount Project
ECORP Consulting, Inc. March 23, 2023

APPENDIX A1 - PROJECT EMISSIONS MODELING OUTPUTS

Los Banos CDFW Solar Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Los Banos CDFW Solar
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.80
Precipitation (days)	25.0
Location	37.10060226938242, -120.81903901382015
County	Merced
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2313
EDFZ	5
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Other Non-Asphalt Surfaces	28.0	1000sqft	0.64	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.33	12.6	11.9	0.02	0.60	0.06	0.66	0.55	0.01	0.56	—	1,780	1,780	0.07	0.02	0.30	1,787
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.58	5.93	7.00	0.01	0.28	0.04	0.28	0.26	0.01	0.26	—	1,305	1,305	0.05	0.01	< 0.005	1,309
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.13	1.27	1.48	< 0.005	0.06	< 0.005	0.06	0.06	< 0.005	0.06	—	273	273	0.01	< 0.005	< 0.005	274
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.02	0.23	0.27	< 0.005	0.01	< 0.005	0.01	0.01	< 0.005	0.01	—	45.1	45.1	< 0.005	< 0.005	< 0.005	45.3

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2023	1.33	12.6	11.9	0.02	0.60	0.06	0.66	0.55	0.01	0.56	—	1,780	1,780	0.07	0.02	0.30	1,787
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.58	5.93	7.00	0.01	0.28	0.00	0.28	0.26	0.00	0.26	—	1,305	1,305	0.05	0.01	0.00	1,309
2024	0.56	5.60	6.98	0.01	0.26	0.04	0.26	0.23	0.01	0.23	—	1,305	1,305	0.05	0.01	< 0.005	1,309
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.13	1.27	1.48	< 0.005	0.06	< 0.005	0.06	0.06	< 0.005	0.06	—	273	273	0.01	< 0.005	< 0.005	274
2024	0.05	0.47	0.60	< 0.005	0.02	< 0.005	0.02	0.02	< 0.005	0.02	—	108	108	< 0.005	< 0.005	< 0.005	109
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.02	0.23	0.27	< 0.005	0.01	< 0.005	0.01	0.01	< 0.005	0.01	—	45.1	45.1	< 0.005	< 0.005	< 0.005	45.3
2024	0.01	0.09	0.11	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	18.0	18.0	< 0.005	< 0.005	< 0.005	18.0

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	< 0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	< 0.005	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	< 0.005	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Waste	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	< 0.005	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Waste	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3. Construction Emissions Details

3.1. Site Preparation (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.02	5.57	0.01	0.27	—	0.27	0.25	—	0.25	—	858	858	0.03	0.01	—	861
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.35	2.35	< 0.005	< 0.005	—	2.36

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.39	0.39	< 0.005	< 0.005	—	0.39
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.38	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	44.8	44.8	< 0.005	< 0.005	0.20	45.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.11	0.11	< 0.005	< 0.005	< 0.005	0.11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.02	0.02	< 0.005	< 0.005	< 0.005	0.02
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Grading (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	12.6	11.4	0.02	0.60	—	0.60	0.55	—	0.55	—	1,713	1,713	0.07	0.01	—	1,719
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	9.39	9.39	< 0.005	< 0.005	—	9.42
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.55	1.55	< 0.005	< 0.005	—	1.56
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.03	0.57	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	67.1	67.1	< 0.005	< 0.005	0.30	68.3
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.34	0.34	< 0.005	< 0.005	< 0.005	0.34
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Building Construction (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.93	7.00	0.01	0.28	—	0.28	0.26	—	0.26	—	1,305	1,305	0.05	0.01	—	1,309
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.93	7.00	0.01	0.28	—	0.28	0.26	—	0.26	—	1,305	1,305	0.05	0.01	—	1,309
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.12	1.18	1.40	< 0.005	0.06	—	0.06	0.05	—	0.05	—	260	260	0.01	< 0.005	—	261
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.22	0.25	< 0.005	0.01	—	0.01	0.01	—	0.01	—	43.1	43.1	< 0.005	< 0.005	—	43.3
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Building Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.56	5.60	6.98	0.01	0.26	—	0.26	0.23	—	0.23	—	1,305	1,305	0.05	0.01	—	1,309
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.43	0.53	< 0.005	0.02	—	0.02	0.02	—	0.02	—	99.6	99.6	< 0.005	< 0.005	—	99.9
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	16.5	16.5	< 0.005	< 0.005	—	16.5
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Trenching (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.69	2.03	< 0.005	0.06	—	0.06	0.05	—	0.05	—	283	283	0.01	< 0.005	—	284
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.01	0.05	0.06	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.76	7.76	< 0.005	< 0.005	—	7.79
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.29	1.29	< 0.005	< 0.005	—	1.29
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.26	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	38.8	38.8	< 0.005	< 0.005	< 0.005	39.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.10	1.10	< 0.005	< 0.005	< 0.005	1.11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.18	0.18	< 0.005	< 0.005	< 0.005	0.18
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Consumer	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipme Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Site Preparation	Site Preparation	9/16/2023	9/17/2023	5.00	1.00	—
Grading	Grading	9/18/2023	9/20/2023	5.00	2.00	—
Building Construction	Building Construction	9/21/2023	2/8/2024	5.00	100	—
Trenching	Trenching	2/9/2024	2/22/2024	5.00	10.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	6.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	6.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	4.00	367	0.29
Building Construction	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Trenching	Excavators	Diesel	Average	2.00	8.00	36.0	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	5.00	10.9	LDA,LDT1,LDT2
Site Preparation	Vendor	—	8.27	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	7.50	10.9	LDA,LDT1,LDT2
Grading	Vendor	—	8.27	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT

Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	0.00	10.9	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	8.27	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Trenching	—	—	—	—
Trenching	Worker	5.00	10.9	LDA,LDT1,LDT2
Trenching	Vendor	—	8.27	HHDT,MHDT
Trenching	Hauling	0.00	20.0	HHDT
Trenching	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%
Sweep paved roads once per month	9%	9%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Other Non-Asphalt Surfaces	0.64	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2023	0.00	204	0.03	< 0.005
2024	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	0.00	0.00	1,680

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Other Non-Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Other Non-Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)

Other Non-Asphalt Surfaces	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	32.5	annual days of extreme heat
Extreme Precipitation	1.05	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	5	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	5	1	1	4
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A

Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	55.4
AQ-PM	12.0
AQ-DPM	19.2
Drinking Water	99.0
Lead Risk Housing	48.2
Pesticides	80.8
Toxic Releases	5.71
Traffic	54.8
Effect Indicators	—
CleanUp Sites	59.0
Groundwater	97.3

Haz Waste Facilities/Generators	7.35
Impaired Water Bodies	96.3
Solid Waste	93.2
Sensitive Population	—
Asthma	93.0
Cardio-vascular	67.6
Low Birth Weights	23.7
Socioeconomic Factor Indicators	—
Education	85.2
Housing	46.5
Linguistic	84.5
Poverty	69.3
Unemployment	95.7

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	18.76042602
Employed	36.78942641
Median HI	22.76401899
Education	—
Bachelor's or higher	6.236365969
High school enrollment	12.44706788
Preschool enrollment	26.60079559
Transportation	—
Auto Access	36.01950468

Active commuting	66.59822918
Social	—
2-parent households	2.55357372
Voting	40.85717952
Neighborhood	—
Alcohol availability	69.80623637
Park access	6.13370974
Retail density	0.384960862
Supermarket access	15.46259464
Tree canopy	6.608494803
Housing	—
Homeownership	38.3036058
Housing habitability	67.2783267
Low-inc homeowner severe housing cost burden	45.47670987
Low-inc renter severe housing cost burden	89.54189657
Uncrowded housing	37.31553959
Health Outcomes	—
Insured adults	31.25882202
Arthritis	0.0
Asthma ER Admissions	15.6
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	19.6

Cognitively Disabled	52.2
Physically Disabled	42.3
Heart Attack ER Admissions	12.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	96.5
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	16.3
Elderly	81.3
English Speaking	12.7
Foreign-born	56.9
Outdoor Workers	2.7
Climate Change Adaptive Capacity	—
Impervious Surface Cover	91.3
Traffic Density	26.9
Traffic Access	0.0
Other Indices	—
Hardship	81.4

Other Decision Support	—
2016 Voting	63.6

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	85.0
Healthy Places Index Score for Project Location (b)	16.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	No demolition phase as there are no existing buildings on Project Site. No paving or architectural coating for solar power system. Trenching required per PD.
Construction: Dust From Material Movement	No import/export material.
Construction: Off-Road Equipment	Equipment added to trenching phase

APPENDIX A2 – SJVAPCD HEALTH RISK SCREENING TOOL

Name

Prioritization Calculator

Applicability	Use to provide a Prioritization score based on the emission potency method. Entries required in yellow areas, output in gray areas.		
Author or updater	Anaya Ward	*Last Update*	March 16, 2023
Facility:	Fore Front Power Solar - Los Banos		
ID#:	CEQA		
Project #:	2021-112.02		
Unit and Process#	Construction		
Operating Hours hr/yr	75.00		

Receptor Proximity and Proximity Factors		Cancer Score	Chronic Score	Acute Score	Max Score
0< R<100	**1.000**				0.00E+00
100≤R<250	**0.250**				0.00E+00
250≤R<500	**0.040**				0.00E+00
500≤R<1000	**0.011**				0.00E+00
1000≤R<1500	**0.003**	**3.12E-01**	**5.40E-02**	**0.00E+00**	**3.12E-01**
1500≤R<2000	**0.002**	2.08E-01	3.60E-02	0.00E+00	2.08E-01
2000<R	**0.001**	1.04E-01	1.80E-02	0.00E+00	1.04E-01

Receptor proximity is in meters. Priortization scores are calculated by multiplying the total scores summed below by the proximity factors. Record the Max score for your receptor distance. If the substance list for the unit is longer than the number of rows here or if there are multiple processes use additional worksheets and sum the totals of the Max Scores.

Construction

Enter the unit's CAS# of the substances emitted and their amounts.

Prioritzation score for each substance generated below. Totals on last row.

Substance	CAS#	MW Correction	Annual Emissions (lbs/yr)	Maximum Hourly (lbs/hr)	Corrected Annual Emissions (lbs/yr)	Corrected Maximum Hourly (lbs/hr)	Average Hourly (lbs/hr)
Diesel engine exhaust, particulate matter (Diesel PM)	**9901**	**1.0000**	4.50E+01	2.50E-02	4.50E+01	2.50E-02	6.00E-01
Carbon Monoxide [Criteria Pollutant]	**42101**	**1.0000**	8.93E+02	4.96E-01	8.93E+02	4.96E-01	1.19E+01
Oxides of Nitrogen	**42603**	**1.0000**	9.45E+02	5.25E-01	9.45E+02	5.25E-01	1.26E+01
Reactive Organic Gas	**16113**	**1.0000**	9.98E+01	5.50E-02	9.98E+01	5.50E-02	1.33E+00
Oxides of sulfur	**42401**	**1.0000**	1.50E+00	8.30E-04	1.50E+00	8.30E-04	2.00E-02
Particulate Matter	**11101**	**1.0000**	4.95E+01	2.75E-02	4.95E+01	2.75E-02	6.60E-01
Particulate Matter 2.5 Microns or less	**88101**	**1.0000**	4.20E+01	2.33E-02	4.20E+01	2.33E-02	5.60E-01

APPENDIX B

Biological Resource Assessment for Los Banos Wildlife Area Solar Ground Mount Project
ECORP Consulting, Inc. September 16, 2021

Biological Resources Assessment

Los Banos Solar Ground Mount Project

Merced County, California

Prepared for:

State of California Department of General Services
Real Estate Services Division

November 2023

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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LIST OF ACRONYMS AND ABBREVIATIONS

Term	Definition
°F	Degrees Fahrenheit
BCC	Birds of Conservation Concern
BO	Biological Opinion
BRA	Biological Resources Assessment
CARI	California Aquatic Resources Inventory
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
DC	Direct Current
DGS	State Department of General Services
DPS	Distinct Population Segment
ESA	Endangered Species Act
HCP	Habitat Conservation Plan
LSAA	Lake or Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act
MSL	Mean sea level
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
Project	Los Banos Solar Ground Mount Project
RWQCB	Regional Water Quality Control Board
SFEI	San Francisco Estuary Institute
SNC	Sensitive Natural Communities
SSC	Species of Special Concern
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

On behalf of the State Department of General Services (DGS), ECORP Consulting, Inc. conducted a Biological Resources Assessment (BRA) for the proposed Los Banos Solar Ground Mount Project (Project) located in Merced County, California. The purpose of the assessment was to collect information on the biological resources present and evaluate the potential for special-status species and their habitats to occur in the Study Area, assess potential biological impacts related to Project activities, and identify potential mitigation measures to inform the Project's California Environmental Quality Act (CEQA) documentation.

1.1 Study Area Location

The approximately 2.24-acre Study Area includes the impact limits of the Project (Project Area) plus a 25-foot buffer around the trenching area and a 50-foot buffer around the solar array area (buffers collectively referred to as the Buffer Area). All components of the Study Area are depicted on Figure 1. *Study Area Components*.

The Study Area is located in the southwest corner of the Los Banos Wildlife Area adjacent to the California Department of Fish and Wildlife (CDFW) facility at 18110 Henry Miller Avenue near the city of Los Banos in Merced County, California (Figure 2. *Study Area Location and Vicinity*). The Study Area corresponds to portions of the southeast quarter of Section 36, Township 09 South, Range 10 East; and the southwest quarter of Section 31, Township 09 South, Range 11 East (Mount Diablo Base and Meridian) within the "Los Banos, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1960 [photo revised 1987]). The approximate center of the Study Area is located at latitude 37.100008° and longitude -121.817025° (NAD83). The Study Area is within the Middle San Joaquin – Lower Chowchilla watershed (Hydrologic Unit Code #18020158) (Natural Resources Conservation Service [NRCS] et al. 2016).

1.2 Project Description

DGS is proposing to install a solar photovoltaic power generation system for the Los Banos Wildlife Area facility. The system would include ground-mounted solar arrays that would convert sunlight to direct current (DC) electrical power. The DC electrical power would then be converted to alternating current by string inverters before being delivered to the Pacific Gas & Electric Company distribution system.

The solar system would be configured into generally contiguous arrays that are laid out to minimize impacts to natural resources. The solar system would utilize either fixed-tilt or single-axis tracking mounting technology to optimize efficiency and performance. Single-axis trackers are designed to rotate the arrays in the east-to-west plane to track the sun's movement across the horizon. Once installed, the ground-mounted solar arrays would be approximately eight feet in height (height would depend on the time of day for a tracking system). A security fence would be installed around the solar arrays.

Solar panel wiring (also known as stringing) would be buried trenches that run between rows and/or installed above grade to connect the output of each string to an inverter. Trenching would be excavated and backfilled, depending on the final conduit size and equipment utilized, or wiring may be directionally drilled to avoid any existing natural resources or infrastructure features.

Map Features

- Study Area - 2.24 acres
- Buffer Area - 1.60 acres
- Project Area - 0.64 acres

Base Source: ESRI World Imagery

ECORP: N:\2018\2018-116.028 RESD Solar Screening Analysis\MAPS\Aerial_Maps\LosBanos_SitePlan_20210309.mxd (AMM) amyers 3/12/2021

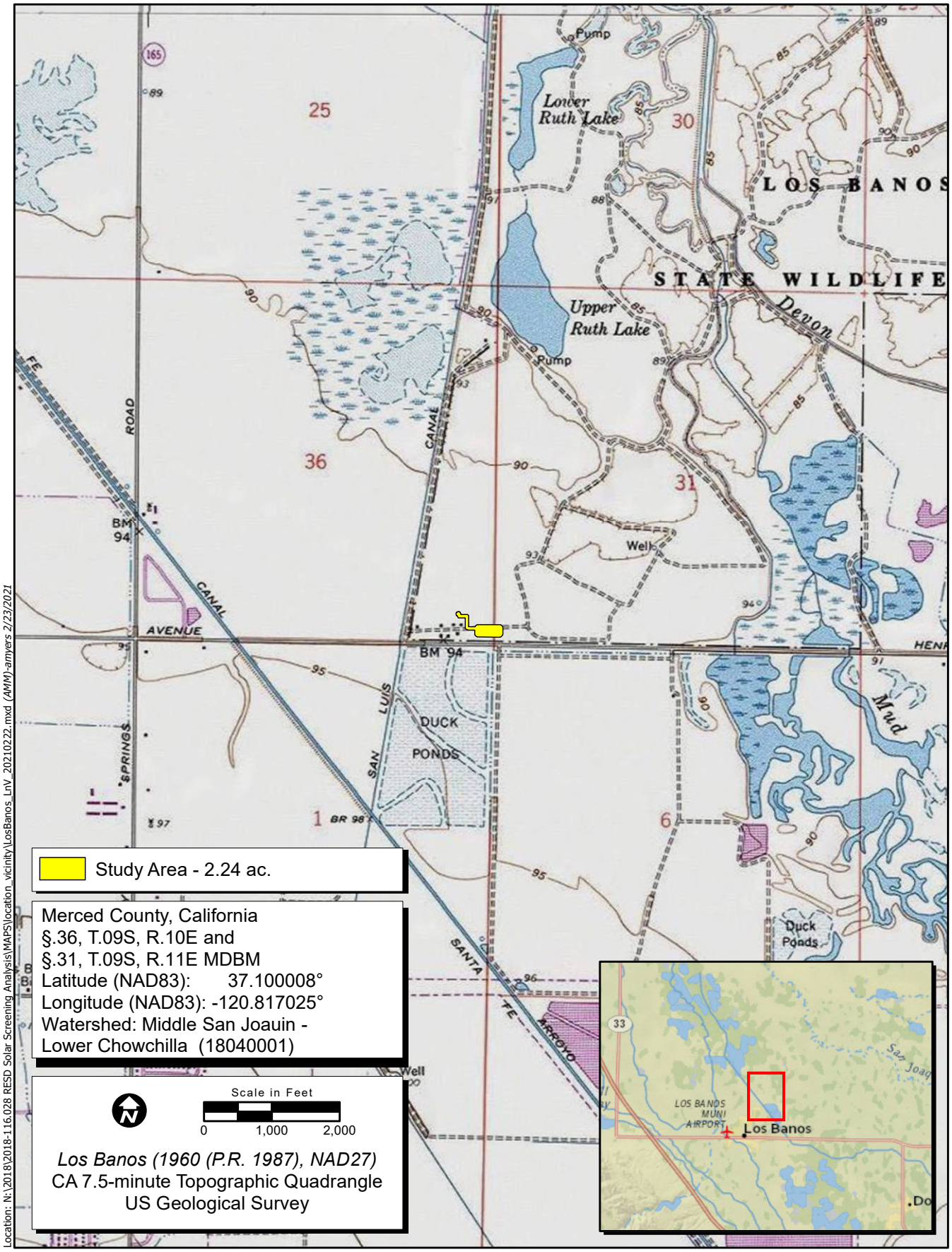
Map Date: 3/12/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 100

Figure 1. Study Area Components

2018-116.028/002 RESD - Screening Analysis - Solar: Los Banos



Location: N:\2018\2018-116.028 RESD Solar Screening Analysis\MAPS\location_vicinity\LosBanos_LnV_20210222.mxd (AMM)-amyers 2/23/2021

Map Date: 2/23/2021

Figure 2. Study Area Location and Vicinity

2018-116.028/002 RESD - Screening Analysis - Solar: Los Banos

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1.3 Purpose of this Biological Resources Assessment

The purpose of this BRA is to assess the potential for occurrence of special-status plant and animal species or their habitats, and sensitive habitats such as wetlands within the Study Area. This assessment does not include determinate field surveys conducted according to agency-promulgated protocols. The conclusions and recommendations presented in this report are based upon a review of the available literature and site reconnaissance.

For the purposes of this assessment, special-status species are defined as plants or animals that:

- are listed, proposed for listing, or candidates for future listing as threatened or endangered under the federal Endangered Species Act (ESA);
- are listed or candidates for future listing as threatened or endangered under the California ESA;
- meet the definitions of endangered or rare under Section 15380 of CEQA Guidelines;
- are identified as a Species of Special Concern (SSC) by the CDFW;
- are birds identified as Birds of Conservation Concern (BCC) by the U.S. Fish and Wildlife Service (USFWS);
- are plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (California Rare Plant Rank [CRPR] 1 and 2), plants listed by CNPS as species about which more information is needed to determine their status (CRPR 3), and plants of limited distribution (CRPR 4);
- are plants listed as rare under the California Native Plant Protection Act (NPPA; California Fish and Game Code, Section 1900 et seq.); or
- are fully protected in California in accordance with the California Fish and Game Code, Sections 3511 (birds), 4700 (mammals), 5050 (amphibians and reptiles), and 5515 (fishes).

Only species that fall into one of the above-listed groups were considered for this assessment. Other species without special status that are sometimes found in database or literature searches were not included in this analysis.

2.0 REGULATORY SETTING

2.1 Federal Regulations

2.1.1 Federal Endangered Species Act

The federal ESA protects plants and animals that are listed as endangered or threatened by the USFWS or the National Marine Fisheries Service (NMFS). Section 9 of the ESA prohibits the taking of listed wildlife, where take is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct” (50 Code of Federal Regulations [CFR] 17.3). For plants, the ESA prohibits removing or possessing any listed plant on federal land, maliciously damaging or destroying any listed plant in any area, or removing, cutting, digging up, damaging, or destroying any such species in knowing violation of state law (16 U.S. Code 1538). Under Section 7 of ESA, federal agencies are required

to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect a listed (or proposed) species (including plants) or its designated Critical Habitat. Through consultation and the issuance of a biological opinion, the USFWS may issue an incidental take statement allowing take of a listed species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued existence of the species. Section 10 of the ESA provides for issuance of incidental take permits where no other federal actions are necessary provided a Habitat Conservation Plan (HCP) is developed.

2.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. The protections of the MBTA extend to disturbances that result in abandonment of a nest with eggs or young. As authorized by the MBTA, the USFWS may issue permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits.

2.1.3 Federal Clean Water Act

The purpose of the federal Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Section 404 of the CWA prohibits the discharge of dredged or fill material into Waters of the U.S. without a permit from the U.S. Army Corps of Engineers (USACE). The definition of Waters of the U.S. 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 CFR 328.3 7b).

The U.S. Environmental Protection Agency also has authority over wetlands and may override a USACE permit.

Substantial impacts to wetlands may require an individual permit. Projects that only minimally affect wetlands may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB).

2.2 State Regulations

2.2.1 California Endangered Species Act

The California ESA (California Fish and Game Code Sections 2050-2116) generally parallels the main provisions of the federal ESA, but unlike its federal counterpart, the California ESA applies the take

prohibitions to species proposed for listing (called *candidates* by the state). Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. *Take* is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Section 2081 allows CDFW to authorize incidental take permits if species-specific minimization and avoidance measures are incorporated to fully mitigate the impacts of the project.

