DRAFT

Initial Study and Mitigated Negative Declaration for the Darrah Springs Solar Project

Lead Agency:

DGS CALIFORNIA DEPARTMENT OF GENERAL SERVICES

Real Estate Services Division

707 Third Street, 4th Floor

West Sacramento, California 95605

Prepared for:

FOREFRONT POWER

100 Montgomery Street #1400

San Francisco, California 94104

January 2024

ECORP Consulting, Inc.

ENVIRONMENTAL CONSULTANTS

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DRAFT

Initial Study and Mitigated Negative Declaration
Darrah Springs Solar Project
Paynes Creek, California

Lead Agency:

Real Estate Services Division
707 Third Street, 4th Floor
West Sacramento, California 95605

Prepared for:

100 Montgomery Street #1400
San Francisco, California 94104

Prepared by:

2525 Warren Drive
Rocklin, California 95677

January 2024

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DRAFT MITIGATED NEGATIVE DECLARATION
DARRAH SPRINGS SOLAR PROJECT

Lead Agency:	California Department of General Services
Project Proponent:	ForeFront Power LLC
Project Location:	The Project is located approximately 6.59 miles west of the town of Manton, approximately 1.9 miles directly north of the intersection of Manton Road and Wildcat Road, in unincorporated Shasta County. The Assessor Parcel Number (APN) for the Project Site is 704-240-003. Section 29, Township 30 North, Range 01 West (Mount Diablo Base and Meridian) within the "Shingletown, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1985). The approximate center of the Project Site is located at latitude 40.430185° and longitude -121.994037°.

Project Description:

The Proposed Project is a solar Photovoltaic (PV) power generation system to be located within the Darrah Springs Fish Hatchery facility, at 29661 Wildcat Rd, Paynes Creek, CA. The 738 ground-mounted solar arrays would occupy approximately 59,500 square feet and will convert sunlight to Direct Current (DC) electrical power which would then be converted to Alternating Current (AC) by string inverters before being delivered to the PG&E distribution system. The total system size is expected to be approximately 321 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. 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 1,050 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: January 12, 2024 to February 12, 2024

Mitigation Measures Incorporated into the Project to Avoid Significant Effects:

Biological Resources

BIO-1: **Define Project Impact Limits.** 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. 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.

Timing/Implementation: *Prior to ground disturbance*

Implementation/Responsibility/Verification *Developer/Project Biologists*

BIO-2: **Erosion Control Measures.** Erosion control measures shall be placed between avoided aquatic resources and the outer edge of the impact limits prior to commencement of construction activities and shall be maintained until construction is completed and soils have been stabilized.

Timing/Implementation: *Prior to construction*

Implementation/Responsibility/Verification: *Developer*

BIO-3: **Spill Prevention.** Any fueling in the Study Area shall use appropriate secondary containment techniques to prevent spills and shall occur at least 150 feet from potential aquatic resources.

Timing/Implementation: *During construction*

Implementation/Responsibility/Verification: *Developer*

BIO-4: **Northwestern Pond Turtle.** A qualified biologist shall conduct a pre-construction northwestern pond turtle survey in the Project Area (including impact areas, access roads, and staging areas) within 48 hours prior to construction activities. Any northwestern pond turtles discovered in the Project Area immediately prior to or during Project activities shall be kept out of harm's way and allowed to move out of the work area of their own volition. If this is not feasible, they shall be captured by a qualified biologist and relocated out of harm's way to the nearest suitable habitat at least 100 feet from the Project work area where they were found.

Timing/Implementation: *Prior to construction*

Implementation/Responsibility/Verification: *Developer/Project Biologists*

BIO-5: **Special-Status Birds and Migratory Bird Treaty Act-Protected Birds.** Implementation of general recommendation BIO-1 and the following specific measure would avoid and/or minimize potential adverse effects to nesting birds:

- 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 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-6: **Pallid Bats.** Implementation of general recommendation BIO-1 and the following specific measure would avoid and/or minimize potential adverse effects to pallid bat:

- Within 14 days prior to Project activities that may impact bat roosting habitat (e.g., removal of trees), a qualified biologist shall survey for all suitable roosting habitat within the Project impact limits. If suitable roosting habitat is not identified, no further measures are necessary. If suitable roosting habitat is identified, a qualified biologist shall conduct an evening bat emergence survey that may include acoustic monitoring to determine whether bats are present. If roosting bats are determined to be present within the Project site, consultation with CDFW prior to initiation of construction activities and/or preparation of a Bat Management Plan outlining avoidance and minimization measures specific to the roost(s) potentially affected may be required.