2.2.2 Fully Protected Species

The state of California first began to designate species as *fully protected* prior to the creation of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the state and/or federal ESAs. Previously, the regulations that implement the Fully Protected Species Statute (California Fish and Game Code Sections 4700 for mammals, 3511 for birds, 5050 for reptiles and amphibians, and 5515 for fish) provided that fully protected species may not be taken or possessed at any time. However, on July 10, 2023, Senate Bill 147 (SB147) was signed into law, authorizing CDFW to issue take permits under the California ESA for fully protected species for qualifying projects through 2033. Qualifying projects include:

- A maintenance, repair, or improvement project to the State Water Project, including existing infrastructure, undertaken by the Department of Water Resources.
- A maintenance, repair, or improvement project to critical regional or local water agency infrastructure.
- A transportation project, including any associated habitat connectivity and wildlife crossing project, undertaken by a state, regional, or local agency, that does not increase highway or street capacity for automobile or truck travel.
- A wind project and any appurtenant infrastructure improvement, and any associated electric transmission project carrying electric power from a facility that is located in the state to a point of junction with any California based balancing authority.
- A solar photovoltaic project and any appurtenant infrastructure improvement, and any associated electric transmission project carrying electric power from a facility that is located in the state to a point of junction with any California-based balancing authority.

CDFW may also issue licenses or permits for take of these species for necessary scientific research or live capture and relocation, and may allow incidental take for lawful activities carried out under an approved Natural Community Conservation Plan within which such species are covered.

2.2.3 Native Plant Protection Act

The NPPA of 1977 was created with the intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA is administered by CDFW and provided in California Fish and Game Code Sections 1900-1913. The Fish and Wildlife Commission has the authority to designate native plants as

endangered or *rare* and to protect endangered and rare plants from take. The California ESA of 1984 (California Fish and Game Code Sections 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the California Fish and Game Code.

2.2.4 California Fish and Game Code Special Protections for Birds

Sections 3503, 3513, and 3800 of the California Fish and Game Code specifically protect birds. Section 3503 prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Subsection 3503.5 prohibits the take, possession, or destruction of any birds in the orders Strigiformes (owls) or Falconiformes (hawks and eagles), as well as their nests and eggs. Section 3513 prohibits the take or possession of any migratory nongame bird as designated in the MBTA. Section 3800 states that, with limited exceptions, it is unlawful to take any nongame bird, defined as all birds occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds. These provisions, along with the federal MBTA, serve to protect all nongame birds and their nests and eggs, except as otherwise provided in the code.

2.2.5 Lake or Streambed Alteration Agreements

Section 1602 of the California Fish and Game Code requires that a Notification of Lake or Streambed Alteration be submitted to CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." The notification must incorporate proposed measures to protect affected fish and wildlife resources. During their review, CDFW may suggest additional protective measures. A Lake or Streambed Alteration Agreement (LSAA) is the final proposal mutually agreed upon by CDFW and the applicant. Projects that require an LSAA often also require a permit from the USACE under Section 404 of the CWA. The conditions of the Section 404 permit and the LSAA frequently overlap in these instances.

2.2.6 Porter-Cologne Water Quality Act

The RWQCB implements water quality regulations under the federal CWA and the Porter-Cologne Water Quality Act. These regulations require compliance with the National Pollutant Discharge Elimination System (NPDES), including compliance with the California Storm Water NPDES General Construction Permit for discharges of storm water runoff associated with construction activities. General Construction Permits for projects that disturb one or more acres of land require development and implementation of a Storm Water Pollution Prevention Plan. Under the Porter-Cologne Water Quality Act, the RWQCB also regulates actions that would involve "discharging waste, or proposing to discharge waste, within any region that could affect the water of the state" (Water Code 13260(a)). Waters of the State are defined as "any surface water or groundwater, including saline waters, within the boundaries of the state" (Water Code 13050(e)). The RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State, that are not regulated by the USACE due to a lack of connectivity with a navigable water body. The RWQCB may require issuance of a Waste Discharge Requirements for these activities.

2.2.7 California Environmental Quality Act

Per CEQA Guidelines Section 15380, a species not protected on a federal or state list may be considered rare or endangered if the species meets certain specified criteria. These criteria follow the definitions in the federal and California ESAs, and Sections 1900-1913 of the California Fish and Game Code, which deal with rare or endangered plants or animals. Section 15380 was included in the CEQA Guidelines primarily to deal with situations where a project under review may have a significant effect on a species that has not yet been listed by either the USFWS or CDFW.

CEQA Significance Criteria

Sections 15063-15065 of the CEQA Guidelines address how an impact is identified as significant. Generally, impacts to listed (rare, threatened, or endangered) species are considered significant. Assessment of "impact significance" to populations of non-listed species (e.g., SSC) usually considers the proportion of the species' range that will be affected by a project, impacts to habitat, and the regional and population level effects.

Section 15064.7 of the CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Pursuant to Appendix G, impacts to biological resources would normally be considered significant if the project would:

- have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;
- have a substantial adverse effect on federally protected Waters of the U.S. including wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means;
- interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA because

although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population-wide or region-wide basis.

Species of Special Concern

The CDFW defines SSC as a species, subspecies, or distinct population of an animal native to California that are not legally protected under ESA, the California ESA or the California Fish and Game Code, but currently satisfy one or more of the following criteria:

- The species has been completely extirpated from the state or, as in the case of birds, it has been extirpated from its primary seasonal or breeding role.
- The species is listed as federally (but not state) threatened or endangered, and meets the state definition of threatened or endangered but has not formally been listed.
- The species has or is experiencing serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status.
- The species has naturally small populations that exhibit high susceptibility to risk from any factor that if realized, could lead to declines that would qualify it for state threatened or endangered status.

SSC are typically associated with threatened habitats. Projects that result in substantial impacts to SSC may be considered significant under CEQA.

USFWS Bird of Conservation Concern

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the USFWS "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under ESA." To meet this requirement, the USFWS published a list of BCC (USFWS 2021) for the U.S. The list identifies the migratory and nonmigratory bird species (beyond those already designated as federally threatened or endangered) that represent USFWS' highest conservation priorities. Depending on the policy of the lead agency, projects that result in substantial impacts to BCC may be considered significant under CEQA.

Watch List Species

The CDFW maintains a list consisting of taxa that were previously designated as *Species of Special Concern* but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.

Depending on the policy of the lead agency, projects that result in substantial impacts to species on the Watch List may be considered significant under CEQA.

California Rare Plant Ranks

The CNPS maintains the *Rare Plant Inventory* (CNPS 2023a), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, or low populations. Plant

species meeting one of these criteria are assigned to one of six CRPRs. The rank system was developed in collaboration with government, academia, non-governmental organizations, and private sector botanists, and is jointly managed by CDFW and the CNPS. The CRPRs are currently recognized in the California Natural Diversity Database (CNDDB). The following are definitions of the CNPS CRPRs:

- Rare Plant Rank 1A – presumed extirpated in California and either rare or extinct elsewhere
- Rare Plant Rank 1B – rare, threatened, or endangered in California and elsewhere
- Rare Plant Rank 2A – presumed extirpated in California, but more common elsewhere
- Rare Plant Rank 2B – rare, threatened, or endangered in California but more common elsewhere
- Rare Plant Rank 3 – a review list of plants about which more information is needed
- Rare Plant Rank 4 – a watch list of plants of limited distribution

Additionally, the CNPS has defined Threat Ranks that are added to the CRPR as an extension. Threat Ranks designate the level of threat on a scale of 0.1 through 0.3, with 0.1 being the most threatened and 0.3 being the least threatened. Threat Ranks are generally present for all plants ranked 1B, 2B, or 4, and for the majority of plants ranked 3. Plant species ranked 1A and 2A (presumed extirpated in California), and some species ranked 3, which lack threat information, do not typically have a Threat Rank extension. The following are definitions of the CNPS Threat Ranks:

- Threat Rank 0.1 – Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- Threat Rank 0.2 – Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
- Threat Rank 0.3 – Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are considered in setting the Threat Rank; and differences in Threat Ranks do not constitute additional or different protection (CNPS 2023a). Depending on the policy of the lead agency, substantial impacts to plants ranked 1A, 1B, 2A, or 2B are typically considered significant under CEQA Guidelines Section 15380. Significance under CEQA is typically evaluated on a case-by-case basis for plants ranked 3 or 4.

Sensitive Natural Communities

Sensitive Natural Communities (SNC) are vegetation communities that are imperiled or vulnerable to environmental effects of projects. CDFW maintains the California Natural Community List (CDFW 2022), which provides a list of vegetation alliances, associations, and special stands as defined in *A Manual of California Vegetation Online* (CNPS 2023b), along with their respective state and global rarity ranks, if applicable. Natural communities with a state rarity rank of S1, S2, or S3 are considered SNCs. Depending on the policy of the lead agency, impacts to SNCs may be considered significant under CEQA.

Wildlife Movement Corridors and Nursery Sites

Impacts to wildlife movement corridors or nursery sites may be considered significant under CEQA. As part of the California Essential Habitat Connectivity Project, CDFW and Caltrans maintain data on Essential Habitat Connectivity areas. This data is available in the CNDDB. The goal of this project is to map large intact habitat or natural landscapes and potential linkages that could provide corridors for wildlife. In urban settings, riparian vegetated stream corridors can also serve as wildlife movement corridors. Nursery sites include but are not limited to concentrations of nest or den sites such as heron rookeries, bat maternity roosts, and mule deer critical fawning areas. These data are available through CDFW's Biogeographic Information and Observation System database or as occurrence records in the CNDDB and are supplemented with the results of the field reconnaissance.

3.0 METHODS

3.1 Literature Review

The following resources were reviewed to determine the special-status species that have been documented within or in the vicinity of the Study Area.

- CDFW CNDDB data for the "Los Banos, California" 7.5-minute USGS quadrangle and the eight surrounding USGS quadrangles (CDFW 2023a).
- USFWS Information, Planning, and Consultation System Resource Report List for the Study Area (USFWS 2023a).
- CNPS' electronic Rare Plant Inventory was queried for the "Los Banos, California" 7.5-minute USGS quadrangle and the eight surrounding quadrangles (CNPS 2023a).
- NMFS Resources data for the "Los Banos, California" 7.5-minute USGS quadrangle (National Oceanic and Atmospheric Administration [NOAA] 2016).

The results of the database queries are included in Attachment A.

Aerial imagery and site or species-specific background information, as cited throughout this document, were reviewed to determine the potential for occurrence of sensitive biological resources within or in the vicinity of the Study Area.

3.2 Field Surveys Conducted

3.2.1 Reconnaissance Field Assessment

ECORP Biologist Hannah Stone conducted a reconnaissance-level field survey for the Study Area on February 24, 2021. Eos Arrow Global Positioning System unit, topographic maps, and aerial imagery were used for navigation and mapping of sensitive resources. Special attention was given to identifying those portions of the Study Area with the potential to support special-status species and sensitive habitats. During the field survey, biological communities occurring onsite were characterized and the following biological resource information was collected:

- Potential aquatic resources;

- Vegetation communities;
- Plant and animal species directly observed;
- Animal evidence (e.g., scat, tracks);
- Existing active raptor nest locations;
- Special habitat features; and
- Representative photographs (Attachment B).

3.2.2 Aquatic Resources Delineation

ECORP biologist Hannah Stone conducted an aquatic resources delineation on March 31, 2021. The aquatic resources delineation was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Region Supplement; USACE 2008). *Munsell Soil Color Charts* (Munsell Color 2009) and the Web Soil Survey (NRCS 2023) were used to aid in identifying hydric soils in the field. *The Jepson Manual, 2nd Edition* (Baldwin et al. 2012) was used for plant nomenclature and identification. The wetland determination data forms are included in Attachment C.

Routine Determination for Wetlands

To be determined a wetland, the following three criteria must be met:

- A majority of dominant vegetation species are wetland-associated species;
- Hydrologic conditions exist that result in periods of flooding, ponding, or saturation during the growing season; and
- Hydric soils are present.

Vegetation

Hydrophytic vegetation is defined as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanent or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present (Environmental Laboratory 1987). Dominant plant species observed at each sampling point were then classified according to their indicator status (probability of occurrence in wetlands; Table 1) (USACE 2018). If the majority (more than 50 percent) of the dominant vegetation on a site are classified as obligate (OBL), facultative wetland (FACW), or facultative (FAC), the site was considered to be dominated by hydrophytic vegetation.

Table 1. Classification of Wetland-Associated Plant Species[1]

Plant Species Classification	Abbreviation	Probability of Occurring in Wetland
Obligate	OBL	Almost always occur in wetlands
Facultative Wetland	FACW	Usually occur in wetlands, but may occur in non-wetlands
Facultative	FAC	Occur in wetlands and non-wetlands
Facultative Upland	FACU	Usually occur in non-wetlands, but may occur in wetlands
Upland	UPL	Almost never occur in wetlands
Plants That Are Not Listed (assumed upland species)	N/L	Does not occur in wetlands in any region.

[1]Source: Lichvar et al. 2016

Soils

A hydric soil is defined as a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (NRCS 2003). Indicators that a hydric soil is present include, but are not limited to, histosols, histic epipedon, hydrogen sulfide, depleted below dark surface, sandy redox, loamy gleyed matrix, depleted matrix, redox dark surface, redox depressions, and vernal pools.

At each sampling point a soil pit was excavated to the depth needed to document an indicator, to confirm the absence of indicators, or until refusal at each sampling point. The soil was then examined for hydric soil indicators. Soil colors were determined while the soil was moist using the *Munsell Soil Color Charts* (Munsell Color 2009).

Hydrology

Wetlands, by definition, are seasonally or perennially inundated or saturated at or near (within 12 inches of) the soil surface. Primary indicators of wetland hydrology include, but are not limited to visual observation of saturated soils, visual observation of inundation, surface soil cracks, inundation visible on aerial imagery, water-stained leaves, oxidized rhizospheres along living roots, aquatic invertebrates, water marks (secondary indicator in riverine environments), drift lines (secondary indicator in riverine environments), and sediment deposits (secondary indicator in riverine environments). The occurrence of one primary indicator is sufficient to conclude that wetland hydrology is present. If no primary indicators are observed, two or more secondary indicators are required to conclude wetland hydrology is present. Secondary indicators include, but are not limited to drainage patterns, crayfish burrows, FAC-neutral test, and shallow aquitard.

3.2.3 Special-status Plant Survey

ECORP biologists conducted a special-status plant survey within the Study Area on April 27 and July 11, 2023. The biologists walked meandering transects throughout the Study Area during the survey, including all suitable habitat for target species, and identified all plant species to the lowest possible taxonomic level required to assess rarity. No special-status plant species were observed. Additional details are provided in Attachment D.

3.3 Special-Status Species Considered for the Study Area

Based on database queries, a list of special-status species that are considered to have the potential to occur within the vicinity of the Study Area was generated (Table 2). Each of the species was evaluated for its potential to occur within the Study Area through the literature review and field observations, and categorized based on the following criteria:

- **Present** - Species was observed during the site visit or is known to occur within the Study Area based on documented occurrences within the CNDDB or other literature.
- **Potential to Occur** - Habitat (including soils and elevation requirements) for the species occurs within the Study Area.
- **Low Potential to Occur** - Marginal or limited amounts of habitat occurs and/or the species is not known to occur within the vicinity of the Study Area based on CNDDB records and other available documentation.
- **Absent** - No suitable habitat (including soils and elevation requirements) and/or the species is not known to occur within the vicinity of the Study Area based on CNDDB records and other documentation.

4.0 RESULTS

4.1 Existing Condition

4.1.1 Site Characteristics and Land Use

The Study Area is located within relatively flat terrain situated at an elevational range of approximately 90 to 95 feet above mean sea level (MSL) in the San Joaquin Valley subregion of the California floristic province (Jepson eFlora 2023). The average winter low temperature in the vicinity of the Study Area is 39.4 degrees Fahrenheit (°F) and the average summer high temperature is 93.1°F Average annual precipitation is approximately 9.95 inches, which falls as rain (NOAA 2021).

As described in Section 1.1, the Study Area includes the Project Area and the Buffer Area (Figure 1). The solar array area, which makes up the majority of the Project Area, is located within an undeveloped alkaline grassland. The trenching area is located within developed areas (i.e., roads, parking areas) that are part of the CDFW facility for the Los Banos Wildlife Area. The Buffer Area includes portions of the alkaline grassland, small portions along the edge of a Fremont cottonwood (*Populus fremontii*) woodland, developed areas, and a ditch used for water conveyance.

The Study Area is in the southeast corner of the Los Banos Wildlife Area. Developed portions of the Study Area are used as part of the CDFW facility, and undeveloped areas are minimally used for facility maintenance (piling and burning of debris). Lands to the northeast are largely undeveloped natural and created wetlands, alkaline grassland, and riparian habitat managed mostly to provide wintering habitat for migratory birds. Lands to the south are largely used for agriculture.

Representative photographs of the Study Area are included in Attachment B.

4.1.2 Soils

According to the Web Soil Survey (NRCS 2023), one soil unit, or type, has been mapped within the Study Area (Figure 3. *Natural Resources Conservation Service Soils Types*):

- 170 – Dospalos clay loam, partially drained

The map unit consists of 85-percent Dospalos series and similar soils, and 15-percent minor components. The Dospalos series is described as very deep, poorly drained soils on valley basins or on floodplains. These soils formed in mixed alluvium, dominantly from granitic sources. The Dospalos series is nonsaline to very slightly saline and has a hydric soil rating. Additionally, this map unit contains four minor components with hydric soil ratings: Alros, clay loam, partially drained; Bolfar, clay loam, partially drained; Elnido sandy loam, partially drained; and Palazzo, sandy loam, partially drained (NRCS 2023).

No soil units derived from serpentinite or other ultramafic parent materials have been reported to occur within the Study Area or its immediate vicinity (Horton 2017; Jennings et al. 1977; NRCS 2023).

4.1.3 Vegetation Communities and Land Cover Types

Vegetation communities or land cover types observed within the Study Area include alkaline grassland, Fremont cottonwood woodland, and developed/disturbed areas. These are described in the following sections.

Alkaline Grassland

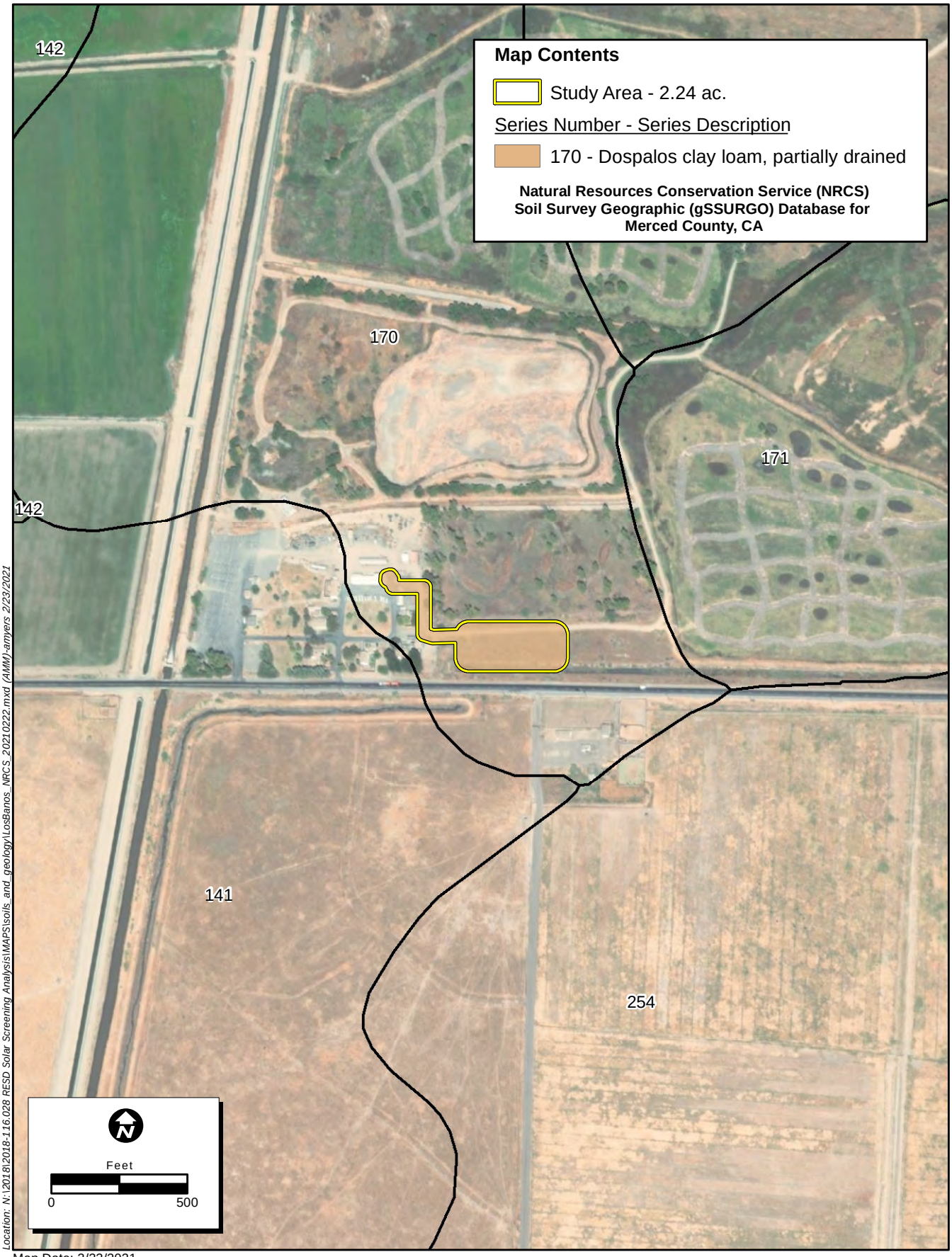
The majority of the Study Area is alkaline grassland. The alkaline grassland is dominated by a mosaic of grasses with scattered forbs and shrubs. Lower-elevation areas were dominated by saltgrass (*Distichlis spicata*) and alkali heath (*Frankenia salina*). Soft chess (*Bromus hordeaceus*) and ripgut brome (*Bromus diandrus*) were scattered throughout the grassland and were dominant in higher-elevation areas. Patches of poison hemlock were observed in lower-elevation and previously disturbed areas. Scattered shrubs were present at low cover and included desert thorn (*Lycium brevipes*) and big saltbush (*Atriplex lentiformis*). Areas of disturbance were present where vegetation piles have been burned in the past or are currently piled for burning. This vegetation type most resembles the *Distichlis spicata* Herbaceous Alliance (CNPS 2023b).

Fremont Cottonwood Woodland

The edge of a Fremont cottonwood woodland is located within the Buffer Area north of the access road and east of the developed facility (Figure 1). Fremont cottonwood and willows (*Salix gooddingii* and *Salix lasiolepis* .) are present in this area and the understory is dominated by poison hemlock (*Conium maculatum*) and tall wheatgrass (*Elymus ponticus*). This vegetation type most resembles the *Populus fremontii – Fraxinus velutina – Salix gooddingii* Forest & Woodland Alliance (CNPS 2023b).

Developed/Disturbed

The developed areas within the Study Area include a dirt access road, asphalt surface parking areas, and garages that are part of the Los Banos Wildlife Area headquarters. These developed areas are largely devoid of vegetation. The disturbed areas for the road shoulders are dominated by tall wheatgrass and alkali heath.