Timing/Implementation: *Prior to construction*

Implementation/Responsibility/Verification: *Developer/Project Biologists*

BIO-7: **Riparian Habitat and Oak Woodlands.** Implementation of general recommendation BIO-1 and the following specific measure would avoid and/or minimize potential adverse effects to riparian vegetation and oak woodlands:

- Where feasible, avoid or minimize ground disturbance within the dripline of oak trees. Mapping of oak driplines in the Study Area and demarcation of avoidance zones during construction may be required.

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 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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Appendix D – Energy Assessment for Darrah Springs Solar Ground Mount Project. ECORP Consulting, Inc. March 22, 2023

Appendix E – Noise Assessment for Darrah Springs Solar Ground Mount Project. ECORP Consulting, Inc. March 22, 2023

LIST OF ACRONYMS AND ABBREVIATIONS

Term	Definition
AB	Assembly Bill
AC	Alternating Current
AMSL	Above Mean Sea Level
ANSI	American National Standards Institute
APE	Area of Potential Effects
APN	Assessor Parcel Number
BAMM	Best Available Mitigation Measures
BMP	Best Management Practice
BRA	Biological Resources Assessment
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 Officers Association
CARB	California Air Resources Board
CARI	California Aquatic Resources Inventory
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFC	California Fire Code
CGS	California Geological Survey
CH_4	Methane
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System

Term	Definition
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon monoxide
CO_2	Carbon Dioxide
CO_2e	carbon dioxide equivalents
County	Shasta County
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
dBA	A-weighted decibels
DC	Direct Current
DGS	California Department of General Services
DHS	Department of Health Services
DPM	Diesel Particulate Matter
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EIR	Environmental Impact Report
FHSZ	Fire Hazard Severity Zone
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	Greenhouse Gas
GLO	General Land Office
GP	General Plan
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
MLD	Most Likely Descendant
MND	Mitigated Negative Declaration
MRZ	Mineral Resource Zone
N_2O	Nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEIC	Northeast Information Center
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NIOSH	National Institute for Occupational Safety and Health
NO_x	Oxides of Nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

Term	Definition
NRHP	National Register of Historic Places
NSVAB	Northern Sacramento Valley Air Basin
O_3	Ozone
OHP	Office of Historic Preservation's
PG&E	Pacific Gas & Electric Company
PM	Particulate Matter
PPV	Peak Particle Velocity
PRC	Public Resources Code
PV	Photovoltaic
RABA	Redding Area Bus Authority
ROG	Reactive Organic Gases
RWQCB	Regional Water Control Board
SB	Senate Bill
SCAQMD	Shasta County Air Quality Management District
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act of 1975
SMM	Standard Mitigation Measures
SO_2	Sulfur dioxide
SR	State Route
SRA	State Responsibility Area
SRWP	Sacramento River Watershed Program
SSC	Species of State Concern
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCR	Tribal Cultural Resources
UCMP	University of California Museum of Paleontology
USC	U.S. Code
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WEAP	Worker Environmental Awareness Program

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1.0 BACKGROUND

1.1 Summary

Project Title:	Darrah Springs Solar Project
Lead Agency Name and Address:	State of California, Department of General Services Real Estate Services Division 707 Third Street, 4th Floor West Sacramento, CA 95605
Contact Person and Phone Number:	Terry Ash 916 201-0085
Project Location:	Darrah Springs Fish Hatchery Facility 29661 Wildcat Rd, Paynes Creek, California
General Plan Designation:	PUB - Public Land
Zoning:	U - Unclassified

1.2 Introduction

The Californian Department of General Services (DGS) 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 Darrah Springs Ground Mount 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. 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 shall be submitted to:

Ms. Terry Ash, DGS Senior Environmental Planner
cc: Amberly Morgan
2525 Warren Drive
Rocklin, CA 95677

amorgan@ecorpconsulting.com

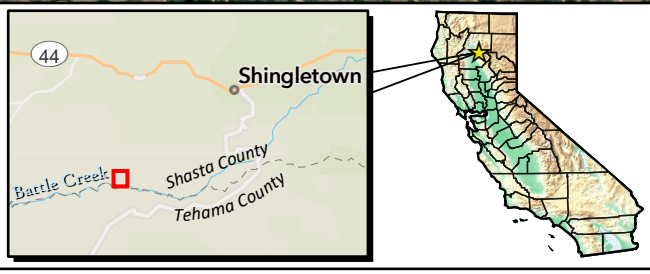
1.3 Surrounding Land Uses/Environmental Setting

The Proposed Project is in unincorporated Shasta County (County) approximately 6.6 miles west of the town of Manton. The Site is situated east of Interstate 5 (I-5), north of SR-36, south of SR-44, and within

the California Department of Fish and Wildlife (CDFW) Darrah Springs Fish Hatchery Facility, located at 29661 Wildcat Road in the City of Paynes Creek, California (Figure 1-1: Project Location and Vicinity). The Project Area is in the lower foothills of the Cascade Mountain range. The surrounding land is characterized by rolling hillsides within an oak woodland setting and open meadows. Project Area elevations range from 1,005 to 1,015 feet Above Mean Sea Level (AMSL). The majority of the Study Area is a mowed annual grassland. The Study Area also includes a portion of oak woodland and a small portion of Wildcat Road. A channelized tributary of Baldwin Creek is located approximately 52 feet north of the proposed solar array field. A paved road (the main road providing access to the Darrah Springs State Fish Hatchery) is located approximately 106 feet south of the proposed solar array field. North Fork Battle Creek is located approximately 0.25 mile south of the southern terminus of the Project Area. Baldwin Creek flows southwest, north of the Project Area.

As shown in Figure1- 2: representative Photographs below, surrounding land uses include the Darrah Springs Fish Hatchery to the northwest, a handful of single-family residences directly north of the Site for seasonal workers of the facility, and open space/wildlife area surrounding the Site. Directly north and east of the Site, beyond open space land and approximately 0.54 mile and 0.74-mile distance, respectively, are individual rural single-family residences.

Project Area - 2.59 acres
Shasta County, California
§29, T.30N, R.01W, MDBM
Latitude (NAD83): 40.430119°
Longitude (NAD83): -121.994387°



Location: N:\2018\2018-116.028 RESD Solar Screening Analysis\MAPS\CEQA\ForeFront Solar CEQA.aprx - Darrah Springs CEQA Location and Vicinity 20230525 (JSwager - 6/7/2023)

Map Date: 6/7/2023
Sources: ESRI, Maxar (2021), ForeFront Power

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 1-1. Project Location and Vicinity

2021-112.01 ForeFront Power - Darrah Springs Solar Project

Figure 1-2. Representative Photographs

Photo 1. Representative Photo of the Open Space Land Surrounding the Project Site

Photo 2. Representative Photo of the Open Space Land Surrounding the Project Site

2.0 PROJECT DESCRIPTION

2.1 Project Background

The State Department of General Services (DGS) is proposing to add solar arrays to four CDFW facilities around the state: Payne Creek (near Redding), Paynes Creek, Mendota, and Gray Lodge. The solar fields would be located adjacent to existing CDFW facilities (i.e., fish hatcheries or administrative complexes) and would be .75 to 1.75 acres 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 buildings or large renovation projects. Incorporating solar 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 into 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 Darrah Springs Fish Hatchery Facility, at 29661 Wildcat Rd, Paynes Creek, CA. The 738 ground-mounted solar arrays would occupy approximately 59,500 square feet and will convert sunlight to DC electrical power which would then be converted to AC 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 321 kilowatts (kW), subject to final design and site optimization. The total size of the project footprint is just over an acre including the trench alignment, solar array, and fence.

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 1,050 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.

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. The inverters then send alternating current electricity to an on-site transformer to step the electricity up to the interconnection voltage. Trenching for the interconnection line will be approximately 650 linear feet and will be excavated and backfilled pending the final conduit size and equipment utilized. The interconnection line will extend from the southwest corner of the array and will run 350 feet west before turning south for an additional 300 feet to the Point of Connection which is an existing power pole. .As indicated on Figure 2-1: Site Plan, a service upgrade and step-down transformer is needed for the intertie location.

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. The Site is accessible from a paved roadway approximately 140 ft directly south of the solar array.