Location: N:\2018\2018-116.028 RESD Solar Screening Analysis\MAPS\soils_and_geology\LosBanos_NRCS_20210222.mxd (AMM)-amyers 2/23/2021

Map Date: 2/23/2021
Photo Source: ESRI World Imagery

Figure 3. Natural Resources Conservation Service Soil Types

4.1.4 Aquatic Resources

Wetlands

Based on the results of the aquatic resources delineation, no wetlands are located within the Study Area. Much of the solar array area was dominated by hydrophytic vegetation but lacked hydric soils and wetland hydrology.

The California Aquatic Resources Inventory (CARI) data (San Francisco Estuary Institute [SFEI] 2017) maps the majority of the Study Area as a Depressional Seasonal Unnatural Emergent Wetland (Figure 4. *California Aquatic Resources Inventory*). The CARI is a statewide map of surface waters and related habitats combining multiple national and regional datasets, including the National Wetlands Inventory and the National Hydrography Dataset. CARI includes aquatic resource features mapped using a variety of remote sensing and modeling techniques. As such, these aquatic features may or may not exist as represented. In addition, CARI data varies in detail, accuracy, and age, and is meant to be used as a tool to assist with an aquatic resource delineation but not as the only source of information (SFEI 2017).

Non-Wetland Waters

One ditch is located within the Study Area (Figure 5. *Aquatic Resources Delineation*; Photo 2 in Attachment B). As described in Section 1.1, the Study Area includes the Project Area and the Buffer Area (Figure 1). The ditch runs east-west through the southern portion of the Buffer Area just south of the solar array area. The ditch within the Study Area has a native soil bed and bank and appears to have been constructed in upland terrain by excavation. At the time of the site visit, the ditch was dominated by cattail (*Typha* sp.).

Other vegetation included patches of rush (*Juncus* sp.), poison hemlock, common smartweed (*Persicaria hydropiper*), hairy water clover (*Marsilea vestita*), and western marsh cudweed (*Gnaphalium palustre*). The ordinary high water mark was delineated where the hydrophytic vegetation transitions to upland species.

4.1.5 Wildlife Observations

Wildlife observed within or near the Study Area during the site reconnaissance includes California quail (*Callipepla californica*), red-tailed hawk (*Buteo jamaicensis*), Anna's hummingbird (*Calypte anna*), and northern mockingbird (*Mimus polyglottos*). A pair of red-tailed hawks were observed courting near the Study Area and a raptor nest was observed approximately 200 feet northeast of the Study Area. The red-tailed hawks may utilize the nest. Additionally, a pair of Swainson's hawks (*Buteo swainsoni*) were observed by CDFW staff building a nest in a tree adjacent to a parking area for the Los Banos Wildlife Area approximately 750 feet west of the Study Area (L. Sparks, personal communication, March 17, 2021).

Location: N:\2018\2018-116.028 RESD Solar Screening Analysis\MAPS\jurisdictional_delineation\LosBanos_CARI_20210222.mxd (AMM)-amyers 2/22/2021

Map Date: 2/22/2021
Photo Source: ESRI World Imagery

ECORP Consulting, Inc.
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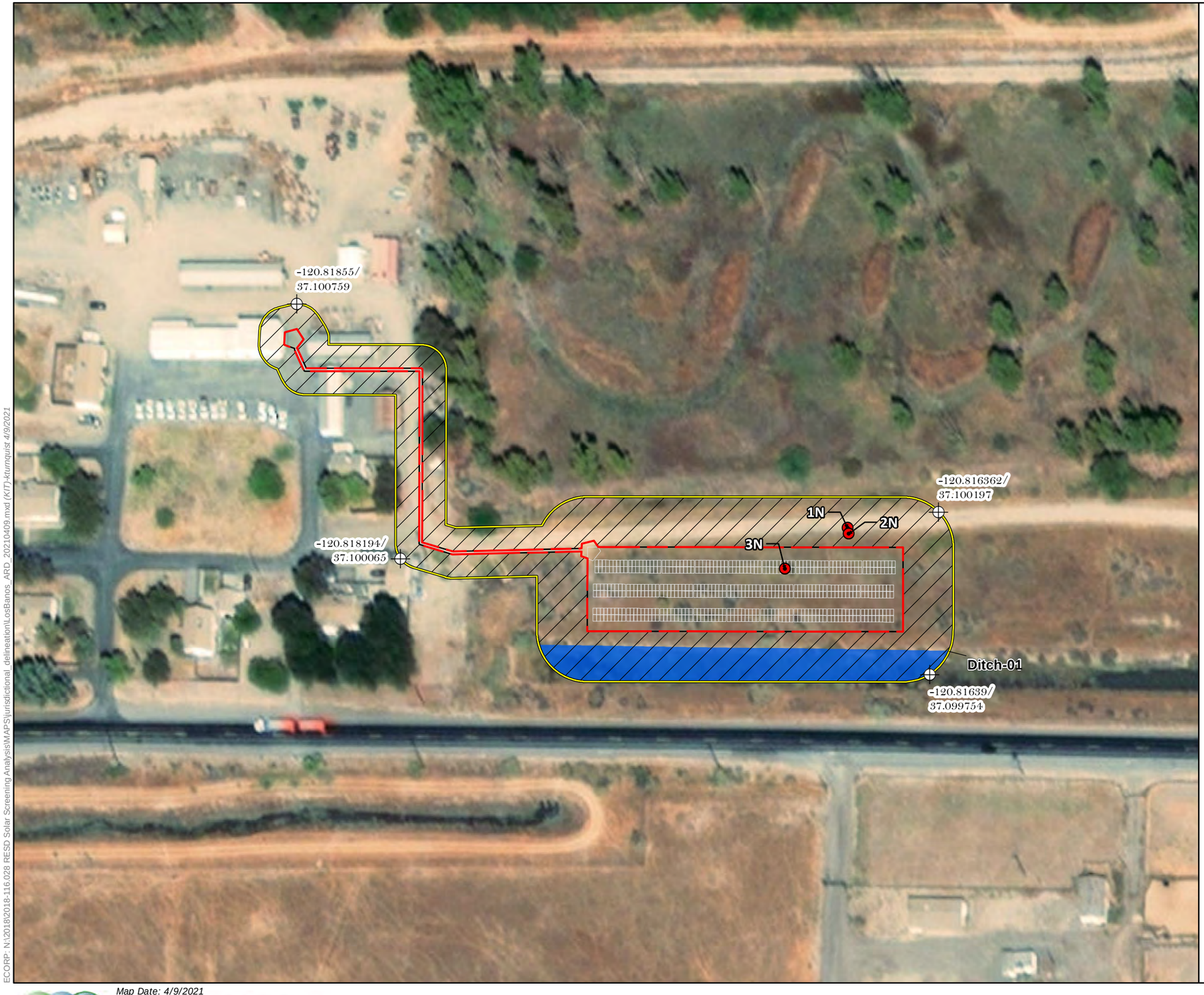
Figure 4. California Aquatic Resources Inventory

2018-116.028/002 RESD - Screening Analysis - Solar: Los Banos



Map Features

- Study Area - 2.24 acres
- Buffer Area - 1.60 acres
- Project Area - 0.64 acres
- Reference Coordinates

Sample Points

- Upland Point
- Waters Point

Aquatic Resources - 0.294 ac.

- Ditch - 0.294 acres[1*]

Photo Source: ESRI World Imagery
Boundary Source: Forefront with ECORP Edits
Delineator(s): Hannah Stone
Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet

[1] Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.
** The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.*

ECORP: N:\2018\2018-116.028 RESD Solar Screening Analysis\MAPS\jurisdictional_delineation\LosBanos_ARD_20210409.mxd (KIT)-ktumquist 4/9/2021

Map Date: 4/9/2021

ECORP Consulting, Inc.
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Scale in Feet
0 100

Figure 5. Aquatic Resources Delineation

2018-116.028/002 RESD - Screening Analysis - Solar: Los Banos

4.2 Evaluation of Species Identified in the Literature Search

Table 2 lists all the special-status plant and wildlife species (as defined in Section 1.3) identified in the literature review as potentially occurring within the vicinity of the Study Area. Included in this table are the listing status for each species, a brief habitat description, and an evaluation on the potential for each species to occur within the Study Area.

Following the table is a brief description and discussion of each special-status species that was determined to have potential to occur onsite.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Plants						
Forked fiddleneck *(Amsinckia furcata)*	–	–	4.2	Semi-barren loose shaly slopes (Kelley and Ganders 2012) in cismontane woodland and valley and foothill grassland (164'–3,281').	February–May	Absent. No suitable habitat.
California androsace *(Androsace elongata* ssp. *acuta)*	–	–	4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland (492'–4,281).	March–June	Absent. No suitable habitat.
Alkali milk-vetch *(Astragalus tener* var. *tener)*	–	–	1B.2	Alkaline soils in playas, valley and foothill grasslands (adobe clay), and vernal pools (5'–195').	March–June	Low potential to occur. The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Heartscale *(Atriplex cordulata* var. *cordulata)*	–	–	1B.2	Alkaline or saline valley and foothill grasslands, meadows and seeps, and chenopod scrub communities (0'–1,835').	April–October	Low potential to occur. The alkaline grassland within the Study Area may provide suitable habitat for this species. A CNDDB occurrence for this species overlaps the Study Area. However, the occurrence is a non-specific bounded area described in a location that does not resemble the Study Area and this species was not observed during the special-status plant survey.
Crownscale *(Atriplex coronata* var. *coronata)*	–	–	4.2	Alkaline, often clay substrates in chenopod scrub, valley and foothill grassland, and vernal pools (5'–1,935').	March–October	Low potential to occur. The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Lost Hills crownscale (*Atriplex coronata* var. *vallicola*)	–	–	1B.2	Alkaline soils in chenopod scrub, valley and foothill grassland and vernal pools (165'–2,085').	April–September	Low potential to occur. The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Brittlescale *(Atriplex depressa)*	–	–	1B.2	Alkaline and clay soils within chenopod scrub, meadows and seeps, playas, valley and foothill grasslands, and vernal pools (5'–1,050').	April–October	Low potential to occur. The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Lesser saltscale *(Atriplex minuscula)*	–	–	1B.1	Alkaline, sandy soils in chenopod scrub, playas, and valley and foothill grassland (50'–655').	May–October	Low potential to occur. The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Vernal pool smallscale *(Atriplex persistens)*	–	–	1B.2	Alkaline vernal pools (33'–377').	June–October	Absent. No suitable habitat within Study Area.
Lemmon's jewel flower (*Caulanthus lemmonii*)	–	–	1B.2	Pinyon and juniper woodland and valley and foothill grassland (262'–5,184').	February–May	Absent. No suitable habitat within Study Area.
Parry's rough tarplant *(Centromadia parryi* ssp. *rudis)*	–	–	4.2	Alkaline, vernally mesic areas, seeps, and sometimes roadsides in valley and foothill grassland and vernal pools (0'–330').	May–October	Low potential to occur. The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Hispid bird's-beak *(Chloropyron molle* ssp. *hispidum)*	–	–	1B.1	Alkaline soils in meadows and seeps, playas, and valley and foothill grasslands (5'–510').	June–September	Low potential to occur. The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Recurved larkspur *(Delphinium recurvatum)*	–	–	1B.2	Chenopod scrub, cismontane woodland, and valley and foothill grasslands (10'–2,590').	March–June	Low potential to occur. The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Protruding buckwheat (*Eriogonum nudum* var. *indictum*)	–	–	4.2	Clay and serpentine soils in chaparral, chenopod scrub, and cismontane woodland (490–4,800').	May–October	Absent. No suitable habitat within Study Area.
Idria buckwheat (*Eriogonum vestitum*)	–	–	4.3	Valley and foothill grassland (770–2,955').	April–August	Low potential to occur. The alkaline grassland within the Study Area may provide marginal habitat; however, this species was not observed during the special-status plant survey.
Delta button-celery *(Eryngium racemosum)*	–	CE	1B.1	Vernally mesic clay depressions in riparian scrub communities (10'–98').	June–October	Absent. No suitable habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Spiny-sepaled button-celery *(Eryngium spinosepalum)*	–	–	1B.2	Swales, roadside ditches (Preston et al. 2012), vernal pools, and valley and foothill grassland (260'–3,200').	April–June	Low potential to occur. The ditch within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Hoover's spurge (*Euphorbia hooveri*)	FT	–	1B.2	Vernal pools (82'–821').	July–September	Absent. No suitable habitat within Study Area.
Alkali-sink goldfields (*Lasthenia chrysantha*)	–	–	1B.1	Alkaline vernal pools (0–656').	February–April	Absent. No suitable habitat within Study Area.
Ferris' goldfields *(Lasthenia ferrisiae)*	–	–	4.2	Alkaline and clay vernal pools (65'–2,295').	February–May	Absent. No suitable habitat within Study Area.
Coulter's goldfields *(Lasthenia glabrata* ssp. *coulteri*)	–	–	1B.1	Coastal marshes and swamps, playas, and vernal pools (5'–4,005').	February–June	Low potential to occur. The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Serpentine leptosiphon (*Leptosiphon ambiguus*)	–	–	4.2	Usually serpentine soils of cismontane woodland, coastal scrub, and valley and foothill grassland (395'–3,710').	March–June	Absent. No suitable habitat within Study Area.
Large-flowered leptosiphon (*Leptosiphon grandiflorus*)	–	–	4.2	Usually sandy soils of coastal bluff scrub, closed–cone coniferous forest, cismontane woodland, coastal dunes, coastal prairie, coastal scrub, and valley and foothill grassland (15'–4,005').	April–August	Low potential to occur. The alkaline grassland within the Study Area may provide marginal habitat; however, this species was not observed during the special-status plant survey.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Little mousetail *(Myosurus minimus* ssp. *apus)*	–	–	3.1	Mesic areas (USACE 2018) of valley and foothill grassland and alkaline vernal pools (65'–2,100').	March–June	Low potential to occur. The ditch within the Study Area may provide marginal habitat; however, this species was not observed during the special-status plant survey.
Prostrate vernal pool navarretia (*Navarretia prostrata*)	–	–	1B.1	Mesic soils within coastal scrub, meadows and seeps, alkaline valley and foothill grassland, and vernal pools (10'–3,970').	April–July	Low potential to occur. The ditch and alkaline grassland within the Study Area may provide marginal habitat; however, this species was not observed during the special-status plant survey.
Colusa grass *(Neostapfia colusana)*	FT	CE	1B.1	Large vernal pools with adobe soils (16'–656').	May–August	Absent. No suitable habitat within Study Area.
California alkali grass (*Puccinellia simplex*)	–	–	1B.2	Alkaline, vernally mesic areas and sinks, flats and lake margins in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools (5'–3,050').	March–May	Low potential to occur. The alkaline grassland within the Study Area may provide suitable habitat for this species. A CNDDB occurrence for this species overlaps the Study Area. However, the occurrence is a non-specific bounded area described in a location that does not resemble the Study Area and this species was not observed during the plant survey

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Sanford's arrowhead *(Sagittaria sanfordii)*	–	–	1B.2	Shallow marshes and freshwater swamps (0'–2,133').	May–October	Low potential to occur. The ditch within the Study Area may provide marginal habitat; however, this species was not observed during the special-status plant survey.
Chaparral ragwort *(Senecio aphanactis)*	–	–	2B.2	Sometimes alkaline soils in chaparral, cismontane woodland, coastal scrub (49'–2,625').	January–April	Absent. No suitable habitat within Study Area.
Arburua Ranch jewelflower (*Streptanthus insignis* ssp. *lyonii*)	–	–	1B.2	Coastal scrub, sometimes on serpentine soils (755'–2,805').	March–May	Absent. No suitable habitat within Study Area.
Slender-leaved pondweed (*Stuckenia filiformis* ssp. *alpina*)	–	–	2B.2	Assorted shallow freshwater marshes and swamps (984'–7,054').	May–July	Absent. The Study Area is outside of the known elevational range for this species.
Wright's trichocoronis *(Trichocoronis wrightii* var. *wrightii)*	–	–	2B.1	Alkaline soils in meadows and seeps, marshes and swamps, riparian forest, and vernal pools (15'–1,425').	May–September	Low potential to occur. The ditch and alkaline grassland within the Study Area may provide marginal habitat; however, this species was not observed during the special-status plant survey.
Invertebrates						
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	–	–	Elderberry shrubs.	Any season	Absent. No suitable habitat within Study Area.
Conservancy fairy shrimp (*Branchinecta conservatio)*	FE	–	–	Vernal pools/wetlands.	November-April	Absent. No suitable habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Longhorn fairy shrimp *(Branchinecta longiantenna)*	FE	–	–	Vernal pools/wetlands.	November – April	Absent. No suitable habitat within Study Area.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	–	–	Vernal pools/wetlands.	November-April	Absent. No suitable habitat within Study Area.
Vernal pool tadpole shrimp (*Lepidurus packardi*)	FE	–	–	Vernal pools/wetlands.	November - April	Absent. No suitable habitat within Study Area.
Crotch bumble bee *(Bombus crotchii)*	–	CC	–	Primarily nests underground in open grassland and scrub habitats from the California coast east to the Sierra Cascade and south to Mexico.	February-October	Low potential to occur. The grassland within the Study Area may provide marginal habitat for this species.
Monarch butterfly - California overwintering population (*Danaus plexippus plexippus pop 1*)	FC	–	–	Overwinters along coastal California in wind-protected groves of eucalyptus, Monterey pine and cypress with nearby nectar and water sources; disperses in spring throughout California. Adults breed and lay eggs during the spring and summer, feeding on a variety of nectar sources; eggs are laid exclusively on milkweed plants.	Any season	Absent. No suitable overwintering habitat within Study Area.
Fish						
Steelhead (CA Central Valley [Distinct Population Segment] DPS) (*Oncorhynchus mykiss*)	FT	–	–	Undammed rivers, streams, creeks.	N/A	Absent. No suitable habitat within Study Area.
Hardhead (*Mylopharodon conocephalus*)	–	–	SSC	Relatively undisturbed streams at low to mid elevations in the Sacramento-San Joaquin and Russian River drainages. In the San Joaquin River, scattered populations found in tributary streams, but only rarely in the valley reaches of the San Joaquin River.	N/A	Absent. No suitable habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Amphibians						
California tiger salamander (Central California DPS) (*Ambystoma californiense*)	FT	CT	SSC	Vernal pools, wetlands (breeding) and adjacent grassland or oak woodland; needs underground refuge (e.g., ground squirrel and/or gopher burrows). Largely terrestrial as adults.	March-May	Low potential to occur. The alkaline grassland in the Study Area may provide upland habitat for this species and there is aquatic habitat in the vicinity of the Study Area, but there are no known occurrences nearby.
Western spadefoot (*Spea hammondii*)	–	–	SSC	California endemic species of vernal pools, swales, wetlands and adjacent grasslands throughout the Central Valley.	March-May	Low potential to occur. The ditch within the Study Area and aquatic features nearby may provide aquatic habitat, and the alkaline grassland may provide upland habitat for this species. The species has been historically reported to occur in Los Banos Wildlife Area (CDFW 2023a), but there are no known recent occurrences.
California red-legged frog (*Rana draytonii*)	FT	–	SSC	Lowlands or foothills at waters with dense shrubby or emergent riparian vegetation. Adults must have aestivation habitat to endure summer dry down.	April - November	Absent. The Study Area is outside of the known geographic range for this species.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Foothill yellow-legged frog (East/Southern Sierra Clade) (*Rana boylii*)	FE	CE	–	Foothill yellow-legged frogs can be active all year in warmer locations but may become inactive or hibernate in colder climates. At lower elevations, foothill yellow-legged frogs likely spend most of the year in or near streams. Adult frogs, primarily males, will gather along main-stem rivers during spring to breed.	April - October	Absent. The Study Area is outside of the known geographic range for this species and there is no suitable habitat.
Northern leopard frog (*Lithobates pipiens*)	–	–	SSC	Near permanent or semi-permanent water in a variety of habitats east of the Sierra Nevada-Cascade Crest. This highly aquatic species requires shoreline cover as well as submerged and emergent aquatic vegetation (CDFW 2023a).	March - October	Absent. The Study Area is outside of the known geographic range for this species.
Reptiles						
Northwestern pond turtle (*Actinemys marmorata*)	FC	–	SSC	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	April-September	Potential to occur. The ditch within the Study Area may provide aquatic habitat, and the alkaline grassland may provide upland habitat for this species.
Northern California legless lizard (*Anniella pulchra*)	–	–	SSC	The most widespread of California's *Anniella* species. Occurs in sandy or loose soils under sparse vegetation from Antioch south coastally to Ventura. Bush lupine is often an indicator plant, and two melanistic populations are known.	Generally spring, but depends on location and conditions	Low potential to occur. The alkaline grassland may provide marginal habitat for this species.
Blunt-nosed leopard lizard *(Gambelia silus)*	FE	CE	FP	Occurs in sparsely vegetated alkali scrub habitats in the southern San Joaquin Valley. Uses mammal burrows, shrubs and other structures for shade.	April - July	Absent. The Study Area is outside of the known geographic range for this species and there is no suitable habitat.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
San Joaquin coachwhip *(Coluber flagellum ruddocki)*	–	–	SSC	Occurs in open, dry, usually flat habitats in Valley Grassland and Saltbush Scrub with little to no shrub cover in the San Joaquin Valley. A dietary generalist.	March-October	Absent. No suitable habitat within Study Area.
Giant garter snake (*Thamnophis gigas*)	FT	CT	–	Freshwater ditches, sloughs, and marshes in the Central Valley. Almost extirpated from the southern parts of its range.	April-October	Potential to occur. The ditch within the Study Area may provide aquatic habitat, and the alkaline grassland may provide upland habitat for this species.
Birds						
Aleutian cackling goose *(Branta hutchinsii leucopareia)*	De-listed	–	–	Pasture, marsh (Sacramento/San Joaquin Valley and Delta).	October-March	Absent. No suitable habitat in Study Area.
Western grebe *(Aechmophorus occidentalis)*	–	–	BCC	Winters on salt or brackish bays, estuaries, sheltered sea coasts, freshwater lakes, and rivers. Nests on freshwater lakes and marshes with open water bordered by emergent vegetation.	June-August	Absent. No suitable habitat in Study Area.
Clark's grebe *(Aechmophorus clarkii)*	–	–	BCC	Winters on salt or brackish bays, estuaries, sheltered sea coasts, freshwater lakes, and rivers. Breeds on freshwater to brackish marshes, lakes, reservoirs and ponds, with a preference for large stretches of open water fringed with emergent vegetation.	June-August (breeding)	Absent. No suitable habitat in Study Area.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Northern harrier (*Circus hudsonius*)	–	–	SSC	Nests on the ground in open wetlands, marshy meadows, wet/lightly grazed pastures, (rarely) freshwater/brackish marshes, tundra, grasslands, prairies, croplands, desert, shrub-steppe, and (rarely) riparian woodland communities.	April-September	Potential to occur. The Study Area may provide nesting habitat for this species.
Swainson's hawk (*Buteo swainsoni*)	–	CT	BCC	Nesting occurs in trees in agricultural, riparian, oak woodland, scrub, and urban landscapes. Forages over grassland, agricultural lands, particularly during disking/harvesting, irrigated pastures	March-August	Potential to occur. There is no nesting habitat within the Study Area, but it may provide foraging habitat and there is a known nest location within ¼ mile of the Study Area (L. Sparks, personal communication, March 17, 2021).
Ferruginous hawk (*Buteo regalis*)	–	–	BCC, CDFW WL	Rarely breeds in California (Lassen County); winter range includes grassland and shrubsteppe habitats from Northern California (except northeast and northwest corners) south to Mexico and east to Oklahoma, Nebraska, and Texas.	September-March (wintering)	Low potential to occur. The Study Area may provide marginal winter foraging habitat.
Bald eagle (*Haliaeetus leucocephalus*)	De-listed	CE	CFP	Typically nests in forested areas near large bodies of water in the northern half of California; nest in trees and rarely on cliffs; wintering habitat includes forest and woodland communities near water bodies (e.g., rivers, lakes), wetlands, flooded agricultural fields, open grasslands.	Nesting: February-September Wintering: October-March	Low potential to occur. The Study Area may provide marginal winter foraging habitat.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Golden eagle (*Aquila chrysaetos*)	–	–	BCC, CFP	Nesting habitat includes mountainous canyon land, rimrock terrain of open desert and grasslands, riparian, oak woodland/ savannah, and chaparral. Nesting occurs on cliff ledges, river banks, trees, and human-made structures (e.g., windmills, platforms, and transmission towers). Breeding occurs throughout California, except the immediate coast, Central Valley floor, Salton Sea region, and the Colorado River region, where they can be found during Winter.	Nest (February-August); winter CV (October-February)	Low potential to occur. The Study Area may provide marginal winter foraging habitat.
Nuttall's woodpecker *(Dryobates nuttallii)*	–	–	BCC	Resident from northern California south to Baja California. Nests in tree cavities in oak woodlands and riparian woodlands.	April-July	Absent. No suitable habitat in Study Area.
Prairie falcon (*Falco mexicanus*)	–	–	BCC, CDFW WL	Found in open habitat at all elevations up to 3,350 meters (Steenhof 2020). Nests on cliffs and bluffs in arid plains and steppes; In California, nesting throughout state except northwest corner, along immediate coast, and the Central Valley floor. Winters throughout California, in open habitats, such as grasslands in Central Valley.	March-July (breeding); September-February (wintering in Central Valley)	Low potential to occur. The Study Area may provide marginal winter foraging habitat.
Yellow rail *(Coturnicops noveboracensis)*	–	–	BCC, SSC	Found in sedge meadows, dense stands of bulrush, high marshlands dominated by sedges and grasses (in California, found in Lassen, Plumas, Siskiyou, Modoc counties, and San Francisco Bay and Tomales Bay regions)	May-September	Absent. No suitable habitat in Study Area.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Mountain plover (*Charadrius montanus*)	–	–	BCC, SSC	Breeds in the Great Plains/Midwestern US; winters in California, Arizona, Texas, and Mexico; wintering habitat in California includes tilled fields, heavily grazed open grassland, burned fields, and alfalfa fields.	September-March (wintering)	Low potential to occur. The Study Area may provide marginal winter foraging habitat.
Long-billed curlew (*Numenius americanus*)	–	–	BCC	Breeds east of the Cascades in Washington, Oregon, northeastern California (Siskiyou, Modoc, Lassen counties), east-central California (Inyo County), through Great Basin region into Great Plains. Winters in California, Texas, and Louisiana. Wintering habitat includes tidal mudflats and estuaries, wet pastures, sandy beaches, salt marsh, managed wetlands, evaporation ponds, sewage ponds, and grasslands.	September-March (wintering)	Potential to occur. The Study Area may provide winter foraging habitat for this species.
Short-billed dowitcher *(Limnodromus griseus)*	–	–	BCC	Nests in Canada, southern Alaska; winters in coastal California south to South America; wintering habitat includes coastal mudflats and brackish lagoons.	Migrant/Wintering: late-August-May	Absent. No suitable habitat in Study Area.
Willet (*Tringa semipalmata*)	–	–	BCC	Breeds locally in interior of western North America. In California, breeding range includes the Klamath Basin and Modoc Plateau and portions of Mono and possibly Inyo counties. Breeding habitat includes prairies, Breeds in wetlands and grasslands on semiarid plains; in uplands near brackish or saline wetlands; prefers temporary, seasonal, and alkali wetlands over semipermanent and permanent wetlands.	April-August	Absent. No suitable habitat in Study Area.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
California gull (nesting colony) *(Larus californicus)*	–	–	BCC, CDFW WL	Nesting occurs in the Great Basin, Great Plains, Mono Lake, and south San Francisco Bay. Breeding colonies located on islands on natural lakes, rivers, or reservoirs. Winters along Pacific Coast from southern British Columbia south to Baja California and Mexico. In California, winters along coast and inland (Central Valley, Salton Sea).	April-August	Absent. No suitable habitat in Study Area.
Black tern *(Chlidonias niger)*	–	–	BCC, SSC	Breeding range includes northeastern California, Central Valley, Great Plains of U.S. and Canada; winters in Central and South America; nesting habitat includes shallow freshwater marsh with emergent vegetation, prairie sloughs, lake margins, river islands, and cultivated rice fields.	May-August	Absent. No suitable breeding habitat in Study Area.
California condor *(Gymnogyps californianus)*	FE	CE	CFP	Nests on cliff ledges and rarely in large tree cavities; foraging occurs over vast expanses of coastline, grassland, meadows, savannahs.	Non-migratory; can be observed during any season; nesting: eggs (late January-May), nestlings to fledge (March-December)	Absent. No suitable habitat in Study Area.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Burrowing owl *(Athene cunicularia)*	–	–	BCC, SSC	Nests in burrows or burrow surrogates in open, treeless, areas within grassland, steppe, and desert biomes. Often with other burrowing mammals (e.g., prairie dogs, California ground squirrels). May also use human-made habitat such as agricultural fields, golf courses, cemeteries, roadside, airports, vacant urban lots, and fairgrounds.	February-August	Low potential to occur. While no suitable burrows or burrow surrogates were observed within the Study Area, the Study Area may provide foraging habitat for this species.
California horned lark (*Eremophila alpestris actia*)	–	–	CDFW WL	San Joaquin Valley, coast range from Sonoma County south to Baja California; grassland, agricultural.	March-July	Potential to occur. The Study Area may provide nesting habitat for this species.
Yellow-billed magpie (*Pica nuttallii*)	–	–	BCC	Endemic to California; found in the Central Valley and coast range south of San Francisco Bay and north of Los Angeles County; nesting habitat includes oak savannah with large in large expanses of open ground; also found in urban parklike settings.	April-June	Absent. No suitable nesting habitat in Study Area.
Loggerhead shrike (*Lanius ludovicianus*)	–	–	BCC, SSC	Found throughout California in open country with short vegetation, pastures, old orchards, grasslands, agricultural areas, open woodlands. Not found in heavily forested habitats.	March-July	Potential to occur. The Study Area may provide nesting habitat for this species.
Belding's savannah sparrow (*Passerculus sandwichensis beldingi*)	–	CE	BCC	Resident coastally from Point Conception south into Baja California; coastal salt marsh.	Year-round resident; nests March-August	Absent. No suitable habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Tricolored blackbird (*Agelaius tricolor*)	–	CT	BCC, SSC	Breeds locally west of Cascade-Sierra Nevada and southeastern deserts from Humboldt and Shasta counties south to San Bernardino, Riverside and San Diego counties. Central California, Sierra Nevada foothills and Central Valley, Siskiyou, Modoc and Lassen counties. Nests colonially in freshwater marsh, blackberry bramble, milk thistle, triticale fields, weedy (mustard, mallow) fields, giant cane, safflower, stinging nettles, tamarisk, riparian scrublands and forests, fiddleneck and fava bean fields.	March-August	Potential to occur. There is no nesting habitat in Study Area, but the species may nest in adjacent habitats and forage within the Study Area.
Bullock's oriole (*Icterus bullockii*)	–	–	BCC	Breeding habitat includes riparian and oak woodlands.	March-July	Absent. There is no nesting habitat in Study Area.
Yellow-headed blackbird (*Xanthocephalus xanthocephalus*)	-	CT	SSC	In California, breeds in the Great Basin region, along Colorado River south to Baja California, Salton Sea, Kern, Ventura, Riverside, San Diego and possibly Orange, Lake counties and locally in the Central Valley, Nests are constructed over deep water in emergent vegetation of prairie wetlands, quaking aspen parklands, mountain meadows, forest edges, large lakes.	April-July	Absent. No suitable nesting habitat in Study Area.
Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	–	–	BCC, SSC	Breeds in salt marshes of San Francisco Bay; winters San Francisco south along coast to San Diego County.	March-July	Absent. The Study Area is outside of the geographic range for this species and there is no suitable habitat.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Mammals						
Nelson's antelope squirrel (*Ammospermophilus nelsoni*)	–	CT	–	Dry, sparsely vegetated areas with loam soils in chenopod scrub habitats in the Western San Joaquin Valley from 200-1200 feet in elevation. Needs widely scattered shrubs, forbs, and grasses in broken terrain with gullies and washes (CDFW 2023a).	Any season	Absent. The Study Area is outside of the geographic range for this species.
Giant kangaroo rat (*Dipodomys ingens*)	FE	CE	–	Annual grasslands on the western side of the San Joaquin Valley. Marginal habitat in alkali scrub. Needs level terrain and sandy loam soils for burrowing.	Any season	Absent. The Study Area is outside of the geographic range for this species.
Fresno kangaroo rat *(Dipodomys nitratoides exilis)*	FE	CE	–	Elevated grassy patches on alkali plains or in grassy terrain with scattered alkali patches. Friable soils for burrow digging and annual and native forbs and grasses for foraging are necessary habitat components. Distribution is limited to the flat San Joaquin Valley Floor from Merced County to the northern border of Kings County (USFWS 2010).	Any season	Absent. The Study Area is outside of the geographic range for this species.
San Joaquin kit fox *(Vulpes macrotis mutica)*	FE	CT	–	Grasslands, sagebrush scrub.	April 15 - July 15, September 1 - December 1	Low potential to occur. The alkaline grassland within the Study Area may provide marginal foraging and movement habitat for this species. No potential dens observed.

Table 2. Special-Status Species Evaluated for the Los Banos Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
American badger *(Taxidea taxus)*	–	–	SSC	Drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Any season	Low potential to occur. The alkaline grassland within the Study Area may provide marginal foraging and movement habitat for this species. No potential dens observed.

Status Codes:

ESA	Federal Endangered Species Act (ESA)
CESA	California Endangered Species Act (CESA)
FE	ESA listed, Endangered.
FT	ESA listed, Threatened.
FP	Proposed for ESA listing
FC	Candidate for ESA listing as Threatened or Endangered
BCC	USFWS Bird of Conservation Concern
CT	CESA- or NPPA-listed, Threatened.
CE	CESA or NPPA listed, Endangered.
CC	Candidate for CESA listing as Threatened or Endangered
CFP	California Fish and Game Code Fully Protected Species (§ 3511-birds, § 4700-mammals, §5050-reptiles/amphibians).
CDFW WL	CDFW Watch List
SSC	CDFW Species of Special Concern (CDFW, updated July 2017).
1B	CRPR/Rare or Endangered in California and elsewhere.
2B	CRPR/Plants rare, threatened, or endangered in California but more common elsewhere
3	CRPR/Plants About Which More Information is Needed – A Review List.
4	CRPR/Plants of Limited Distribution – A Watch List.
0.1	Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2	Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3	Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
Delisted	Formally Delisted (delisted species are monitored for 5 years).

Note: CNDDB = California Natural Diversity Database; CV = Central Valley; DPS = Distinct Population Segment

4.2.1 Plants

A total of 32 special-status plant species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Table 2). Of those, 15 species are considered to be absent from the Study Area due to the lack of suitable habitat (Table 2). No further discussion of those species is provided in this assessment. Brief descriptions of the remaining 17 species that have low potential to occur within the Study Area are presented below.

Alkali Milk-vetch

Alkali milk-vetch (*Astragalus tener* var. *tener*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in alkaline areas of playas, adobe clay valley and foothill grasslands, and vernal pools. Alkali milk-vetch

blooms from March through June and is known to occur at elevations ranging from 5 to 195 feet above MSL. Alkali milk-vetch is endemic to California; the current range of this species includes Alameda, Contra Costa, Merced, Monterey, Napa, San Benito, Santa Clara, San Francisco, San Joaquin, Solano, Sonoma, Stanislaus, and Yolo counties but it is likely extirpated from Contra Costa, Monterey, San Benito, Santa Clara, San Francisco, San Joaquin, Sonoma, and Stanislaus counties (CNPS 2023a).

There is one CNDDB occurrence of alkali milk-vetch within 5 miles of the Study Area (CDFW 2023a). The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Alkali milk-vetch has low potential to occur within the Study Area.

Heartscale

Heartscale (*Atriplex cordulata* var. *cordulata*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual found within alkaline or saline sandy valley and foothill grasslands, meadows and seeps, and chenopod scrub communities. Heartscale flowers from April through October and is known to occur at elevations ranging from sea level to 1,835 feet above MSL. Heartscale is endemic to California; the current range of this species in California includes Alameda, Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Madera, Merced, San Joaquin, Solano, Stanislaus, Tulare, and Yolo counties but is considered extirpated from San Joaquin, Stanislaus, and Yolo counties (CNPS 2023a).

There are five CNDDB occurrences of heartscale within 5 miles of the Study Area, one of which overlaps with the Study Area (Occurrence 27; CDFW 2023a). However, the occurrence that overlaps the Study Area is a non-specific bounded area and is described in a location that does not resemble the Study Area (CDFW 2023a). Therefore, it is not likely that the occurrence record is attributed to the Study Area. The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Heartscale has low potential to occur within the Study Area.

Crownscale

Crownscale (*Atriplex coronata* var. *coronata*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous annual that occurs in alkaline and often clay soils within chenopod scrub, valley and foothill grassland, and vernal pools. Crownscale blooms from March through October and is known to occur at elevations ranging from 5 to 1,935 feet above MSL. Crownscale is endemic to California; the current range of this species includes Alameda, Contra Costa, Fresno, Kings, Kern, Merced, Monterey, San Benito, San Luis Obispo, Solano, Stanislaus, and Tulare counties (CNPS 2023a).

There are no CNDDB occurrences of crownscale within “Los Banos, California” 7.5-minute quadrangle (CDFW 2023b). The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Crownscale has low potential to occur within the Study Area.

Lost Hills Crownscale

Lost Hills crownscale (*Atriplex coronata* var. *vallicola*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. Alkaline soils in chenopod scrub, valley and foothill grassland, and alkaline vernal pools are potential habitat for this plant species (CNPS 2023a). Lost Hills crownscale differs from heartscale primarily in the shape and size of the fruiting bracts. Lost Hills crownscale is an herbaceous annual that flowers from April through September and is known to occur at elevations ranging from 165 feet to 2,085 feet above MSL (CNPS 2023a). Lost Hills crownscale is endemic to California; the current range of this species includes Fresno, Kern, Kings, Merced, Monterey, San Benito, San Luis Obispo, and Tulare counties (CNPS 2023a).

There are no CNDDB occurrences of Lost Hills crownscale within 5 miles of the Study Area (CDFW 2023a). The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Lost Hills crownscale has low potential to occur within the Study Area.

Brittlescale

Brittlescale (*Atriplex depressa*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in alkaline and clay soils within chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools. Brittlescale blooms from April through October and is known to occur at elevations ranging from 5 to 1,050 feet above MSL. Brittlescale is endemic to California; the current range of this species includes Alameda, Colusa, Contra Costa, Fresno, Glenn, Kings, Merced, Solano, Tulare, and Yolo counties (CNPS 2023a).

There are no CNDDB occurrences of brittlescale within 5 miles of the Study Area (CDFW 2023a). The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Brittlescale has low potential to occur within the Study Area.

Lesser Saltscale

Lesser saltscale (*Atriplex minuscula*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in alkaline and sandy soils in chenopod scrub, playas, and valley and foothill grassland. Lesser saltscale blooms from May through October, and is known to occur from 50 to 655 feet above MSL. Lesser saltscale is endemic to California; the current range of this species includes Alameda, Butte, Fresno, Kern, Madera, Merced, Stanislaus, and Tulare counties. It is likely extirpated from Stanislaus County (CNPS 2023a).

There is one CNDDB occurrence of lesser saltscale within 5 miles of the Study Area (CDFW 2023a). The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Lesser saltscale has low potential to occur within the Study Area.

Parry's Rough Tarplant

Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is an herbaceous annual that occurs

in vernal pools and valley and foothill grassland with alkaline and vernally mesic soils, seeps, and sometimes roadsides. Parry's rough tarplant blooms from May through October and is known to occur at elevations ranging from sea level to 330 feet above MSL. Parry's rough tarplant is endemic to California; its current range includes Butte, Colusa, Glenn, Lake, Merced, Modoc, Sacramento, San Joaquin, Solano, Stanislaus, and Yolo counties (CNPS 2023a).

There is at least one CNDDB occurrence of Parry's rough tarplant within the "Los Banos, California" 7.5-minute quadrangle (CDFW 2023b). The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Parry's rough tarplant has low potential to occur within the Study Area.

Hispid Salty Bird's-Beak

Hispid salty bird's-beak (*Chloropyron molle* ssp. *hispidum*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. This species is an herbaceous, hemiparasite annual that occurs on alkaline soils in meadows and seeps, playas, and valley and foothill grasslands. Hispid salty bird's-beak blooms from June through September and is known to occur at elevations ranging from 5 to 510 feet above MSL. Hispid salty bird's-beak is endemic to California; the current range of this species includes Alameda, Kern, Merced, Placer, and Solano counties (CNPS 2023a).

There are 12 CNDDB occurrences of hispid salty bird's-beak within 5 miles of the Study Area (CDFW 2023a). The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Hispid salty bird's-beak has low potential to occur within the Study Area.

Recurved Larkspur

Recurved larkspur (*Delphinium recurvatum*) is not listed pursuant to either the federal or California ESAs, but is designated a CRPR 1B.2 species. This species is an herbaceous perennial that occurs in alkaline substrates in chenopod scrub, cismontane woodland, and valley and foothill grasslands. Recurved larkspur blooms from March through June and is known to occur at elevations ranging from 10 to 2,590 feet above MSL. Recurved larkspur is endemic to California; the current range of this species includes Alameda, Butte, Contra Costa, Fresno, Kern, Kings, Madera, Merced, Monterey, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Solano, Sutter, Tulare, and Yuba counties. The species is presumed extirpated from Butte County (CNPS 2023a).

There are no CNDDB occurrences of recurved larkspur within 5 miles of the Study Area (CDFW 2023a). The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Recurved larkspur has low potential to occur within the Study Area.

Idria Buckwheat

Idria buckwheat (*Eriogonum vestitum*) is not listed pursuant to either the federal or California ESAs, but is designated a CRPR 4.3 species. This species is an herbaceous annual that occurs in valley and foothill grasslands. Idria buckwheat blooms from April through August and is known to occur at elevations ranging from 770 to 2,955 feet above MSL. Idria buckwheat is endemic to California; the current range of this species includes Fresno, Merced, and San Benito counties.

There are no CNDDB occurrences of Idria buckwheat within "Los Banos, California" 7.5-minute quadrangle (CDFW 2023b). The alkaline grassland within the Study Area may provide marginal habitat; however, this species was not observed during the special-status plant survey. Idria buckwheat has low potential to occur within the Study Area.

Spiny-Sepaled Button-Celery

Spiny-sepaled button-celery (*Eryngium spinosepalum*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual/perennial that occurs in valley and foothill grassland and vernal pools. Spiny-sepaled button-celery blooms from April through June and is known to occur at elevations ranging from 260 to 3,200 feet above MSL. Spiny-sepaled button-celery is endemic to California; the current range of this species includes Calaveras, Contra Costa, Fresno, Kern, Madera, Mariposa, Merced, San Luis Obispo, Stanislaus, Tulare, and Tuolumne counties (CNPS 2023a).

There is one CNDDB occurrence of spiny-sepaled button-celery within 5 miles of the Study Area (CDFW 2023a). The ditch within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Spiny-sepaled button-celery has low potential to occur within the Study Area.

Coulter's Goldfields

Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.1 species. This species is an herbaceous annual that occurs in coastal salt marshes and swamps, playas, and vernal pools. Coulter's goldfields blooms from February through June and is known to occur at elevations ranging from 5 to 4,005 feet above MSL. The current range of this species in California includes Colusa, Kern, Los Angeles, Merced, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, Solano, Tehama, Tulare, Ventura, and Yolo counties; however, it is presumed extirpated in Kern, Los Angeles, and San Bernardino counties and possibly extirpated in Tulare County (CNPS 2023a).

There are no CNDDB occurrences of Coulter's goldfields within 5 miles of the Study Area (CDFW 2023a). The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Coulter's goldfields has low potential to occur within the Study Area.

Little Mousetail

Little mousetail (*Myosurus minimus* ssp. *apus*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 3.1 species. This species is an herbaceous annual that occurs in mesic areas (USACE 2018) of valley and foothill grassland and alkaline vernal pools (CNPS 2023a). Little mousetail blooms between March and June and is known to occur at elevations ranging from 65 to 2,100 feet above MSL. The current range for little mousetail in California includes Colusa, Contra Costa, Lake, Merced, Riverside, San Bernardino, San Diego, Solano, Tulare, and Yolo counties (CNPS 2023a).

There are no CNDDB occurrences of little mousetail within 5 miles of the Study Area (CDFW 2023a). The ditch within the Study Area may provide marginal habitat; however, this species was not observed during the special-status plant survey. Little mousetail has low potential to occur within the Study Area.

Prostrate Vernal Pool Navarretia

Prostrate vernal pool navarretia (*Navarretia prostrata*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in mesic soils within coastal scrub, meadows and seeps, alkaline soils in valley and foothill grasslands, and vernal pools. Prostrate vernal pool navarretia blooms from April through July and is known to occur at elevations ranging from 10 to 3,970 feet above MSL. Prostrate vernal pool navarretia is endemic to California; the current range of this species includes Alameda, Fresno, Los Angeles, Merced, Monterey, Orange, Riverside, San Benito, San Bernardino, San Diego, and San Luis Obispo counties; however, it is possibly extirpated in San Bernardino County (CNPS 2023a).

There are four CNDDB occurrences of prostrate vernal pool navarretia within 5 miles of the Study Area (CDFW 2023a). The alkaline grassland within the Study Area may provide marginal habitat; however, this species was not observed during the special-status plant survey. Prostrate vernal pool navarretia has low potential to occur within the Study Area.