2.4 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

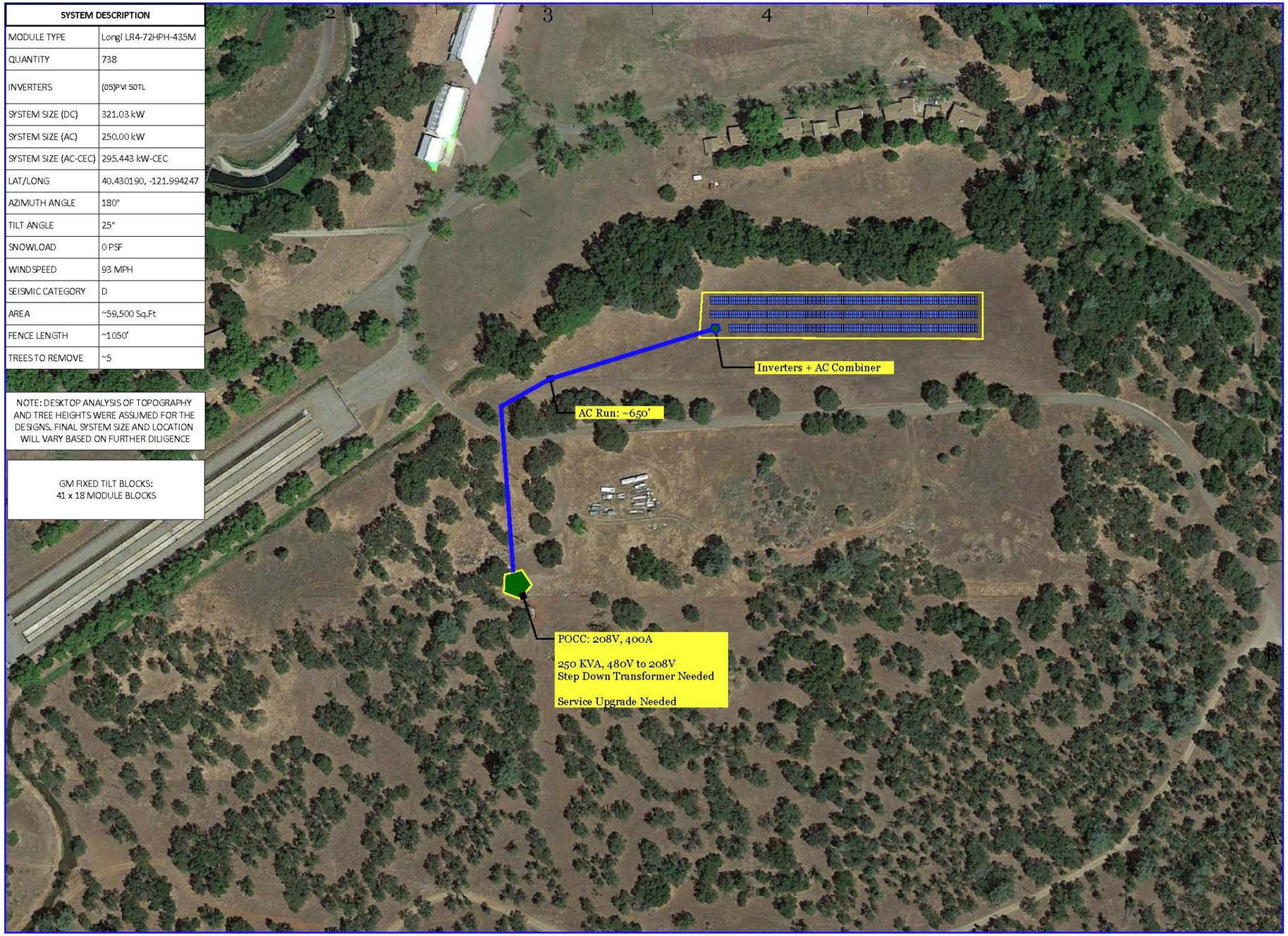
- One backhoe for wheel compaction
- One forklift for material deliveries
- One to three pile driving rigs
- One generator for Conex storage interior lighting and office

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.

SYSTEM DESCRIPTION	
MODULE TYPE	Longi LR4-72HPH-435M
QUANTITY	738
INVERTERS	(05)PVI 50TL
SYSTEM SIZE (DC)	321.03 kW
SYSTEM SIZE (AC)	250.00 kW
SYSTEM SIZE (AC-CEC)	295.443 kW-CEC
LAT/LONG	40.430190, -121.994247
AZIMUTH ANGLE	180°
TILT ANGLE	25°
SNOWLOAD	0 PSF
WIND SPEED	93 MPH
SEISMIC CATEGORY	D
AREA	~59,500 Sq.Ft
FENCE LENGTH	~1050'
TREES TO REMOVE	~5

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:
41 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
Darrah Springs Fish Hatchery

29661 Wildcat Rd,
Paynes Creek, CA, USA

PROJECT NUMBER:
CA-19-0272

SHEET TITLE:
CONCEPTUAL LAYOUT

SHEET SIZE:
TABLOID 11" X 17"

NO.	REVISION	DATE	INIT.

DATE: 15.Mar.2021
DRAWN BY: RP
ENGINEER: RP
APPROVED BY:

PROJECT PHASE:
PRELIMINARY DESIGN
SCALE: 1" : 150'

SHEET NO:
CL-1

Source: ForeFront Power

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 2-1. Site Plan

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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.

2.5 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

2.6 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 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 California Historical Resources Information System (CHRIS).

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3.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED AND DETERMINATION

3.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by the 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

State Scenic Highways

The California Scenic Highway Program protects and enhances the scenic beauty of California's highways and adjacent corridors. The California Department of Transportation (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 the Shasta County General Plan (GP), the portion of Shasta Dam Boulevard west from Lake Boulevard received official State designation as a scenic highway in 1981. The Proposed Project Site is not visible from the scenic route as it is approximately 38 miles southeast and surrounded by oak woodlands (Caltrans 2023a).