California Alkali Grass

California alkali grass (*Puccinellia simplex*) is not listed pursuant to either the federal or California ESAs, and is designated as a CRPR 1B.2 species. This species is an herbaceous annual that occurs in alkaline, vernally mesic chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools along sinks, flats, and lake margins. California alkali grass blooms between March and May and is known to occur at elevations ranging from 5 to 3,050 feet above MSL. The current range for this species in California includes Alameda, Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Kings, Lake, Los Angeles, Madera, Merced, Napa, San Bernardino, San Luis Obispo, Santa Clara, Santa Cruz, Solano, Stanislaus, Tulare, and Yolo counties; however, it is presumed extirpated in Kings County (CNPS 2023a).

There is one CNDDB occurrence of California alkali grass within 5 miles of the Study Area, and it overlaps with the Study Area (Occurrence 36; CDFW 2023a). However, the occurrence is a non-specific bounded area from a 1978 collection described in a location that does not resemble the Study Area. Therefore, it is not likely that the collection was made within the Study Area. The alkaline grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. California alkali grass has low potential to occur within the Study Area.

Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is not listed pursuant to the federal or California ESAs, but is designated as a CRPR 1B.2 species. This species is a perennial rhizomatous herb that occurs in shallow, freshwater marshes and swamps. Sanford's arrowhead blooms from May through October, and is known to occur at elevations ranging from sea level to 2,135 feet above MSL. Sanford's arrowhead is endemic to California; the current range of this species includes Butte, Del Norte, El Dorado, Fresno, Kings, Los Angeles, Madera, Marin, Mariposa, Merced, Napa, Orange, Sacramento, San Bernardino, San Joaquin, San Mateo, Santa Clara, Shasta, Solano, Sutter, Tehama, Tulare, Ventura, and Yuba counties; it is believed to be extirpated from Ventura County (CNPS 2023a).

There is one CNDDB occurrence of Sanford's arrowhead within 5 miles of the Study Area (CDFW 2023a). The ditch within the Study Area may provide marginal habitat; however, this species was not observed

during the special-status plant survey. Sanford's arrowhead has low potential to occur within the Study Area.

Wright's Trichocoronis

Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 2B.1 species. This species is an herbaceous annual that occurs on alkaline soils in meadows and seeps, marshes and swamps, riparian forest, and vernal pools. Wright's trichocoronis blooms from May through September, and is known to occur at elevations ranging from 15 to 1,425 feet above MSL. The current range for this species in California includes Colusa, Merced, Riverside, San Joaquin, and Sutter counties, but it is presumed extirpated from Colusa and San Joaquin counties (CNPS 2023a).

There is one CNDDB occurrence of Wright's trichocoronis within 5 miles of the Study Area (CDFW 2023a). The ditch within the Study Area may provide marginal habitat; however, this species was not observed during the special-status plant survey. Wright's trichocoronis has low potential to occur within the Study Area.

4.2.2 Invertebrates

Seven special-status invertebrate species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Table 2). Of those, 6 species are considered to be absent from the Study Area due to the lack of suitable habitat and/or because it is outside of the known geographic range for the species (Table 2). No further discussion of those species is provided in this assessment. A brief description of the remaining species that has low potential to occur within the Study Area is presented below.

Crotch Bumble Bee

The Crotch bumble bee (*Bombus crotchii*) is a candidate for listing under the State ESA. This species is associated with open grassland and scrub habitats and occurs primarily in California, including the Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of southwestern California (Williams et al. 2014). Crotch bumble bee primarily nest underground, and may occupy cavities in a variety of substrates including: thatched grasses, abandoned rodent burrows or bird nests, brush piles, rock piles, and fallen logs (Alford 1975; Free and Colin Gasking Butler 1959; Fussell and Corbet 1992; ; Lye et al. 2012; Sladen 1912; Williams et al. 2014) and have also been found nesting in manmade structures such as walls, rubble or abandoned furniture (Fussell and Corbet 1992, Williams et al. 2014). Bumble bee nests are annual and conclude with deaths of the queen, workers, and drones at the end of the season with only the mated gyne (future queen) surviving the winter (overwintering) in order to emerge the following spring to start the next year's colony. Similar to other bumble bee species, Crotch bumble bee is a generalist forager and reportedly visits a variety of flowering plants including *Asclepias, Chaenactis, Lupinus, Medicago, Phacelia,* and *Salvia*.

There are no CNDDB occurrences of Crotch bumble bee within 5 miles of the Study Area (CDFW 2023a). However, the alkaline grassland within the Study Area may provide marginally suitable foraging, nesting, and overwintering habitat for this species. Crotch bumble bee has low potential to occur within the Study Area. Fish

Two special-status fish species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Table 2). However, upon further analysis and after the site visit, both species are considered to be absent from the Study Area due to the lack of suitable habitat and/or because it is outside of the known geographic range for these species. No further discussion of special-status fish is provided within this assessment.

4.2.3 Amphibians

Five special-status amphibian species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Table 2). Of those, three species are considered to be absent from the Study Area due to the lack of suitable habitat and/or because it is outside of the known geographic range for the species (Table 2). No further discussion of those species is provided in this assessment. Brief descriptions of the remaining two species that have low potential to occur within the Study Area are presented below.

California Tiger Salamander

The California tiger salamander (*Ambystoma californiense*) is listed as threatened pursuant to the federal and California ESAs, and is designated as a CDFW SSC. The California tiger salamander is a member of the family Ambystomatidae, the mole salamanders, which are named for their highly fossorial lifestyle (Halliday and Adler 1986). This salamander is generally terrestrial and most commonly found in annual grasslands, but it also occurs in oak woodlands (Stebbins 2003). Necessary habitat components include upland underground retreats and breeding ponds, which are used seasonally. Tiger salamanders spend most of their adult life within underground refugia such as burrows of California ground squirrel (*Otospermophilus beecheyi*). They emerge from retreats on humid or rainy nights to forage and make seasonal migratory movements to water. Breeding sites are generally ponded, ephemeral lentic features and include vernal pools, seasonal wetlands, and slow-moving fishless streams. California tiger salamanders breed in permanently inundated manufactured ponds such as stock ponds and small reservoirs if predators (e.g., fish, crayfish, bullfrogs [*Lithobates catesbeianus*]) are absent.

Adult California tiger salamanders are generally crepuscular or nocturnal and can migrate distances up to 1.6 kilometers from underground refugia to breeding ponds (USFWS 2004). Breeding and egg-laying occurs between November and April following rainfall events (Petranka 1998). Eggs are laid singly or in small clumps on submerged or emergent vegetation or debris in shallow water (Jennings and Hayes 1994). Adult males may remain at breeding ponds for a few days following reproduction, though some individuals may stay for several weeks. Females typically leave breeding sites soon after egg laying. Larvae are completely aquatic and have external gills. They are carnivorous and feed upon aquatic invertebrates and the larvae of other amphibians. Tiger salamander larvae transform into juveniles during late spring or early summer, usually by July. The average larval period is four to five months (Petranka 1998).

There is one CNDDB occurrence of California tiger salamander within 5 miles of the Study Area (CDFW 2023a). The alkaline grassland within the Study Area may provide suitable upland habitat for this species, and there is aquatic habitat in the vicinity; however, there are no known occurrences nearby. California tiger salamander has low potential to occur within the Study Area.

Western Spadefoot

The western spadefoot (*Spea hammondii*) is not listed pursuant to either the federal or California ESAs; however, it is designated as a CDFW SSC. Necessary habitat components of the western spadefoot include loose, friable soils in which to burrow in upland habitats and breeding ponds. Breeding sites include temporary rain pools, such as vernal pools and seasonal wetlands, or pools within portions of intermittent drainages (Jennings and Hayes 1994). Spadefoots spend most of their adult life within underground burrows or other suitable refugia, such as rodent burrows. In California, western spadefoot toads are known to occur from the Redding area in Shasta County southward to northwestern Baja California, at elevations below 4,475 feet (Jennings and Hayes 1994).

There are two CNDDB occurrences of western spadefoot within 5 miles of the Study Area (CDFW 2023a). The alkaline grassland within the Study Area may provide suitable upland habitat for this species, and there is aquatic habitat in the vicinity; however, there are no known recent occurrences nearby. Western spadefoot has low potential to occur within the Study Area.

4.2.4 Reptiles

Five special-status reptile species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Table 2). Of those, two species are considered to be absent from the Study Area due to the lack of suitable habitat and/or because it is outside of the known geographic range for the species (Table 2). No further discussion of those species is provided in this assessment. Brief descriptions of the remaining two species that have low potential to occur within the Study Area are presented below.

Northwestern Pond Turtle

The northwestern pond turtle is proposed for listing as Threatened under the Federal ESA and is designated as a CDFW SSC. Northwestern pond turtles occur in a variety of fresh and brackish water habitats including marshes, lakes, ponds, and slow-moving streams (Jennings and Hayes 1994). This species is primarily aquatic; however, they can leave aquatic habitats to nest, disperse between wetlands, and to overwinter (Jennings and Hayes 1994). Deep, still water with abundant emergent woody debris, overhanging vegetation, and rock outcrops is optimal for basking and thermoregulation. Although adults are habitat generalists, hatchlings and juveniles require shallow edgewater with relatively dense submergent or short emergent vegetation in which to forage. Northwestern pond turtles are typically active between March and November. Mating generally occurs during late April and early May and eggs are deposited between late April and early August (Jennings and Hayes 1994). Eggs are deposited within excavated nests in upland areas, in substrates having high clay or silt fractions (Jennings and Hayes 1994). The majority of nesting sites are located within 650 feet (200 meters) of aquatic sites; however, nests have been documented as far as 1,310 feet (400 meters) from aquatic habitat.

There are 11 CNDDB occurrences of northwestern pond turtle within 5 miles of the Study Area (CDFW 2023a). The ditch within the Study Area may provide aquatic habitat and the alkaline grassland may provide upland habitat for this species. Northwestern pond turtle has potential to occur within the Study Area.

Northern California Legless Lizard

The Northern California legless lizard (*Anniella pulchra*) is not listed pursuant to either the federal or California ESAs, but it is designated as a CDFW SSC. The Northern California legless lizard is one of five species of legless lizard in California (Papenfuss and Parham 2013). Although CDFW only recognizes two subspecies (*A. p. pulchra* and *A. p. nigra*), all California legless lizards are considered SSC.

Although lacking legs, the legless lizards (*Anniella*) are decidedly lizards as shown by their eyelids, which are lacking in all snakes. Like snakes, however, these species lack external ear openings. The Northern California legless lizard has the largest range of all California *Anniella,* ranging from sites in and around Antioch in the East Bay, south to northern San Luis Obispo County. Two disjunct segments of this species range occur: one in the eastern foothills of Tulare and Fresno counties, and another at the western edge of the Antelope Valley in Kern and Los Angeles counties. A large area of undetermined species status connects those populations to areas occupied by Southern Sierra legless lizard (*A. campi*), Bakersfield legless lizard (*A. grinnelli*), Temblor legless lizard (*A. alexanderae*), and Southern California legless lizard (*A. stebbinsi*). Although not recognized by taxonomists, a melanistic form of *A. pulchra* that exists in Monterey Bay is considered to be the subspecies *A. p. nigra* by CDFW.

There are no CNDDB occurrences of Northern California legless lizard within 5 miles of the Study Area (CDFW 2023a). However, the alkaline grassland within the Study Area may provide marginal habitat for this species. Northern California legless lizard has low potential to occur within the Study Area.

Giant Garter Snake

The giant garter snake (*Thamnophis gigas*) is listed as threatened pursuant to the federal and the California ESAs. The giant garter snake is a California endemic species, only occurring in the Sacramento and San Joaquin valleys from Butte County south to Kern County (Rossman et al. 1996). It is the largest garter snake species, attaining a maximum length of 165 centimeters (65 inches) (Stebbins and McGinnis 2012). Like most Natricines, these snakes are sexually dimorphic with females being both longer and proportionally heavier than males (Wylie et al. 2010).

The giant garter snake is semi-aquatic and occurs in sloughs, ponds, low-gradient streams, and irrigation/drainage canals (USFWS 1999). It is an active, generally diurnal predator, which hunts by sight or olfaction (Ernst and Ernst 2003) and its diet is almost entirely aquatic. Rice agriculture now provides habitat and supports populations when the seasonally flooded fields and associated water conveyance systems are managed for the species (USFWS 1999), and is one reason giant garter snake populations in the Sacramento Valley are more robust than those further south (Halstead et al. 2010). Historically, they depended on native prey such as California red-legged frog (*Rana draytonii*), Sacramento blackfish (*Orthodon macrolepis*), and thick-tailed chub (*Gila crassicauda*), species that have undergone recent major declines or extirpations (Rossman et al. 1996). Diet is now dominated by introduced species such as mosquitofish, American bullfrogs (*Lithobates catesbeianus*), and common carp (*Cyprinus carpio*) (Rossman et al. 1996).

Both the distribution and abundance of the giant garter snake have been reduced from historic levels. Flood control activities and the drainage of marshes and other wetlands for agriculture have led to extirpation in the Buena Vista, Tulare, and Kern lakebeds in the southern one-third of its range (Hansen and Brode 1980). Most of the San Joaquin Valley has undergone similar wetland modification together

with upstream watershed projects, urban development, and the proliferation of introduced and subsidized aquatic predators (USFWS 2012). As a result, the giant garter snake in the central and southern San Joaquin Valley is extremely rare and population trends appear to be declining (Hansen 2008). At locations in the Sacramento Valley, the garter snake is generally more numerous and habitat quality appears to be better, although trends in abundance are unclear (USFWS 2012).

There are 11 CNDDB occurrences of giant garter snake within 5 miles of the Study Area (CDFW 2023a). Giant garter snake may use the ditch within the Study Area as foraging habitat and may move through upland habitats within 200 feet of the ditch. While it is possible, it is not expected that giant garter snakes would utilize upland habitats further than 200 feet from aquatic habitat. Giant garter snake has potential to occur within the Study Area.

4.2.5 Birds

A total of 27 special-status bird species were identified as having the potential to occur within the Study Area based on the literature review (Table 2). Of those, 15 species were determined to be absent from the Study Area due to the lack of suitable habitat and/or due to the Study Area being outside of the known geographic range of the species. No further discussion of those species is provided in this assessment. Brief descriptions of the remaining 12 species that have the potential to occur within the Study Area are presented below.

Northern Harrier

The northern harrier (*Circus hudsonius*) is not listed pursuant to either the federal or California ESAs, but is designated as a CDFW SSC. This species is known to nest within the Central Valley, along the Pacific Coast, and in northeastern California. The northern harrier is a ground nesting species, and typically nests in emergent wetland/marsh, open grasslands, or savannah communities usually in areas with dense vegetation (Smith et al. 2020). Foraging occurs within a variety of open environments such as marshes, agricultural fields, and grasslands. Nesting occurs during April through September.

There are four CNDDB occurrences of northern harrier within 5 miles of the Study Area (CDFW 2023a). The alkaline grassland within the Study Area may provide nesting habitat for this species. Northern harrier has potential to occur within the Study Area.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) has been delisted under the federal ESA but remains listed as Endangered under the California ESA. It is fully protected pursuant to the California Fish and Game Code Section 3511 and the federal Bald and Golden Eagle Protection Act. Bald eagles breed at lower elevations in the northern Sierra Nevada and North Coast ranges. Bald eagles breed in forested areas adjacent to large waterbodies (Buehler 2022). Tree species used for nesting are quite variable and includes conifers (dominant where available), oaks, hickories, cottonwoods and aspens (Buehler 2022). Nest trees are generally the largest tree available in a suitable area (Buehler 2022). Breeding activity occurs from late-February through September, with peaks in activity from March to June. Wintering habitat is usually found in close proximity to aquatic habitats with open water for foraging and absent of substantial human disturbance (Buehler 2022).

There are no CNDDB occurrences of bald eagle within 5 miles of the Study Area (CDFW 2023a). There is no nesting habitat or marginal foraging habitat present in the Study Area. However, the wildlife area surrounding the Study Area is likely to support wintering bald eagles. Bald eagle has low potential to occur within the Study Area.

Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*) is not listed pursuant to the federal ESA but is listed as threatened pursuant to the California ESA, and is designated a USFWS BCC. This species nests in North America (Canada, western U.S., and Mexico) and typically winters from South America north to Mexico. However, a small population has been observed wintering in the Sacramento-San Joaquin River Delta (Bechard et al. 2020). In California, the nesting season for Swainson's hawk ranges from mid-March to late August.

Swainson's hawks nest within tall trees in a variety of wooded communities including riparian, oak woodland, roadside landscape corridors, urban areas, and agricultural areas, among others. Foraging habitat includes open grassland, savannah, low-cover row crop fields, and livestock pastures. In the Central Valley, Swainson's hawks typically feed on a combination of California vole (*Microtus californicus*), California ground squirrel, ring-necked pheasant (*Phasianus colchicus*), many passerine birds, and grasshoppers (*Melanoplus* species). Swainson's hawks are opportunistic foragers and will readily forage in association with agricultural mowing, harvesting, disking, and irrigating (Estep 1989). The removal of vegetative cover by such farming activities results in more readily available prey items for this species.

There are 45 CNDDB occurrences of Swainson's hawk within 5 miles of the Study Area (CDFW 2023a), and a pair of Swainson's hawks were observed setting up a nest for the 2021 nesting season within 0.25 mile of the Study Area (L. Sparks, personal communication, March 17, 2021). There is no suitable nesting habitat within the Study Area; however, Swainson's hawk may forage within the alkaline grassland of the Study Area. Swainson's hawk has potential to occur within the Study Area.

Ferruginous Hawk

Ferruginous hawks (*Buteo regalis*) are not listed pursuant to either the California or federal ESAs. However, they are a CDFW "watch list" species and USFWS BCC. This species typically occurs in open environments and nests from Oregon to Canada, though nesting has been documented in Lassen County, California (Small 1994). For the remainder of the state, including the Central Valley, ferruginous hawk occurrences are restricted to the non-breeding season (approximately September through March) (Small 1994). Wintering habitat includes a variety of open communities including annual grasslands, agricultural areas, deserts, and savannahs, where there is an abundance of ground squirrels, prairie dogs, lagomorphs, or pocket gophers (Ng et al. 2020).

There are no CNDDB occurrences of ferruginous hawk within 5 miles of the Study Area (CDFW 2023a) and ferruginous hawks do not nest in the region. However, the alkaline grassland within the Study Area may provide marginal winter foraging habitat for this species. Ferruginous hawk has low potential to occur within the Study Area.

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is not listed pursuant to either the California or federal ESAs. However, it is fully protected according to Section 3511 of the Fish and Game Code of California and the federal Bald and Golden Eagle Protection Act. Golden eagles generally nest on cliff ledges and/or large lone trees in rolling to mountainous terrain. Golden eagles nest throughout California except the Central Valley, the immediate coast, and portions of southeastern California (Kochert et al. 2020). Occurrences within the Central Valley are usually dispersing post-breeding birds, non-breeding sub-adults, or migrants. Foraging habitat includes open grassland and savannah. Nesting occurs during February through August.

There are no CNDDB occurrences of golden eagle within 5 miles of the Study Area (CDFW 2023a) and golden eagles do not nest in the region. However, the alkaline grassland within the Study Area may provide marginal winter foraging habitat for this species. Golden eagle has low potential to occur within the Study Area.

Prairie Falcon

Prairie falcons (*Falco mexicanus*) are not listed pursuant to either the California or federal ESAs; however, they are considered to be a CDFW "watch list" species and a USFWS BCC. The breeding distribution of prairie falcons includes the entire state except the extreme northwestern part of the state and coastal areas (Steenhof 2020). Nesting occurs during March through July. However, prairie falcons have not been documented to nest in the Central Valley but may occur as migrants and wintering birds. They nest primarily on shelves, ledges, or potholes in cliffs, but may also use trees, power line structures, buildings, mine highwalls, caves, or stone quarries (Steenhof 2020). Breeding habitat includes open habitat at all elevations up to 3,350 meters in arid plains and stepped, wherever cliffs or bluffs are present (Steenhof 2020).

There are no CNDDB occurrences of prairie falcon within 5 miles of the Study Area (CDFW 2023a) and prairie falcons do not nest in the region. However, the alkaline grassland within the Study Area may provide marginal winter foraging habitat for this species. Prairie falcon has low potential to occur within the Study Area.

Mountain Plover

The mountain plover (*Charadrius montanus*) is not listed pursuant to either the California or federal ESAs; however, it is designated as a BCC by the USFWS and an SSC by the CDFW. This species breeding range includes Montana, eastern Colorado, Wyoming, New Mexico, Texas, and Oklahoma; and the wintering range extends from north-central California to Mexico (Knopf and Wunder 2020). Within their wintering (September through March) range, which consists primarily of the Sacramento, San Joaquin, and Imperial valleys, mountain plovers can be found in plowed fields, heavily grazed annual grassland, and burned fields (Knopf and Rupert 1995; Knopf and Wunder 2020). Mountain plovers do not nest in California but may occasionally forage within grassland communities (or plowed agricultural fields) during winter.

There are no CNDDB occurrences of mountain plover within 5 miles of the Study Area (CDFW 2023a) and mountain plovers do not nest in the region. However, the alkaline grassland within the Study Area may

provide marginal winter foraging habitat for this species. Mountain plover has low potential to occur within the Study Area.

Long-billed Curlew

The long-billed curlew (*Numenius americanus*) is not listed in accordance with either the California or federal ESAs but is designated as a USFWS BCC and a CDFW "watch list" species. The breeding range of this species includes the Great Plains, Great Basin, intermontane valleys of the western U.S., and southwestern Canada (Dugger and Dugger 2020). In the U.S., their wintering range includes California, Louisiana, and Texas. Winter foraging habitat includes rice fields (flooded and unflooded), managed wetlands, evaporation ponds, sewage ponds, and grasslands (Dugger and Dugger 2020). Long-billed curlew do not nest in the region but may occasionally forage within grassland communities (or wetlands, agricultural fields) during winter.

There is at least one CNDDB occurrence of long-billed curlew within the "Los Banos, California" 7.5-minute quadrangle (CDFW 2023b). Long-billed curlew does not nest in the region. However, the alkaline grassland within the Study Area may provide winter foraging habitat for this species. Long-billed curlew has potential to occur within the Study Area.

Burrowing Owl

The burrowing owl (*Athene cunicularia*) is not listed pursuant to either the federal or California ESAs, but it is designated as a USFWS BCC and a CDFW SSC. Burrowing owls inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. They can also inhabit developed areas such as golf courses, cemeteries, roadsides within cities, airports, vacant lots in residential areas, school campuses, and fairgrounds (Poulin et al. 2020). This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel but may also use manufactured structures such as concrete culverts or pipes; concrete, asphalt, or wood debris piles; or openings beneath concrete or asphalt pavement (California Department of Fish and Game [CDFG] 2012). The breeding season typically occurs between February 1 and August 31 (California Burrowing Owl Consortium 1993; CDFG 2012).

There are no CNDDB occurrences of burrowing owl within 5 miles of the Study Area (CDFW 2023a). No sign of burrowing mammals, burrows, or burrow surrogates were observed within the Study Area. However, there is a chance that burrowing owl may nest in adjacent habitats and forage within the Study Area. Burrowing owl has low potential to occur within the Study Area.