General Plan

The following objectives regarding scenic views are set forth in The General Plan Approach of the Shasta County General Plan:

SH-1: *Protection of the natural scenery along the official scenic highways of Shasta County from new development which would diminish the aesthetic value of the scenic corridor.*

SH-2: *New development along scenic corridors of the official scenic highway shall be designed to relate to the dominant character of the corridor (natural or natural and man-made contrast) or of a particular segment of the corridor. Relationships shall be achieved in part through regulations concerning building form, site location, and density of new development.*

SH-3: *Recognition that the management practices of agriculture, timber, and other resource-based industries which may cause some degradation of the visual quality of the scenic corridor are inevitable, but their impacts are temporary.*

4.1.1.2 Visual Character of the Project Site

The Proposed Project is in unincorporated Shasta County, east of I-5, north of State Route 36 (SR-36), and south of SR-44, and within the Darrah Springs Fish Hatchery facility in Paynes Creek. The ground-mounted solar arrays would occupy approximately 59,500 square feet, with 43,030 square feet of area within the

perimeter fencing, on the Darrah Springs Fish Hatchery facility. This portion of Shasta County has a unique geography of oak habitats, including shady riparian woodland along the water features, and extensive oak savannas in the foothills. The Proposed Project is only accessible by rural paved roads, surrounded by oak savanna, and has views of rolling hills to the north.

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?	☐	☐	☐	☒

No Impact.

The Proposed Project is proposed within a CDFW Fish Hatchery property surrounded by rural roadways. Based on review of the Caltrans State Scenic Highway List and the Shasta County General Plan, no officially designated scenic vistas or scenic land units were identified within the Project Site or vicinity (Caltrans 2023a, Shasta County 2004). Therefore, the Project would have no impact on scenic vistas 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
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒

No Impact.

As stated above, according to Caltrans' list of designated Scenic Highways and the Shasta County General Plan, the Proposed Project is not located near or within a state scenic highway viewshed 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 oak savanna. Project construction activities would introduce heavy equipment, including 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 will be no change in the visual character or quality of public views of the Fish Hatchery and surroundings and the Project would not conflict with zoning and other regulations governing scenic quality. There would 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 15 miles east of Anderson, CA. The closest sensitive receptors would be the rural residents along Lanes Valley Road located approximately 1.5 miles south of the Project Site. Although there is a potential for fugitive glare to be directed to the west, the project site/Darrah Springs Fish Hatchery 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 is under Williamson Act contract. The California Important Farmland Finder Map identifies the site as Other Land and all the area surrounding as Grazing Land (California Department of Conservation 2022).

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 Other Land and areas surrounding as Grazing 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 and no nearby parcels are under Williamson Act contracts (Shasta County 2004). 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 Shasta County Air Quality Management District (SCAQMD). 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 in unincorporated Shasta County within the Darrah Springs Fish Hatchery facility. 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 Northern Sacramento Valley Air Basin (NSVAB), which includes the counties of Butte, Colusa, Glenn, Shasta, Sutter, Shasta, and Yuba. The NSVAB is bounded on the north and west by the Coastal Mountain Range and on the east by the southern end of the Cascade Mountain Range and the northern end of the Sierra Nevada. These mountain ranges reach heights in excess of 6,000 feet AMSL, with individual peaks rising much higher. The mountains form a substantial physical barrier to locally created pollution as well as to pollution transported northward on prevailing winds from the Sacramento metropolitan area (Sacramento Valley Air Quality Engineering and Enforcement Professionals 2021).

The environmental conditions of NSVAB are conducive to potentially adverse air quality conditions. The region is characterized by moderately wet winters followed by hot and dry summers. The basin area traps pollutants between two mountain ranges to the east and the west. This problem is exacerbated by a temperature inversion layer that traps air at lower levels below an overlying layer of warmer air. Prevailing winds in the area are from the south and southwest. Sea breezes flow over the San Francisco Bay Area and into the Sacramento Valley, transporting pollutants from the large urban areas. Growth and urbanization in Shasta County have also contributed to an increase in emissions.

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 (O3), carbon monoxide (CO), particulate matter (PM), oxides of nitrogen (NOx), sulfur dioxide (SO2), and lead. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas.

The air quality regulating authority in Shasta County is the SCAQMD. 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 Shasta County. The unique mountain-encompassed geography with its potential for trapped pollutants underscores the importance of the SCAQMD regulating air pollution. Shasta County is classified as an attainment area for all federal standards. However, the County is designated as a nonattainment area for the state standard of O_3 (CARB 2022).

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. Shasta County is in attainment for all federal standards.

As previously mentioned, the Project Site is located within the Shasta County portion of the NSVAB, which is under the jurisdiction of the SCAQMD. The Northern Sacramento Valley Planning Area Triennial Air Quality Attainment Plan (2021) is the most recent air quality planning document covering Shasta County and contains mechanisms to achieve O3 standards. These pollutant control strategies are based on the latest scientific and technical information and planning assumptions, updated emission inventory methodologies for various source categories, and the latest population growth projections and associated vehicle miles traveled projections for the region. SCAQMD's latest population growth forecasts were defined in consultation with local governments and with reference to local general plans. A project conforms with the SCAQMD attainment plans if it complies with all applicable district rules and regulations, complies with all control measures from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan).

SCAQMD growth projections for the County are based on the Shasta County General Plan. As such, projects that propose development consistent with the growth anticipated by the respective general plan of the jurisdiction in which the project is located would be consistent with SCAQMD air quality planning. If a project, however, proposes a project that increases the population density than that assumed in the general plan, the project may conflict with SCAQMD air quality planning efforts and could result in a significant impact on air quality. The Project is proposing a solar PV power generation system located within the Darrah Springs Fish Hatchery facility. It would not increase the number of homes or jobs and would not contribute to emissions once the construction of the upgrades is complete. Additionally, to comply with all applicable SCAQMD rules and regulations, the Proposed Project would also have to adhere to the annual thresholds for individual pollutants. As demonstrated below, the Proposed Project construction phase would not surpass any of the SCAQMD's significance thresholds. 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).

For these reasons, the Project would not conflict with the Northern Sacramento Valley Planning Area Triennial Air Quality Attainment Plan. There is no impact. No mitigation required.

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 non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐

Less Than Significant Impact.

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.

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 Shasta County. Appendix A provides more information regarding the construction assumptions, including construction equipment and duration, used in this analysis.

The SCAQMD has established thresholds under CEQA for the assessment of air quality impacts in a daily (pounds per day) two level approach, Level A and Level B. The SCAQMD recommends that projects apply Standard Mitigation Measures (SMM) and appropriate Best Available Mitigation Measures (BAMM) when a project exceeds Level A thresholds and SMMs, BAMMs, and special BAMMs when a project exceeds Level B thresholds. Projects that cannot mitigate emissions to levels below the Level B thresholds are considered significant. Based on these standards, the effects of the Proposed Project have been categorized as either a "less than significant impact" or a "potentially significant impact." Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a significant and unavoidable impact (Shasta County 2004).

Predicted daily 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 SCAQMD's thresholds of significance.

Table 4.3-1. Construction-Related Emissions (pounds per day)						
Activity	**ROG**	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Construction Year One	0.11	0.88	1.01	0.00	0.07	0.05
SCAQMD Level A Thresholds	*25*	*25*	*–*	*–*	*80*	*–*
SCAQMD Level B Thresholds	*137*	*137*	*–*	*–*	*137*	*–*
Exceed SCAQMD Daily Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: California Emissions Estimator Model (CalEEMod) Version 2022.1. Refer to Appendix A for Model Data Outputs.
Notes: CO = Carbon Monoxide; NO_x = Nitric Oxides; ROG = Reactive organic gases; $PM_{2.5}$ = fine particulate matter. PM_{10}= coarse particulate matter; SO_2 = Sulfur Dioxide;.
The SCAQMD does not provide thresholds for CO, SO_2 or $PM_{2.5}$.

As shown in Table 4.3-1, daily construction related emissions would not exceed the Level A significance thresholds. As such, a less than significant impact would occur.

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 SCAQMD significance thresholds during construction and would not be a source of emissions once construction is completed. Therefore, this impact is less than significant. No mitigation required.

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 Project is proposed to be constructed at the Darrah Springs Fish Hatchery, which contains housing for staff. Since the Project is proposing a solar generation system to improve this housing, the housing itself will not be evaluated as a sensitive receptor. It is further acknowledged that the housing onsite serves as temporary housing for Darrah Springs Fish Hatchery staff and does not accommodate permanent residents. The nearest permanent, off-site sensitive receptor to the Project Site is a rural single-family residence located approximately 3,000 feet east of the Project Site.

Construction-Generated Air Contaminants

Construction-related activities would result in temporary, short-term Project-generated emissions of Diesel Particulate Matter (DPM), ROG, NOx, CO, and PM10 from the exhaust of off-road, heavy-duty diesel equipment for site preparation (e.g., clearing, grading); paving; and other miscellaneous activities. The Shasta County portion of the NSVAB is listed as nonattainment area for the state standards of O3 (CARB 2022). Thus, existing O3 levels in the NSVAB are at unhealthy levels during certain periods. However, as shown in Table 4.3-1, the Project would not exceed the SCAQMD significance thresholds for construction emissions and therefore no regional health effects from Project criteria pollutants would occur.