California Horned Lark

The California horned lark (*Eremophila alpestris*) is not listed pursuant to either the California or federal ESAs; but is considered a CDFW "watch list" species. The California horned lark is widely distributed throughout North America with 21 recognized subspecies (American Ornithologists' Union 1957). The California horned lark is one of approximately nine subspecies that breeds and/or winters in California, and is found in the Coast Range and southern San Joaquin Valley south into northern Baja California (Beason 2020). The California horned lark is resident and non-migratory. They are found in grasslands and other open habitats with sparse vegetation. Nests are grass-lined and built on the ground. Breeding season includes March through July, with a peak of activity in May.

There are no CNDDB occurrences of California horned lark within 5 miles of the Study Area (CDFW 2023a). However, the alkaline grassland within the Study Area may provide nesting habitat for this species. California horned lark has potential to occur within the Study Area.

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is not listed pursuant to either the California or federal ESAs; but is considered a BCC by the USFWS and an SSC by the CDFW. Loggerhead shrikes nest throughout California except the northwestern corner, montane forests, and high deserts (Small 1994). Loggerhead shrikes nest in small trees and shrubs in open country with short vegetation such as pastures, old orchards, mowed roadsides, cemeteries, golf courses, agricultural fields, riparian areas, and open woodlands (Yosef 2020). The nesting season extends from March through July.

There are no CNDDB occurrences of loggerhead shrike within 5 miles of the Study Area (CDFW 2023a). However, the alkaline grassland within the Study Area may provide nesting habitat for this species. Loggerhead shrike has potential to occur within the Study Area.

Tricolored Blackbird

The tricolored blackbird (*Agelaius tricolor*) is not listed pursuant to the federal ESA but was granted emergency listing for protection under the California ESA in December 2014. The listing status was not renewed in June 2015; however, after an extensive status review, the California Fish and Game Commission listed tricolored blackbirds as a threatened species in 2018. In addition, the tricolored blackbird is currently considered a USFWS BCC and a CDFW SSC. This colonial nesting species is distributed widely throughout the Central Valley, Coast Range, and into Oregon, Washington, Nevada, and Baja California (Beedy et al. 2020). Tricolored blackbirds nest in colonies that can range from several pairs to several thousand pairs, depending on prey availability, the presence of predators, or level of human disturbance. Tricolored blackbird nesting habitat includes emergent marsh, riparian woodland/scrub, blackberry thickets, densely vegetated agricultural and idle fields (e.g., wheat, triticale, safflower, fava bean fields, thistle, mustard, cane, and fiddleneck), usually with some nearby standing water or ground saturation (Beedy et al. 2020). They feed mainly on grasshoppers during the breeding season, but may also forage upon a variety of other insects, grains, and seeds in open grasslands, wetlands, feedlots, dairies, and agricultural fields (Beedy et al. 2020). The nesting season is generally from March through August.

There are nine CNDDB occurrences of tricolored blackbird within 5 miles of the Study Area (CDFW 2023a). There is no suitable nesting habitat within the Study Area. However, tricolored blackbird may forage within the Study Area. Tricolored blackbird has potential to occur within the Study Area.

Other Protected Birds

In addition to the above-listed special-status birds, all native or naturally occurring birds and their occupied nests/eggs are protected under the California Fish and Game Code and the MBTA. The Study Area supports potential nesting habitat for a variety of common native birds protected under these regulations.

4.2.6 Mammals

Five special-status mammal species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Table 2). Of those, three species were determined to be absent from the Study Area because the Study Area is outside of the known geographic range for the species (Table 2). No further discussion of that species is provided in this assessment. Brief descriptions of the remaining two species that have low potential to occur within the Study Area are presented below.

San Joaquin Kit Fox

The San Joaquin kit fox (*Vulpes macrotis*) is listed as endangered pursuant to the federal ESA and threatened pursuant to the California ESA. Although the precise historical range of the San Joaquin kit fox is unknown, Grinnell et al. (1937) believed that prior to 1930 San Joaquin kit fox occupied most of the San Joaquin Valley from southern Kern County north to Tracy in San Joaquin County, on the west side, and near La Grange in Stanislaus County, on the east side. Since then the San Joaquin kit fox population has declined primarily as a result of habitat loss to agricultural, urban, industrial, and mineral development in the San Joaquin Valley. San Joaquin kit fox has been listed as endangered for over 30 years, yet despite the loss of habitat and apparent decline in numbers since the early 1970s, there has never been a comprehensive survey of its entire range or habitat that was once thought to be occupied (USFWS 1983; Morrell 1975). Despite the lack of a comprehensive data set, local surveys, research projects and incidental sightings indicate that kit foxes currently inhabit some areas of suitable habitat on the San Joaquin Valley floor and in the surrounding foothills of the coastal ranges, Sierra Nevada, and Tehachapi Mountains, from southern Kern County north to Contra Costa, Alameda, and San Joaquin counties on the west, near La Grange in Stanislaus County on the east side of the valley (Williams 1990), and some of the larger scattered islands of natural land on the valley floor in Kern, Tulare, Kings, Fresno, Madera, and Merced counties (USFWS 1998).

In the southern portion of the range, kit foxes are commonly associated with Valley Sink Scrub, Valley Saltbush Scrub, Upper Sonoran Subshrub Scrub, and Annual Grassland. Kit foxes also inhabit grazed grasslands, petroleum fields (Morrell 1971; O'Farrell 1980), and survive adjacent to tilled or fallow fields (Jensen 1972; Ralls and White 1991). In the central portion of the range, which includes Madera County, the kit fox is associated with Valley Sink Scrub, Interior Coast Range Saltbush Scrub, Upper Sonoran Subshrub Scrub, Annual Grassland, and the remaining native grasslands. Agriculture dominates this region where kit foxes mostly inhabit grazed, non-irrigated grasslands, but also live next to and forage in tilled or fallow fields, irrigated row crops, orchards, and vineyards (USFWS 1998). In the northern portion of their range, kit foxes are commonly associated with annual grassland (Hall 1983) and Valley Oak Woodland (Bell 1994). Kit foxes inhabit grazed grasslands, grasslands with wind turbines, and also live adjacent to and forage in tilled and fallow fields, and irrigated row crops (Bell 1994). They usually inhabit areas with loose-textured (friable) soils, suitable for den excavation (USFWS 1983). Where soils make digging difficult, the foxes frequently use and modify burrows built by other animals (Orloff et al. 1986). Structures such as culverts, abandoned pipelines, and well casings also may be used as den sites (USFWS 1983).

Kit foxes are primarily nocturnal and carnivorous, but are commonly seen during the day in the late spring and early summer (Orloff et al. 1986). Major prey includes kangaroo rats, black-tailed hares,

desert cottontails, deer mice, California ground squirrels, ground-nesting birds, and insects (Scrivner et al. 1987).

There are two CNDDB occurrence of San Joaquin kit fox within 5 miles of the Study Area (CDFW 2023a). No potential dens were observed within the Study Area, but it may provide marginal foraging and movement habitat for this species. San Joaquin kit fox has low potential to occur within the Study Area.

American Badger

The American badger (*Taxidea taxus*) is designated a CDFW SSC. The species historically ranged throughout much of the state, except in humid coastal forests. Badgers were once numerous in the Central Valley; however, populations now occur in low numbers in the surrounding peripheral parts of the valley and in the adjacent lowlands of eastern Monterey, San Benito, and San Luis Obispo counties (Williams 1986).

Badgers occupy a variety of habitats, including grasslands and savannas. The principal requirements seem to be significant food supply, friable soils, and relatively open, uncultivated ground (Williams 1986).

There are two CNDDB occurrences of American badger within 5 miles of the Study Area (CDFW 2023a). No potential dens were observed within the Study Area, but it may provide marginal foraging and movement habitat for this species. American badger has low potential to occur within the Study Area.

4.3 Critical Habitat and Essential Fish Habitat

There is no designated critical habitat or Essential Fish Habitat mapped within the Study Area (USFWS 2023b; NOAA 2023).

4.4 Riparian Habitats and Sensitive Natural Communities

The Fremont cottonwood woodland within the Study Area may be considered both riparian habitat and a sensitive natural community. Based on the site reconnaissance, the Fremont cottonwood woodland resembles the *Populus fremontii – Fraxinus velutina – Salix gooddingii* Forest & Woodland Alliance, which has a State Rarity Rank of S3.2.

Six other sensitive natural communities were identified as having potential to occur within the vicinity of the Study Area based on the literature review (CDFW 2023a). These include Valley Sink Scrub, Valley Sacaton Grassland, Alkali Seep, Cismontane Alkali Marsh, Coastal and Valley Freshwater Marsh, and Sycamore Alluvial Woodland. Upon further analysis and site reconnaissance, these six sensitive natural communities were determined to be absent from the Study Area.

4.5 Wildlife Movement/Corridors and Nursery Sites

The Study Area falls within an Essential Habitat Connectivity area mapped by the CDFW (CDFW 2023b). The Study Area is a small area near a developed facility. The developed facility is surrounded by undeveloped lands. While the Study Area may provide movement corridors for wildlife, it is not expected to support critical wildlife movement corridors or potential nursery sites. Wildlife may move through the Study Area, although undeveloped areas further from the facility likely provide more important movement corridors.

For the purposes of this analysis, nursery sites include but are not limited to concentrations of nest or den sites such as heron rookeries or bat maternity roosts. This data is available through CDFW's Biogeographic Information and Observation System database or as occurrence records in the CNDDB and is supplemented with the results of the site reconnaissance. No nursery sites have been documented within the Study Area (CDFW 2023a) and none were observed during the site reconnaissance.

5.0 IMPACT ANALYSIS

This section evaluates potential impacts on biological resources in accordance with the Appendix G environmental checklist of the CEQA Guidelines.

5.1 Special Status Species

Would the Project result in effects, either directly or through habitat modifications, to species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

No special-status species are known to occur within the Study Area. However, there is a possibility that special-status species could be present or could move into the Study Area prior to construction. Potential effects to special-status species are summarized in the following sections.

5.1.1 Special-Status Plants

No federally and State-listed plant species have potential to occur in the Study Area, but there is potential habitat for 17 non-listed special-status plant species (Table 2). Special-status plant surveys were conducted, and no special-status plant species were observed. However, plant populations are not static and species with potential habitat may be present in future years. Project development would permanently remove or alter a minimal amount of potential habitat for special-status plants, and if special-status plant populations occur onsite they may be directly or indirectly impacted by the Project.

Implementation of recommendations BIO1, BIO4, and BIO5 described in Section 6.0 would avoid or minimize potential effects to special-status plants. These include a pre-construction plant survey and avoidance measures, if necessary, worker awareness environmental training, and demarcation of Project limits to avoid offsite impacts. With implementation of these measures, the Project is not expected to significantly impact special-status plants.

5.1.2 Special-Status Invertebrates

One candidate for State-listing, Crotch bumble bee, has low potential to occur in the Study Area. The alkaline grassland provides low-quality nesting, foraging, and overwintering habitat for the Crotch bumble bee. Because this species is a generalist forager and bees may nest and overwinter under thatch or in abandoned rodent burrows and locations change each year, temporary and permanent impacts due to removal of these habitats would not be expected to contribute substantially to the overall decline of this species unless an active nest or overwintering gyne (future queen) were to be impacted. Impacts to Crotch bumble bee would be less than significant with the implementation of Mitigation Measure BIO-11 in Section 6.0.

5.1.3 Special-Status Amphibians

There is low potential for one federally and State-listed amphibian species (California tiger salamander) to occur in the Study Area. Additionally, there is low potential for one non-listed special-status amphibian (western spadefoot) to occur.

In the unlikely event that special-status amphibians occur onsite, they may be temporarily displaced by Project construction and may be directly or indirectly impacted by the Project. Additionally, a small amount of potential upland habitat would be removed or altered in the footprint of the solar array.

Implementation of recommendations BIO3 through BIO6 described in Section 6.0 would avoid or minimize potential effects to special-status amphibians. These include a pre-construction wildlife survey and avoidance measures, if necessary, worker awareness environmental training, demarcation of Project limits to avoid offsite impacts, and measures to prevent entrapment. With implementation of these measures, the Project is not expected to significantly impact special-status amphibians.

5.1.4 Special-Status Reptiles

There is potential for one federally and State-listed reptile species (giant garter snake)and one candidate for federal listing (northwestern pond turtle) to occur in the Study Area. Additionally, there is potential for one non-listed special-status reptile (Northern California legless lizard) to occur.

In the event that special-status reptiles occur onsite, they may be temporarily displaced by Project construction and may be directly or indirectly impacted by the Project. Additionally, a small amount of potential upland habitat would be removed or altered in the footprint of the solar array.

Implementation of recommendations BIO3 through BIO6 described in Section 6.0 would avoid or minimize potential effects to special-status reptiles. These include a pre-construction wildlife survey and avoidance measures, if necessary, worker awareness environmental training, demarcation of Project limits to avoid offsite impacts, and measures to prevent entrapment. With implementation of these measures, the Project is not expected to significantly impact special-status reptiles.

5.1.5 Special-Status and Other Protected Birds

There is potential foraging habitat, but no nesting habitat, for two State-listed bird species (Swainson's hawk, tricolored blackbird) within the Study Area.

There is potential or marginal nesting habitat for three non-listed special-status bird species (northern harrier, California horned lark, loggerhead shrike) within the Study Area and foraging habitat for multiple other non-listed special-status bird species (Table 2). Additionally, a variety of other birds that are protected under the MBTA and the California Fish and Game Code may nest within the Study Area.

Birds may be temporarily displaced from the Project Area during construction and nesting birds within or in the vicinity of the Project may be directly or indirectly impacted by the Project. Additionally, a small amount of potential nesting and foraging habitat would be removed or altered in the footprint of the solar array. Due to the small footprint of the solar arrays and the short duration of Project construction, mortality of special-status birds is not expected.

Implementation of recommendations BIO2, BIO4, and BIO5 described in Section 6.0 would avoid or minimize potential effects on special-status birds and other protected birds. These include a pre-construction nesting-bird survey and avoidance measures, if necessary, worker awareness environmental training, and demarcation of Project limits to avoid offsite impacts. With implementation of these measures, the Project is not expected to significantly impact special-status birds.

5.1.6 Special-Status Mammals

One federally and State-listed mammal (San Joaquin kit fox) has low potential to occur in the Study Area. Additionally, there is low potential for one non-listed special-status mammal (American badger) to occur.

In the unlikely event that special-status mammals occur onsite they may be temporarily displaced by Project construction and may be directly or indirectly impacted by the Project. Additionally, a small amount of marginal potential movement/foraging habitat would be removed or altered in the footprint of the solar array.

Implementation of recommendations BIO3 through BIO7 described in Section 6.0 would avoid and/or minimize potential effects on special-status mammals. These include a pre-construction wildlife survey and avoidance measures, if necessary, worker awareness environmental training, demarcation of Project limits to avoid offsite impacts, and measures to prevent entrapment and avoid attraction of wildlife to the Project site. With implementation of these measures, the Project is not expected to significantly impact special-status mammals.

5.2 Riparian Habitat and Oak Woodlands

Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG or USFWS?

A small portion of Fremont cottonwood woodland, which may be considered both riparian habitat and a sensitive natural community, is located within the Study Area (see Sections 4.1.3 and 4.4). However, the woodland is within the Buffer Area for the Project. No impacts are proposed within the Buffer Area. Implementation of recommendations BIO5 in Section 6.0 would avoid potential impacts to riparian habitat and sensitive natural communities. This measure includes demarcation of Project limits to avoid offsite impacts. With implementation of this measure, the Project is not expected to impact riparian habitat or substantially impact sensitive natural communities.

5.3 Aquatic Resources, Including Waters the U.S. and State

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

Based on the aquatic resources delineation and the current Project limits, the Project would have no impact on federally protected wetlands; however, the ditch within the Study Area may be considered a Water of the U.S. and/or State. The ditch is within the Buffer Area and the Project is not proposing impacts to the ditch.

Implementation of recommendations BIO5, BIO9, and BIO10 described in Section 6.0 would avoid or minimize potential effects to Waters of the U.S. and State. These include measures to avoid offsite impacts. With implementation of these measures, the Project is not expected to impact Waters of the U.S. or State.

5.4 Wildlife Movement/Corridors

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

Project construction is likely to temporarily disturb and displace most wildlife from the Study Area. Some wildlife such as birds or nocturnal species are likely to continue to use the habitats opportunistically for the duration of construction. Once construction is complete, wildlife movements are expected to resume. Therefore, the Project is not expected to substantially interfere with wildlife movement.

There are no documented nursery sites and no nursey sites were observed within the Study Area during the site reconnaissance. Therefore, the Project is not expected to impact wildlife nursery sites.

5.5 Local Policies, Ordinances, and Other Plans

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

The Project is within the Los Banos Wildlife Area on land owned by CDFW. There are no known local policies or ordinances relevant to the Project. The Los Banos Wildlife Area may have a management plan. The Project is not expected to conflict with a management plan.

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

The Study Area is not covered by any local, regional, or State conservation plan. Therefore, the Project would not conflict with a local, regional, or State conservation plan.

6.0 RECOMMENDATIONS

The following measures are recommended to avoid and/or minimize potential impacts to biological resources from the proposed Project:

BIO1: Perform floristic plant surveys according to USFWS, CDFW, and CNPS protocols within 2 years prior to construction. Surveys shall be conducted by a qualified biologist and timed according to the appropriate phenological stage for identifying target species. Known reference populations shall be visited and/or local herbaria records shall be reviewed, if available, prior to surveys to confirm the phenological stage of the target species. If no special-status plants are found within the Project site, no further measures pertaining to special-status plants are necessary. If special-status plants are identified within 25 feet of the Project impact area, implement the following measures:

- If avoidance of special-status plants is feasible, establish and clearly demarcate avoidance zones for special-status plant occurrences prior to construction and designate as environmentally sensitive areas. Avoidance zones shall include the extent of the special-status plants plus a 25-foot buffer, unless otherwise determined by a qualified biologist, and shall be maintained until the completion of construction. A qualified biologist or biological monitor shall be present if work must occur within the avoidance buffer to ensure special-status plants are not impacted by the work.
- If avoidance of special-status plants is not feasible, mitigation for significant impacts to special-status plants may be required. Mitigation measures shall be developed in consultation with CDFW. Mitigation measures may include restoration or permanent preservation of onsite or offsite habitat for special-status plants and/or translocation of plants or seeds from impacted areas to unaffected habitats.

BIO2: If construction is to occur during the nesting season (generally February 1 - August 31), conduct a pre-construction nesting-bird survey of all suitable nesting habitat within 14 days prior to construction. The survey shall be conducted within a 500-foot radius of Project work areas for raptors and within a 100-foot radius for other nesting birds. If any active nests are observed, these nests shall be designated an environmentally sensitive area and protected by an avoidance buffer established in coordination with CDFW until the breeding season has ended or until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival.

BIO3: A qualified biologist shall conduct a pre-construction special-status wildlife survey in the Project Area (including impacts areas, access roads, and staging areas) between 30 and 15 days prior to ground- or vegetation-disturbing construction activities. The survey shall be conducted within 200 feet of all areas of ground or vegetation disturbance and shall be conducted for the following species: California tiger salamander, western spadefoot, northwestern pond turtle, Northern California legless lizard, giant garter snake, San Joaquin kit fox, and American badger. The survey shall follow accepted procedures for these species and shall map any occurrences or habitat features (i.e., dens or burrows) with sign of special-status species. If no special-status species are detected, construction may proceed in unoccupied habitat. If special-status species are detected, the following measures shall apply:

- If a special-status species is detected within or near the Project Area during the pre-construction survey and there is potential for Project activities to impact the species, a qualified biological monitor shall be present during all activities that may impact the species (e.g., ground or vegetation disturbance).
- Special-status wildlife detected prior to or during construction shall be allowed to move out of the work area of their own volition. If an individual must be relocated, a qualified biologist with required permits or approvals must relocate the individual out of harm's way to the nearest suitable habitat at least 100 feet from the Project work area where it was found.
- If a kit fox or badger den is detected within 200 feet of the work area, it shall be designated an environmentally sensitive area and protected by an avoidance buffer of

200 feet for non-natal dens. A buffer distance for natal dens shall be established in consultation with USFWS and/or CDFW. Avoidance buffers shall be maintained until a qualified biologist determines the den is no longer active. Any demarcation of the dens or avoidance zone shall not prevent access to the den by kit foxes or badgers.

BIO4: A qualified biologist shall conduct mandatory worker environmental awareness training for all contractors, work crews, and any onsite personnel to aid workers in recognizing special-status species and other sensitive biological resources that may occur onsite. The training shall include identification of the special-status species with potential to occur and their habitats, a description of the regulatory status of sensitive resources, and review of the limits of construction, environmentally sensitive areas, and measures required to reduce impacts to biological resources. The Project shall retain a qualified biologist with any required permits on an as-needed basis to assist with potential biological issues that may arise during construction (i.e., wildlife relocation).

BIO5: The Project impact limits shall be clearly demarcated prior to construction and all workers shall be made aware of the impact limits and avoided areas. If orange construction fencing is to be used, it shall be placed such that there is a one-foot gap between the ground and the bottom of the fencing to prevent ground-dwelling animals from being caught in the fencing. No work shall occur outside of the Project impact limits. All vehicles and equipment shall be restricted to the Project impact limits and/or existing designated access roads and staging areas. Project-related vehicles shall observe a speed limit of 15 miles per hour during the day and 10 miles per hour at night in construction areas and on access roads where it is safe and feasible to do so, except on county roads and State and federal highways.

BIO6: To prevent inadvertent entrapment of special-status wildlife during construction, all excavated, steep-walled holes or trenches more than two-feet deep shall be covered at the close of each working day by plywood or similar materials. If the trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape or the USFWS/CDFW should be contacted for guidance.

Kit foxes are attracted to den-like structures such as pipes and may enter stored pipes and become trapped or injured. All construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods shall be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way.

BIO7: To avoid attracting special-status mammals to the Project site, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from the Project site during construction.

BIO9: Erosion control measures should be placed between avoided aquatic resources and the outer edge of the impact limits prior to commencement of construction activities, and should be maintained until construction is completed and soils have been stabilized.

BIO10: Any fueling in the Study Area should use appropriate secondary containment techniques to prevent spills and should occur at least 150 feet from potential aquatic resources.

BIO11: Because Crotch bumble bee nest locations are chosen on an annual basis and the site provides marginal nesting habitat, a CDFW-approved Crotch bumble bee biologist shall conduct three weekly preconstruction nesting surveys with focus on detecting active nesting colonies with the third and final survey conducted within 24-hours immediately prior to ground disturbing activities that are scheduled to occur during the flight season (February through October). Surveys shall be completed at a minimum of one person-hour of searching per three acres of suitable habitat during suitable weather conditions (sustained winds less than 8 mph, mostly sunny to full sun, temperatures between 65 and 90 degrees Fahrenheit) at an appropriate time of day for detection (at least an hour after sunrise and at least two hours before sunset, though ideally between 9am-1pm). If no nests are found but the species is present, a full-time qualified biological monitor shall be present during initial vegetation or ground disturbing activities that are scheduled to occur during the queen flight period (February through March), colony active period (March through September), and/or gyne flight period (September through October). The Crotch bumble bee biologist shall immediately notify CDFW of the detection as further coordination may be required to avoid or mitigate certain impacts. If an active Crotch bumble bee nest is detected, an appropriate no disturbance buffer zone (including foraging resources and flight corridors essential for supporting the colony) shall be established around the nest to reduce the risk of disturbance or accidental take and the designated biologist shall coordinate with CDFW to determine if an Incidental Take Permit under Section 2081 of the California ESA will be required. Nest avoidance buffers may be removed at the completion of the flight season and/or once the qualified Crotch bumble bee biologist deems the nesting colony is no longer active and CDFW agrees with the determination.

If initial grading is phased or delayed for any reason, the 24-hour preconstruction nesting survey will be repeated prior to ground-disturbing activities that are scheduled to occur during the same flight season (February through October). Three preconstruction Crotch bumble bee nesting surveys shall be required in subsequent years of construction whenever vegetation and ground disturbing activities are scheduled to occur during the flight season (February through October) if nesting habitat is still present or has re-established and will be affected.

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LIST OF ATTACHMENTS

ATTACHMENT A

Results of Database Queries

Selected Elements by Element Code

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Turner Ranch (3712026) OR Dos Palos (3612086) OR Delta Ranch (3712016) OR Los Banos (3712017) OR Ortigalita Peak NW (3612088) OR Charleston School (3612087) OR Volta (3712018) OR Ingomar (3712028) OR San Luis Ranch (3712027))

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AAAAA01181	***Ambystoma californiense pop. 1*** California tiger salamander - central California DPS	Threatened	Threatened	G2G3T3	S3	WL
AAABF02020	***Spea hammondii*** western spadefoot	None	None	G2G3	S3S4	SSC
AAABH01022	***Rana draytonii*** California red-legged frog	Threatened	None	G2G3	S2S3	SSC
AAABH01054	***Rana boylii pop. 4*** foothill yellow-legged frog - central coast DPS	Proposed Threatened	Endangered	G3T2	S2	
AAABH01170	***Lithobates pipiens*** northern leopard frog	None	None	G5	S2	SSC
ABNJB05035	***Branta hutchinsii leucopareia*** cackling (=Aleutian Canada) goose	Delisted	None	G5T3	S3	WL
ABNKC11011	***Circus hudsonius*** northern harrier	None	None	G5	S3	SSC
ABNKC19070	***Buteo swainsoni*** Swainson's hawk	None	Threatened	G5	S4	
ABNKC19120	***Buteo regalis*** ferruginous hawk	None	None	G4	S3S4	WL
ABNKC22010	***Aquila chrysaetos*** golden eagle	None	None	G5	S3	FP
ABNKD06090	***Falco mexicanus*** prairie falcon	None	None	G5	S4	WL
ABNME01010	***Coturnicops noveboracensis*** yellow rail	None	None	G4	S2	SSC
ABNNB03100	***Charadrius montanus*** mountain plover	None	None	G3	S2	SSC
ABNSB10010	***Athene cunicularia*** burrowing owl	None	None	G4	S2	SSC
ABPAT02011	***Eremophila alpestris actia*** California horned lark	None	None	G5T4Q	S4	WL
ABPBR01030	***Lanius ludovicianus*** loggerhead shrike	None	None	G4	S4	SSC
ABPBXB0020	***Agelaius tricolor*** tricolored blackbird	None	Threatened	G1G2	S2	SSC
ABPBXB3010	***Xanthocephalus xanthocephalus*** yellow-headed blackbird	None	None	G5	S3	SSC
AFCHA0209K	***Oncorhynchus mykiss irideus pop. 11*** steelhead - Central Valley DPS	Threatened	None	G5T2Q	S2	

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AFCJB25010	***Mylopharodon conocephalus*** hardhead	None	None	G3	S3	SSC
AMACC01020	***Myotis yumanensis*** Yuma myotis	None	None	G5	S4	
AMACC05032	***Lasiurus cinereus*** hoary bat	None	None	G3G4	S4	
AMAFB04040	***Ammospermophilus nelsoni*** Nelson's (=San Joaquin) antelope squirrel	None	Threatened	G2G3	S3	
AMAFD01060	***Perognathus inornatus*** San Joaquin pocket mouse	None	None	G2G3	S2S3	
AMAFD03080	***Dipodomys ingens*** giant kangaroo rat	Endangered	Endangered	G1G2	S2	
AMAJA03041	***Vulpes macrotis mutica*** San Joaquin kit fox	Endangered	Threatened	G4T2	S3	
AMAJF04010	***Taxidea taxus*** American badger	None	None	G5	S3	SSC
ARAAD02030	***Emys marmorata*** western pond turtle	None	None	G3G4	S3	SSC
ARACC01020	***Anniella pulchra*** Northern California legless lizard	None	None	G3	S2S3	SSC
ARACF07010	***Gambelia sila*** blunt-nosed leopard lizard	Endangered	Endangered	G1	S2	FP
ARADB21021	***Masticophis flagellum ruddocki*** San Joaquin coachwhip	None	None	G5T2T3	S3	SSC
ARADB36150	***Thamnophis gigas*** giant gartersnake	Threatened	Threatened	G2	S2	
CTT36210CA	***Valley Sink Scrub*** Valley Sink Scrub	None	None	G1	S1.1	
CTT42120CA	***Valley Sacaton Grassland*** Valley Sacaton Grassland	None	None	G1	S1.1	
CTT45320CA	***Alkali Seep*** Alkali Seep	None	None	G3	S2.1	
CTT52310CA	***Cismontane Alkali Marsh*** Cismontane Alkali Marsh	None	None	G1	S1.1	
CTT52410CA	***Coastal and Valley Freshwater Marsh*** Coastal and Valley Freshwater Marsh	None	None	G3	S2.1	
CTT62100CA	***Sycamore Alluvial Woodland*** Sycamore Alluvial Woodland	None	None	G1	S1.1	
ICBRA03010	***Branchinecta conservatio*** Conservancy fairy shrimp	Endangered	None	G2	S2	
ICBRA03020	***Branchinecta longiantenna*** longhorn fairy shrimp	Endangered	None	G2	S2	

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
ICBRA03030	***Branchinecta lynchi*** vernal pool fairy shrimp	Threatened	None	G3	S3	
ICBRA06010	***Linderiella occidentalis*** California linderiella	None	None	G2G3	S2S3	
ICBRA10010	***Lepidurus packardi*** vernal pool tadpole shrimp	Endangered	None	G3	S3	
IIHYM24260	***Bombus pensylvanicus*** American bumble bee	None	None	G3G4	S2	
IIHYM24480	***Bombus crotchii*** Crotch bumble bee	None	Candidate Endangered	G2	S2	
IMBIV19010	***Gonidea angulata*** western ridged mussel	None	None	G3	S2	
PDAPI0Z0S0	***Eryngium racemosum*** Delta button-celery	None	Endangered	G1	S1	1B.1
PDAPI0Z0Y0	***Eryngium spinosepalum*** spiny-sepaled button-celery	None	None	G2	S2	1B.2
PDAST5L030	***Lasthenia chrysantha*** alkali-sink goldfields	None	None	G2	S2	1B.1
PDAST5L0A1	***Lasthenia glabrata ssp. coulteri*** Coulter's goldfields	None	None	G4T2	S2	1B.1
PDAST8H060	***Senecio aphanactis*** chaparral ragwort	None	None	G3	S2	2B.2
PDAST9F031	***Trichocoronis wrightii var. wrightii*** Wright's trichocoronis	None	None	G4T3	S1	2B.1
PDBRA0M0E0	***Caulanthus lemmonii*** Lemmon's jewelflower	None	None	G3	S3	1B.2
PDBRA2G0Q1	***Streptanthus insignis ssp. lyonii*** Arburua Ranch jewelflower	None	None	G3G4T2	S2	1B.2
PDCHE040B0	***Atriplex cordulata var. cordulata*** heartscale	None	None	G3T2	S2	1B.2
PDCHE042M0	***Atriplex minuscula*** lesser saltscale	None	None	G2	S2	1B.1
PDCHE042P0	***Atriplex persistens*** vernal pool smallscale	None	None	G2	S2	1B.2
PDCHE04371	***Atriplex coronata var. vallicola*** Lost Hills crownscale	None	None	G4T3	S3	1B.2
PDEUP0D150	***Euphorbia hooveri*** Hoover's spurge	Threatened	None	G1	S1	1B.2
PDFAB0F8R1	***Astragalus tener var. tener*** alkali milk-vetch	None	None	G2T1	S1	1B.2
PDPLM0C0Q0	***Navarretia prostrata*** prostrate vernal pool navarretia	None	None	G2	S2	1B.2

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
PDRAN0B1J0	***Delphinium recurvatum*** recurved larkspur	None	None	G2?	S2?	1B.2
PDSCR0J0D1	***Chloropyron molle ssp. hispidum*** hispid salty bird's-beak	None	None	G2T1	S1	1B.1
PMALI040Q0	***Sagittaria sanfordii*** Sanford's arrowhead	None	None	G3	S3	1B.2
PMPOA4C010	***Neostapfia colusana*** Colusa grass	Threatened	Endangered	G1	S1	1B.1
PMPOA53110	***Puccinellia simplex*** California alkali grass	None	None	G2	S2	1B.2
PMPOT03091	***Stuckenia filiformis ssp. alpina*** northern slender pondweed	None	None	G5T5	S2S3	2B.2

Record Count: 67

CNPS Rare Plant Inventory

California Native Plant Society

Search Results

31 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [**3712026:3612086:3712016:3712017:3612088:3612087:3712018:3712028:3712027**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Amsinckia furcata	forked fiddleneck	Boraginaceae	annual herb	Feb-May	None	None	G4	S4	4.2	Yes	1974-01-01	 © 2017 Keir Morse
Androsace elongata ssp. *acuta*	California androsace	Primulaceae	annual herb	Mar-Jun	None	None	G5? T3T4	S3S4	4.2		1994-01-01	 © 2008 Aaron Schusteff
Astragalus tener var. *tener*	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2	Yes	1994-01-01	No Photo Available
Atriplex cordulata var. *cordulata*	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	Yes	1988-01-01	 © 1994 Robert E. Preston, Ph.D.
Atriplex coronata var. *coronata*	crownscale	Chenopodiaceae	annual herb	Mar-Oct	None	None	G4T3	S3	4.2	Yes	1994-01-01	 © 1994 Robert E. Preston, Ph.D.
Atriplex coronata var. *vallicola*	Lost Hills crownscale	Chenopodiaceae	annual herb	Apr-Sep	None	None	G4T3	S3	1B.2	Yes	1974-01-01	No Photo Available
Atriplex minuscula	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	None	None	G2	S2	1B.1	Yes	1994-01-01	 © 2000 Robert E. Preston, Ph.D.

Atriplex persistens	vernal pool smallscale	Chenopodiaceae	annual herb	Jun-Oct	None	None	G2	S2	1B.2	Yes	2001-01-01	No Photo Available
Caulanthus lemmonii	Lemmon's jewelflower	Brassicaceae	annual herb	Feb-May	None	None	G3	S3	1B.2	Yes	2001-01-01	No Photo Available
Centromadia parryi ssp. *rudis*	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	None	None	G3T3	S3	4.2	Yes	2007-05-22	 © 2019 John Doyen
Chloropyron molle ssp. *hispidum*	hispid salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Sep	None	None	G2T1	S1	1B.1	Yes	1974-01-01	No Photo Available
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	None	None	G2?	S2?	1B.2	Yes	1988-01-01	No Photo Available
Eriogonum nudum var. *indictum*	protruding buckwheat	Polygonaceae	perennial herb	(Apr)May-Oct(Dec)	None	None	G5T4	S4	4.2	Yes	1994-01-01	No Photo Available
Eriogonum vestitum	Idria buckwheat	Polygonaceae	annual herb	Apr-Aug	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
Eryngium racemosum	Delta button-celery	Apiaceae	annual/perennial herb	(May)Jun-Oct	None	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	1980-01-01	No Photo Available
Euphorbia hooveri	Hoover's spurge	Euphorbiaceae	annual herb	Jul-Sep(Oct)	FT	None	G1	S1	1B.2	Yes	1974-01-01	No Photo Available
Lasthenia chrysantha	alkali-sink goldfields	Asteraceae	annual herb	Feb-Apr	None	None	G2	S2	1B.1	Yes	2019-09-30	 © 2009 California State University, Stanislaus
Lasthenia ferrisiae	Ferris' goldfields	Asteraceae	annual herb	Feb-May	None	None	G3	S3	4.2	Yes	2001-01-01	 © 2009 Zoya Akulova
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	Asteraceae	annual herb	Feb-Jun	None	None	G4T2	S2	1B.1		1994-01-01	 © 2013 Keir Morse

Leptosiphon ambiguus	serpentine leptosiphon	Polemoniaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2	Yes	1994-01-01	 © 2010 Aaron Schusteff
Leptosiphon grandiflorus	large-flowered leptosiphon	Polemoniaceae	annual herb	Apr-Aug	None	None	G3G4	S3S4	4.2	Yes	1994-01-01	 © 2003 Doreen L. Smith
Myosurus minimus ssp. *apus*	little mousetail	Ranunculaceae	annual herb	Mar-Jun	None	None	G5T2Q	S2	3.1		1980-01-01	No Photo Available
Navarretia prostrata	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.2	Yes	2001-01-01	No Photo Available
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	FT	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G2	S2	1B.2		2015-10-15	No Photo Available
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	Yes	1984-01-01	 ©2013 Debra L. Cook
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	None	None	G3	S2	2B.2		1994-01-01	No Photo Available
Streptanthus insignis ssp. *lyonii*	Arburua Ranch jewelflower	Brassicaceae	annual herb	Mar-May	None	None	G3G4T2	S2	1B.2	Yes	1984-01-01	No Photo Available
Stuckenia filiformis ssp. *alpina*	northern slender pondweed	Potamogetonaceae	perennial rhizomatous herb (aquatic)	May-Jul	None	None	G5T5	S2S3	2B.2		1994-01-01	 Dana York (2016)
Trichocoronis wrightii var. *wrightii*	Wright's trichocoronis	Asteraceae	annual herb	May-Sep	None	None	G4T3	S1	2B.1		1988-01-01	No Photo Available

Showing 1 to 31 of 31 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2023. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 2 October 2023].

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Merced County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Fresno Kangaroo Rat Dipodomys nitratoides exilis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5150	Endangered
San Joaquin Kit Fox Vulpes macrotis mutica Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS
California Condor Gymnogyps californianus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard Gambelia silus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/625	Endangered
Giant Garter Snake Thamnophis gigas Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS

NAME	STATUS
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp Lepidurus packardi Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2246	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31

Golden Eagle Aquila chrysaetos

Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

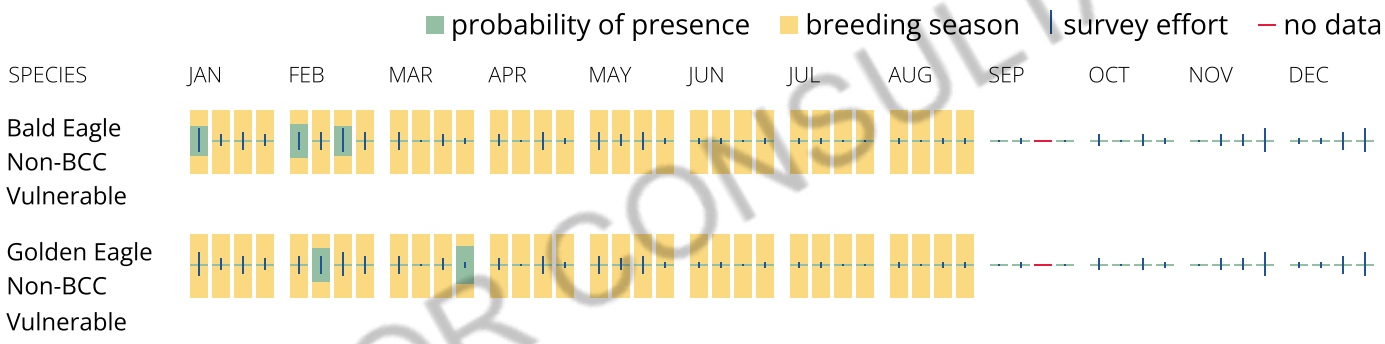
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid

cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date

range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow *Passerculus sandwichensis beldingi* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Black Tern *Chlidonias niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Bullock's Oriole *Icterus bullockii* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull *Larus californicus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Grebe aechmophorus occidentalis — Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/6743

Willet Tringa semipalmata — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

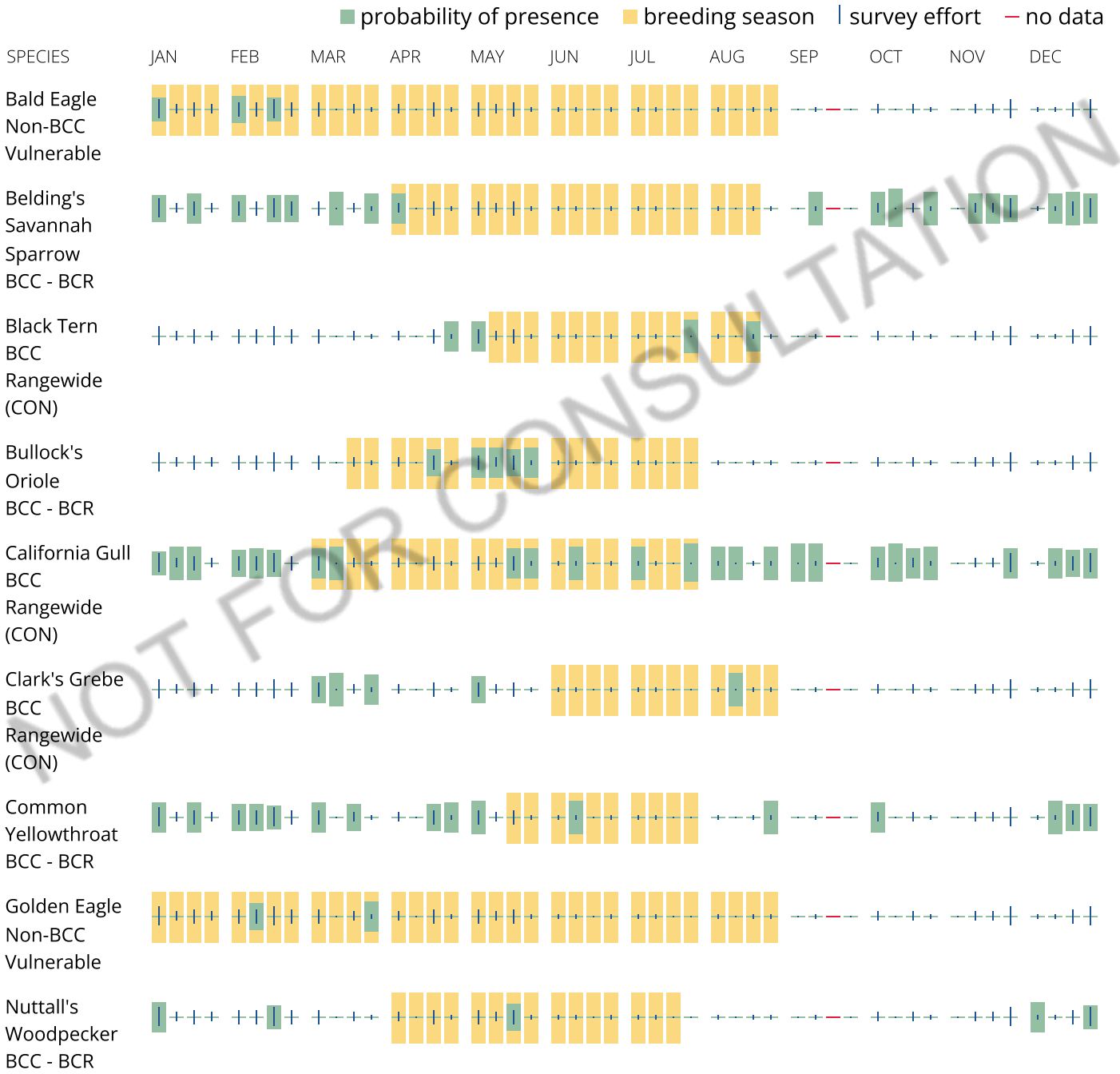
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

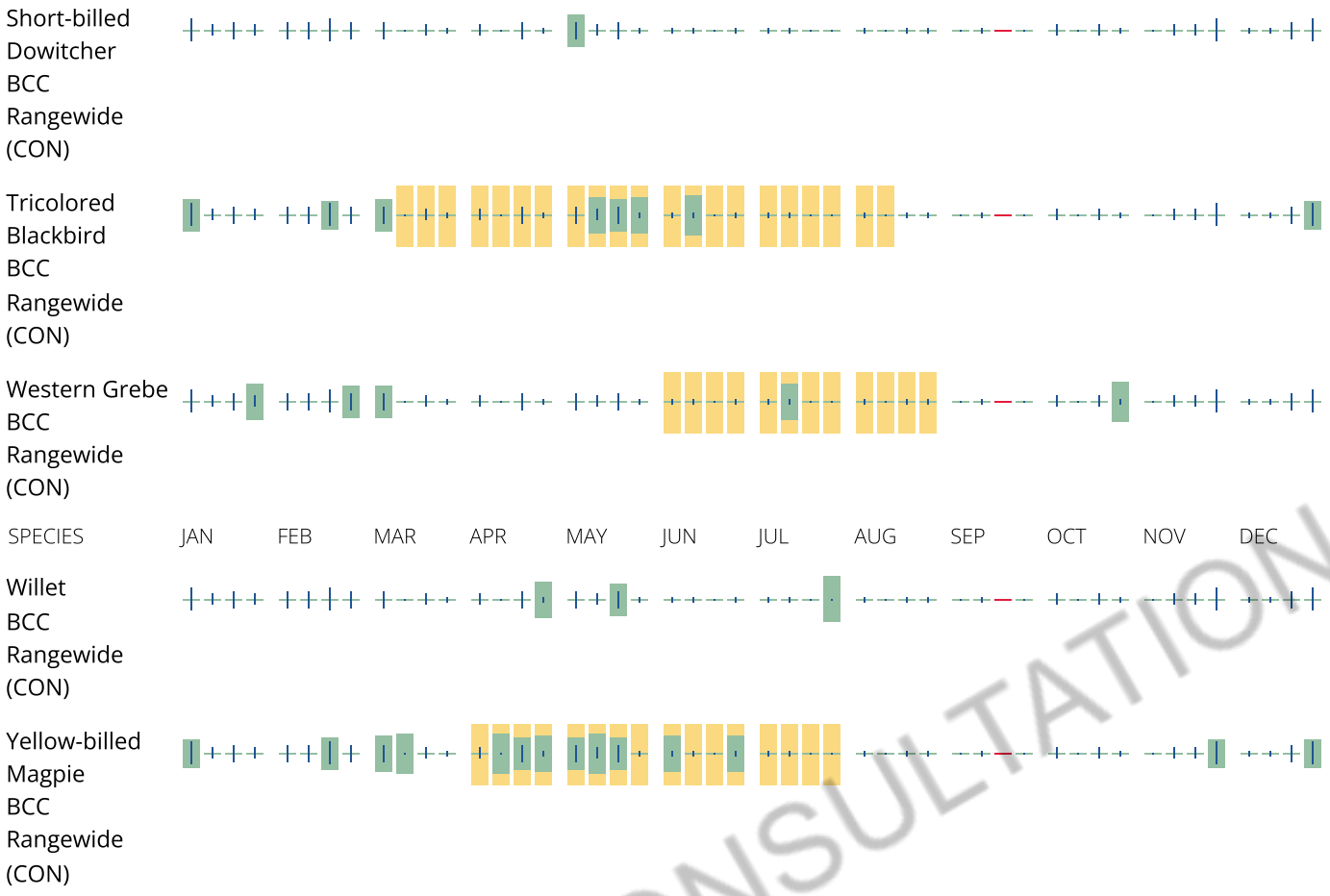
No Data (–)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

PEM1K

RIVERINE

R4SBCx

R5UBFx

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Quad Name **Los Banos**
Quad Number **37120-A7**

ESA Anadromous Fish

SONCC Coho ESU (T) - None
CCC Coho ESU (E) – None
CC Chinook Salmon ESU (T) – None
CVSR Chinook Salmon ESU (T) – None
SRWR Chinook Salmon ESU (E) – None
NC Steelhead DPS (T) – None
CCC Steelhead DPS (T) – None
SCCC Steelhead DPS (T) – None
SC Steelhead DPS (E) – None
CCV Steelhead DPS (T) - **X**
Eulachon (T) – None
sDPS Green Sturgeon (T) - None

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat – None
CCC Coho Critical Habitat – None
CC Chinook Salmon Critical Habitat – None
CVSR Chinook Salmon Critical Habitat – None
SRWR Chinook Salmon Critical Habitat – None
NC Steelhead Critical Habitat – None
CCC Steelhead Critical Habitat – None
SCCC Steelhead Critical Habitat – None
SC Steelhead Critical Habitat – None
CCV Steelhead Critical Habitat – None
Eulachon Critical Habitat – None
sDPS Green Sturgeon Critical Habitat – None

ESA Marine Invertebrates

Range Black Abalone (E) – None
Range White Abalone (E) – None

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat - None

ESA Sea Turtles

East Pacific Green Sea Turtle (T) – None
Olive Ridley Sea Turtle (T/E) – None
Leatherback Sea Turtle (E) – None
North Pacific Loggerhead Sea Turtle (E) - None

ESA Whales

Blue Whale (E) – None
Fin Whale (E) - None
Humpback Whale (E) - None
Southern Resident Killer Whale (E) - None
North Pacific Right Whale (E) - None
Sei Whale (E) - None
Sperm Whale (E) - None

ESA Pinnipeds

Guadalupe Fur Seal (T) - None
Steller Sea Lion Critical Habitat - None

Essential Fish Habitat

Coho EFH – None
Chinook Salmon EFH – None
Groundfish EFH – None
Coastal Pelagics EFH – None
Highly Migratory Species EFH - None

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans - None
MMPA Pinnipeds - None

ATTACHMENT B

Representative Site Photographs

Photo 1. Representative photo of the alkaline grassland within the Study Area. Photo taken February 24, 2021, facing west-southwest.