The health effects associated with O3 are generally associated with reduced lung function. The Project would not involve construction activities that would result in high levels of O3 precursor emissions (ROG or NOx) in excess of the SCAQMD thresholds, the Project is not anticipated to substantially contribute to regional O3 concentrations and the associated health impacts.

CO tends to be a localized impact associated with congested intersections. In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions. The Project would not involve construction activities that would result in CO emissions in that would pose a health risk to the nearby residences. The exposure from construction would be temporary and due air flow within the area, would not result in a concentrated exposure to CO. Thus, the Project's CO emissions would not contribute to the health effects associated with this pollutant.

PM10 and PM2.5 contain microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. PM exposure has been linked to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing. For construction activity, DPM is the primary toxic air contaminant of concern. The potential cancer risk from the inhalation of DPM outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs. PM10 exhaust is considered a surrogate for DPM as all diesel exhaust is considered to be DPM and PM10 contains PM2.5 as a subset. As with O3 and NOx, the Project would not generate emissions of any PM that would exceed the SCAQMD's thresholds. Accordingly, the Project's PM10 and PM2.5 emissions are not expected to cause any increase in related regional health effects for these pollutants.

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.

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 is less than significant. No mitigation required.

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. A less than significant impact would occur. No mitigation required.

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 approximately 2.56-acre Study Area includes the impact limits of the Project (Project Area) plus a 25-foot buffer (Buffer Area). The Project Area includes the area where the solar array will be installed and a trenching alignment from the solar array area to a transformer. This portion of Shasta County has a unique geography of oak habitats, including shady riparian woodland along the water features, and extensive oak savannas in the foothills. The Proposed Project is only accessible by rural paved roads, surrounded by oak savannas.

4.4.1.1 Vegetation Communities and Land Cover Types

Vegetation communities or land cover types observed within the Study Area include annual grassland, blue oak (*Quercus douglasii*) woodland, and developed areas. These are described in the following sections.

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

Annual Grassland

Annual grassland is located within the solar array area and most of the trenching alignment (Appendix B). The annual grassland is a flat open area that appeared to be regularly mowed to maintain the facility grounds. At the time of the site reconnaissance, vegetation was still in very early stages and the annual grassland was dominated by unidentifiable annual grasses and yellow star-thistle (*Centaurea solstitialis*). Grasses observed in un-mowed portions of the Study Area included wild oats (*Avena* sp.), medusahead grass (*Elymus caput-medusae*), and hedgehog dog-tail grass (*Cynosurus echinatus*). Common forbs observed within the grassland included red-stemmed filaree (*Erodium cicutarium*), vetch (*Vicia* sp.) and miner's lettuce (*Claytonia* sp.).

Blue Oak Woodland

Blue oak woodland is located within the trenching alignment (Appendix B, Figure 1). At the time of the site reconnaissance, blue oak was the dominant species within the woodland and valley oak (*Quercus lobata*) was present at lesser density. Vegetation in the understory was the same as described for the annual grassland. The blue oak woodland was consistent with the Blue Oak Forest & Woodland Alliance (Appendix B), which has a State Rarity Ranking of S4 and is not considered to be a sensitive natural community.

Developed/Disturbed

A portion of Wildcat Road is located within the Study Area. Wildcat Road is a paved two-lane road that is devoid of vegetation except for along the narrow road shoulder. Vegetation along the road shoulder included wild oats, yellow star-thistle, and vetch.

4.4.1.2 Wildlife Observations

Wildlife observed within or flying over the Study Area during the site reconnaissance includes California scrub-jay (*Aphelocoma californica*), house sparrow (*Passer domesticus*), and American goldfinch (*Spinus tristis*). Sign of wildlife included mule deer (*Odocoileus hemionus*) scat and disturbance from fossorial mammals.

4.4.1.3 Aquatic Resources

A preliminary aquatic resources assessment to identify potential Waters of the U.S. and State was conducted within the Study Area concurrent with the reconnaissance-level field survey. No potential aquatic resources were observed within the Study Area, and no aquatic resources are mapped within the Study Area in the California Aquatic Resources Inventory (CARI) data (Appendix B, Figure 4). 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. The nearest aquatic resource to the Study Area is a ditch that is located north and east of the Study Area (Appendix B, Figure 4).