Photo 2. Representative photo of the ditch located in the southern portion of the Study Area. Photo taken on February 24, 2021, facing west.

Photo 3. Representative photo of the developed/disturbed areas and the small portion of Fremont cottonwood woodland in the Study Area. Photo taken on March 31, 2021, facing north-northwest.

Photo 4. Representative photo of the Fremont cottonwood woodland adjacent to the Study Area. Photo taken March 31, 2021, facing northeast.

ATTACHMENT C

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Los Banos Solar Ground Mount Project City/County: Merced County Sampling Date: 03/31/2021

Applicant/Owner: State Department of General Services, Real Eastate Division State: CA Sampling Point: 1

Investigator(s): Hannah Stone Section, Township, Range: S.31 T.09S R.11E

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): C Lat: 37.1001517055549 Long: -120.816671676999 Datum: NAD83

Soil Map Unit Name: 170 - Dospalos clay loam, partially drained NWI classification: FEW

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____ No ✓	
Wetland Hydrology Present?	Yes _____ No ✓	

Remarks:

Sampling point is lowest point of a shallow, 2-foot wide roadside ditch that is expected to be the lowest and wettest site within the area investigated. Most of the adjacent land drains to this location.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 2' x 10')			
1. Distichlis spicata	90	Y	FAC
2. Frankenia salina	6	N	FACW
3. Bromus hordeaceus	3	N	FACU
4.			
5.			
6.			
7.			
8.			
	99 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 1 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/1	98	10YR 4/4	1	C	PL	SCL	
2-10	10YR 3/1	99	10YR 4/4	1	C	PL	Clay Loam	
10-16	2.5Y 4/2	100					Clay Loam	Bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil is moist but not saturated. Moisture likely from infiltration of surface water. Wildlife Area Supervisor, Sean Allen, who has worked at Los Banos Wildlife Area for over 30 years has never observed flooding or ponding at this location.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Los Banos Solar Ground Mount Project City/County: Merced County Sampling Date: 03/31/2021

Applicant/Owner: State Department of General Services, Real Eastate Division State: CA Sampling Point: 2

Investigator(s): Hannah Stone Section, Township, Range: S.31 T.09S R.11E

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): C Lat: 37.1001363212668 Long: -120.816668750163 Datum: NAD83

Soil Map Unit Name: 170 - Dospalos clay loam, partially drained NWI classification: FEW

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Sampling Point 2 is near Sampling Point 1 but at slightly higher elevation and not in roadside ditch. Purpose of sampling point was to compare soil between the two locations.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. Distichlis spicata	95	Y	FAC
2. Bromus hordeaceus	5	N	FACU
3. Frankenia salina	2	N	FACW
4. Rumex crispus	1	N	FAC
5.			
6.			
7.			
8.			
	99 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 1 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y 3/1	100					SCL	
3-16	2.5Y 3/1	100					Clay Loam	Bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil is moist but not saturated. Moisture likely from infiltration of surface water. Wildlife Area Supervisor, Sean Allen, who has worked at Los Banos Wildlife Area for over 30 years has never observed flooding or ponding at this location.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Los Banos Solar Ground Mount Project City/County: Merced County Sampling Date: 03/31/2021

Applicant/Owner: State Department of General Services, Real Eastate Division State: CA Sampling Point: 3

Investigator(s): Hannah Stone Section, Township, Range: S.36 T.09S R.10E

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): C Lat: 37.100040230015 Long: -120.816885195094 Datum: NAD83

Soil Map Unit Name: 170 - Dospalos clay loam, partially drained NWI classification: FEW

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Sampling point is in shallow depression within the larger depression of the investigated area. Location is expected to be wetter than the surrounding area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5' radius)			
1. Distichlis spicata	50	Y	FAC
2. Frankenia salina	20	N	FACW
3. Conium maculatum	20	N	FACW
4. Bromus hordeaceus	15	N	FACU
5.			
6.			
7.			
8.			
	99 = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 1 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	100					Clay Loam	
3-12	10YR 3/1	100					Clay Loam	Bottom of pit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil is moist but not saturated. Moisture likely from infiltration of surface water. Wildlife Area Supervisor, Sean Allen, who has worked at Los Banos Wildlife Area for over 30 years has never observed flooding or ponding at this location.

ATTACHMENT D

Plant Survey Report

August 7, 2023

Mr. Casey Miller
ForeFront Power, LLC
100 Montgomery Street, Suite 275
San Francisco, California 94104

RE: Los Banos Wildlife Area Solar Project, Merced County, California – Special-Status Plant Survey

Dear Mr. Miller:

ECORP Consulting, Inc. conducted a special-status plant survey on behalf of ForeFront Power, LLC for the Los Banos Wildlife Area Solar Project (Project). The survey location, purpose, methods, and results are included in the following sections.

LOCATION

The approximately 2.24-acre survey area for the Project (Survey Area) is located in the southwest corner of the Los Banos Wildlife Area adjacent to the California Department of Fish and Wildlife (CDFW) facility at 18110 Henry Miller Avenue near the City of Los Banos in Merced County, California (Figures 1 and 2). The Survey Area corresponds to portions of the southeast quarter of Section 36, Township 09 South, Range 10 East; and the southwest quarter of Section 31, Township 09 South, Range 11 East (Mount Diablo Base and Meridian) within the "Los Banos, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1960 [photo revised 1987]). The approximate center of the Survey Area is located at latitude 37.100008° and longitude -121.817025° (NAD83). The Survey Area is within the Middle San Joaquin – Lower Chowchilla watershed (Hydrologic Unit Code #18040001; Natural Resources Conservation Service [NRCS] et al. 2019).

PURPOSE

The purpose of the survey was to identify and map the locations of special-status plant species if found within the Survey Area to support the California Environmental Quality Act documentation for the Project.

METHODS

ECORP collected background information prior to conducting the survey on the potential presence of special-status plants within or near the Survey Area from a variety of sources, including the CDFW California Natural Diversity Database (CDFW 2023), the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation tool (USFWS 2023), and the California Native Plant Society (CNPS) Rare Plant Inventory (CNPS 2023). Biologists evaluated each special-status plant species with potential to occur in the vicinity of the Survey Area for its potential to occur onsite, and determined a list of target species. The following 16 species were included as targets for the survey:

- Alkali milk-vetch (*Astragalus tener* var. *tener*)

- Heartscale (*Atriplex cordulata* var. *cordulata*)
- Crownscale (*Atriplex coronata* var. *coronata*)
- Lost Hills crownscale (*Atriplex coronata* var. *vallicola*)
- Brittlescale (*Atriplex depressa*)
- Lesser saltscale (*Atriplex minuscula*)
- Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*)
- Hispid bird's-beak (*Chloropyron molle* ssp. *hispidum*)
- Recurved larkspur (*Delphinium recurvatum*)
- Spiny-sepaled button-celery (*Eryngium spinosepalum*)
- Little mousetail (*Myosurus minimus* ssp. *apus*)
- Prostrate vernal pool navarretia (*Navarretia prostrata*)
- California alkali grass (*Puccinellia simplex*)
- Sanford's arrowhead (*Sagittaria sanfordii*)
- Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*)
- Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*)

ECORP biologists used herbaria specimens, Calflora (2023), Calphotos (2023), and Jepson eFlora (2023) as references to assess phenology and observe morphology of the target species. In addition, biologists performed site visits to reference populations for Heartscale, Lesser saltscale, and Sanford's arrowhead prior to the survey. The reference population visits and review of other reference sources confirmed that the survey coincided with identifiable periods for all target species.

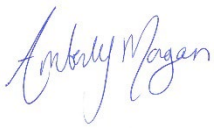
ECORP biologists Krissy Walker-Berry and Roxanne Kessler conducted the early season survey on April 27, 2023, and ECORP biologist Krissy Walker-Berry conducted the late season survey on July 11, 2023. The surveys were conducted in accordance with guidelines promulgated by USFWS (USFWS 2000), and CDFW (CDFW 2018), CNPS (CNPS 2001). The biologists walked meandering transects during the surveys throughout the Survey Area, including all suitable habitat for target species, and identified all plant species to the lowest possible taxonomic level required to assess rarity.

RESULTS

The biologists observed no special-status plant species during the survey. A list of all plant species observed within the Survey Area is included in Appendix A.

If you have any questions about the information presented in this letter, please contact me at amorgan@ecorpconsulting.com or (916) 782-9100.

Sincerely,



Amberly Morgan
Senior Environmental Planner/Project Manager

REFERENCES

California Department of Fish and Wildlife (CDFW). 2023. Rarefind Natural Diversity Database Program. California Natural Diversity Database (CNDDB). The Resources Agency, Sacramento, California.

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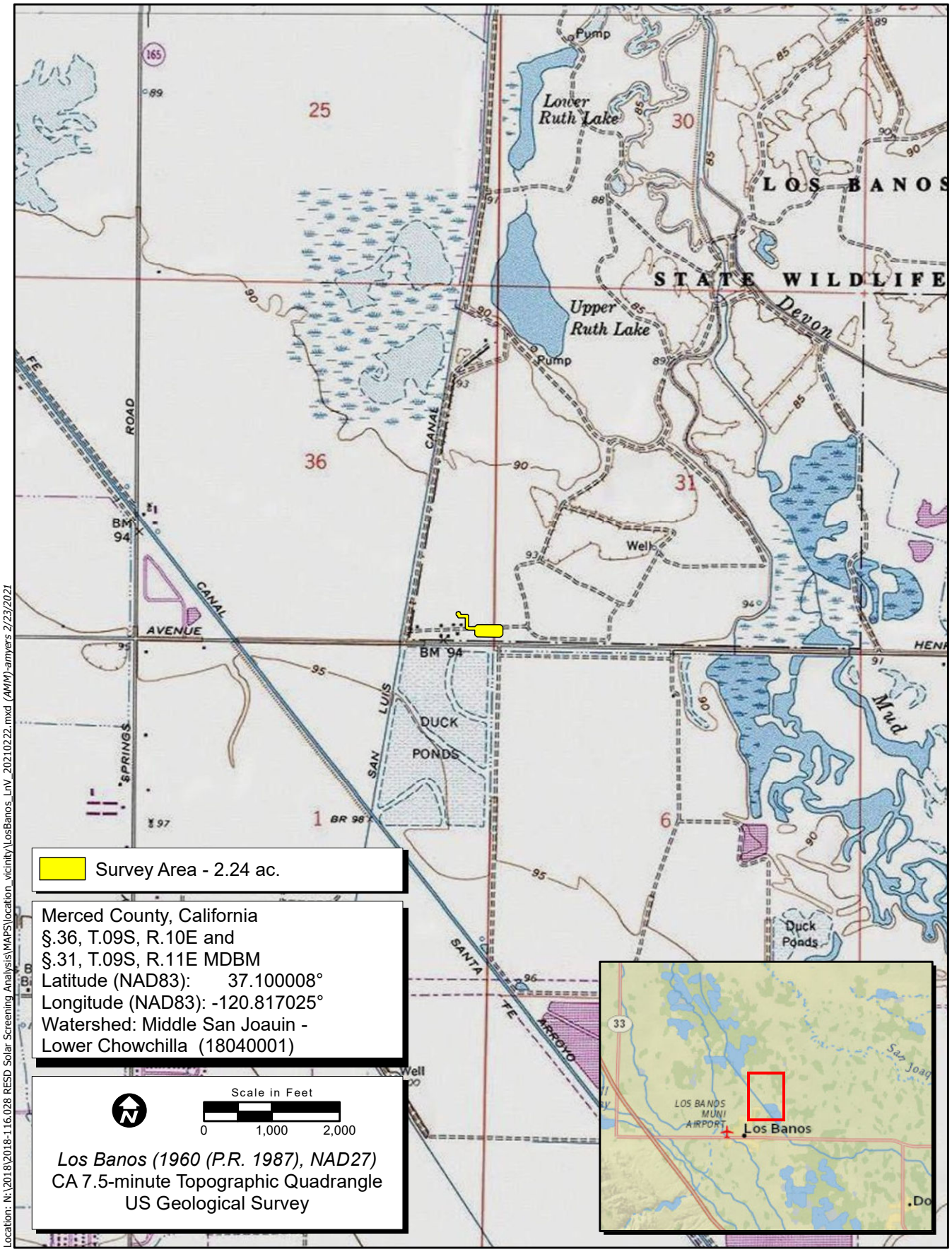
LIST OF FIGURES



Location: N:\2018\2018-116.028 RESD Solar Screening Analysis\MAPS\location_vicinity\LosBanos_LnV_20210222.mxd (AMM)-amyers 2/23/2021

Map Date: 2/23/2021

Figure 1. Survey Area Location and Vicinity

2021-112.02/Los Banos Wildlife Area Solar Project

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Map Features

- Survey Area - 2.24 acres
- Buffer Area - 1.60 acres
- Project Area - 0.64 acres

Base Source: ESRI World Imagery

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Map Date: 3/12/2021

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Scale in Feet
0 100

Figure 2. Survey Area Components

2021-112.02/Los Banos Wildlife Area Solar Project

APPENDIX A

Plant Species Observed Onsite (April 27 and July 11, 2023)

Scientific Name	Common Name
APIACEAE	**CARROT FAMILY**
*Conium maculatum**	Poison hemlock
*Torilis arvensis**	Field hedge parsley
APOCYNACEAE	**DOGBANE FAMILY**
Asclepias fascicularis	Narrow-leaf milkweed
ASTERACEAE	**SUNFLOWER FAMILY**
Centromadia pungens ssp. *pungens*	Common tarweed
*Cirsium vulgare**	Bull thistle
*Erigeron bonariensis**	Flax-leaved horseweed
Grindelia camporum	Common gumplant
Heliotropium curassavicum	Seaside heliotrope
*Helminthotheca echioides**	Bristly oxtongue
*Lactuca serriola**	Prickly lettuce
Pluchea odorata	Salt march fleabane
*Senecio vulgaris**	Common groundsel
*Silybum marianum**	Milk thistle
*Sonchus asper**	Prickly sowthistle
BORAGINACEAE	**BORAGE FAMILY**
Amsinckia menziesii	Small flowered fiddleneck
BRASSICACEAE	**MUSTARD FAMILY**
*Brassica nigra**	Black mustard
*Lepidium latifolium**	Perennial pepperweed
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Atriplex letiformis	Big saltbush
*Chenopodium album**	White goosefoot
*Salsola tragus**	Russian thistle
CLEOMACEACE	**SPIDER FLOWER FAMILY**
Peritoma arborea	Bladderpod
CONVOLVULACEAE	**MORNING-GLORY FAMILY**
Cressa truxillensis	Spreading alkali-weed
EUPHORBIACEAE	**SPURGE FAMILY**
*Euphorbia maculata**	Spotted spurge
FABACEAE	**LEGUME FAMILY**
*Melilotus indicus**	Annual yellow sweetclover
*Parkinsonia aculeata**	Mexican palo verde
*Robinia pseudoacacia**	Black locust
FRANKENIACEAE	**FRANKENIA FAMILY**
Frankenia salina	Alkali heath
JUNCACEAE	**RUSH FAMILY**
Juncus balticus ssp. *ater*	Baltic rush
Juncus effusus	Soft rush
MALVACEAE	**MALLOW FAMILY**
*Malva parviflora**	Cheeseweed
Malvella leprosa	Alkali-mallow

Scientific Name	Common Name
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Epilobium brachycarpum	Panicled willow-herb
Ludwigia peploides ssp. *peploides*	Water primrose
POACEAE	**GRASS FAMILY**
*Bromus diandrus**	Ripgut brome
*Bromus hordeaceus**	Soft brome
Bromus madritensis ssp. *rubens**	Red brome
*Cynodon dactlyon**	Bermuda grass
Distichlis spicata	Saltgrass
Elymus ponticus	Tall wheat grass
*Festuca bromoides**	Brome fescue
*Festuca myuros**	Rat-tail fescue
*Festuca perennis**	Italian ryegrass
*Hordeum marinum**	Mediterranean barley
*Hordeum murinum**	Foxtail barley
Muhlenbergia asperifolia	Alkali muhly
*Polypogon monspeliensis**	Annual rabbit-foot grass
*Triticum aestivum**	Cultivated wheat
POLYGONACEAE	**BUCKWHEAT FAMILY**
*Rumex crispus**	Curly dock
ROSACEAE	**ROSE FAMILY**
Rosa californica	California rose
SALICACEAE	**WILLOW FAMILY**
Populus fremontii	Fremont's cottonwood
Salix gooddingii	Goodding's black willow
Salix lasiolepis	Arroyo willow
SOLANACEAE	**NIGHTSHADE FAMILY**
Solanum americanum	Comon nightshade
SOLANACEAE	**POTATO FAMILY**
Lycium brevipes	Desert thorn
TYPHACEAE	**CATTAIL FAMILY**
Typha latifolia	Broad-leaf cattail
ULMACEAE	**ELM FAMILY**
*Ulmus parvifolia**	Siberian Elm
URTICACEAE	**NETTLE FAMILY**
*Urtica urens**	Dwarf nettle
ZYGOPHYLLACEAE	**CALTROP FAMILY**
*Tribulus terrestris**	Puncture vine

APPENDIX C

Archaeological and Architectural History Resources Inventory Report for the Los Banos Wildlife Area State Fish Hatchery Facility
ECORP Consulting, Inc. June 2023

THIS REPORT IS NOT PROVIDED IN THIS SUBMITTAL DUE TO CONFIDENTIALITY.
IT IS AVAILABLE UPON REQUEST.

Proposed Project
Total Construction-Related
Gasoline Usage

Table 1. Construction Year One	***Construction***		
Action	**Carbon Dioxide Equivalents (CO_2e) in Metric Tons[1]**	**Conversion of Metric Tons to Kilograms[2]**	**Construction Equipment Emission Factor[2]**
Project Construction	45	45,300	10.15
Total Gallons Consumed During Construction Year One:			**4,463**

Table 2. Construction Year Two			
Action	**Carbon Dioxide Equivalents (CO_2e) in Metric Tons[1]**	**Conversion of Metric Tons to Kilograms[2]**	**Construction Equipment Emission Factor[2]**
Project Construction	18	18,000	10.15
Total Gallons Consumed During Construction Year Two:			**1,773**

Sources:

[1]ECORP Consulting. 2023. Air Quality and Greenhouse Gas Emissions Assessment: Los Banos

[2]Climate Registry. 2016. General Reporting Protocol for the Voluntary Reporting Program version 2.1. January 2016. http://www.theclimateregistry.org/wp-content/uploads/2014/11/General-Reporting-Protocol-Version-2.1.pdf

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/20/2023
Case Description: Site Prep

Description	**Land Use**
Site Prep	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Grader	No	40	85		3966
Tractor	No	40	84		3966

Calculated (dBA)

Equipment		***Lmax**	**Leq**
Grader		47	43
Tractor		46	42
	Total	**47**	**45.6**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/20/2023
Case Description: Grading

Description	**Land Use**
Grading	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Grader	No	40	85		3966
Dozer	No	40		81.7	3966
Tractor	No	40	84		3966

Calculated (dBA)

Equipment	***Lmax**	**Leq**
Grader	47	43
Dozer	43.7	39.7
Tractor	46	42
Total	**47**	**46.6**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/20/2023
Case Description: Building Construction

Description	**Land Use**
Building Construction	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Crane	No	16		80.6	3966
Gradall	No	40		83.4	3966
Gradall	No	40		83.4	3966
Tractor	No	40	84		3966
Tractor	No	40	84		3966

Calculated (dBA)

Equipment		***Lmax**	**Leq**
Crane		42.6	34.6
Gradall		45.4	41.4
Gradall		45.4	41.4
Tractor		46	42
Tractor		46	42
	Total	**46**	**48**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/20/2023
Case Description: Trenching

Description	**Land Use**
Trenching	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Excavator	No	40		80.7	3966
Excavator	No	40		80.7	3966

Calculated (dBA)

Equipment		***Lmax**	**Leq**
Excavator		42.7	38.7
Excavator		42.7	38.7
	Total	**42.7**	**41.8**

*Calculated Lmax is the Loudest value.