4.4.1.4 Evaluation of Species Identified in the Literature Search

The Biological Resource Assessment (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 Special-Status Plants

A total of 37 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, 26 species are considered to be absent from the Study Area due to the lack of suitable habitat (See BRA, Appendix B). The following 11 species that have potential to occur within five miles of the project site: Red-flowered bird's-foot trefoil (*Acmispon rubriflorus*), Sanborn's onion (*Allium sanbornii* var. *sanbornii*), Red-stemmed cryptantha (*Cryptantha rostellata*), Stony Creek spurge (*Euphorbia ocellata* ssp. *rattanii*), Butte County fritillary (*Fritillaria eastwoodiae*), Jepson's horkelia (*Horkelia daucifolia* var. *indicta*), Broad-lobed leptosiphon (*Leptosiphon latisectus*), Ahart's paronychia (*Paronychia ahartii*), Bidwell's knotweed (*Polygonum bidwelliae*), Redding checkerbloom (*Sidalcea celata*), and Maverick clover (*Trifolium piorkowskii*).

4.4.1.6 Special-Status Wildlife

No federally or state listed reptile species, bird species, or mammals have the potential to occur I the Study Area. However, there is potential for one CDFW Species of State Concern (SSC), northwestern pond turtle, three non-listed special-status bird species (burrowing owl (*Athene cunicularia*), Nuttall's woodpecker (*Dryobates nuttallii*), and oak titmouse(*Baeolophus inornatus*)), and one mammal Pallid Bat (*Antrozous pallidus*) to occur within the Study Area.

4.4.1.7 Wildlife Movement Corridors

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.

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 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 biologist Hannah Stone conducted special status plant survey on April 24 and June 14, 2023 in accordance with guidelines promulgated by USFWS (2000), and CDFW (2018), CNPS (2001). Ms. Stone walked meandering transects throughout the Survey 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. (Appendix B, Attachment C). 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 Reptiles

No special-status species are known to occur within the Study Area; however, wildlife surveys have not been conducted. The Study Area includes potential habitat for special-status species within the Project Area, which is planned for impact. Potential effects to special-status species are summarized in the following sections by taxonomic group or species.

The northwestern pond turtle, a CDFW SSC, has the potential to occur in the study area. Implementation of mitigation measures BIO-1, through BIO-4 would avoid or minimize potential effects to the northwestern pond turtle.

4.4.2.3 Special-Status and Other Protected Birds

There is potential for three non-listed special-status bird species (burrowing owl, Nuttall's woodpecker, and oak titmouse) to nest and forage within the Study Area. Implementation of mitigation measure BIO-5 would avoid or minimize potential effects to special-status birds and other protected birds.

4.4.2.4 Special-Status Mammals

The pallid bat, a CDFW SSC, has the potential to roost and forage within the Study Area. Implementation of mitigation measure BIO-6 would avoid or minimize potential effects to pallid bat.

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 With Mitigation Incorporated.

The Project would not impact sensitive natural communities. Riparian habitat and blue oak woodland are located within the Study Area. The Project does not propose removal of trees. A limited amount of ground disturbance for trenching activities may occur within the dripline of oak trees within the non-riparian oak woodland, and on the outermost edge of the dripline of trees within the riparian corridor. Ground disturbance within the dripline may impact tree roots and adversely affect the health of impacted trees. However, this is not expected to have a substantial adverse effect on riparian habitats or oak woodlands and is not expected to result in conversion of oak woodlands. Implementation of mitigation measure BIO-1 through BIO-3 and BIO-7 would avoid or minimize potential impacts to oak woodland and riparian habitat.

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 With Mitigation Incorporated.

Based on the preliminary aquatic resources assessment, there are no potential aquatic resources within the Study Area. Therefore, the Project is not expected to have a substantial adverse effect on protected aquatic resources. There is one offsite ditch located near the Study Area. Implementation of mitigation measures BIO-1, BIO-2, and BIO-3 would avoid or minimize potential impacts to offsite aquatic resources.

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.

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 on State-owned land and there are no known local policies or ordinances that would apply. Therefore, the Project would not conflict with local policies or ordinances.

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 any plans.

4.4.3 Mitigation Measures

BIO-1: **Define Project Impact Limits.** 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. 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.

Timing/Implementation: *Prior to ground disturbance*

Implementation/Responsibility/Verification *Developer/Project Biologists*

BIO-2: **Erosion Control Measures.** Erosion control measures shall be placed between avoided aquatic resources and the outer edge of the impact limits prior to commencement of construction activities and shall be maintained until construction is completed and soils have been stabilized.

Timing/Implementation: *Prior to construction*

Implementation/Responsibility/Verification: *Developer*

BIO-3: **Spill Prevention.** Any fueling in the Study Area shall use appropriate secondary containment techniques to prevent spills and shall occur at least 150 feet from potential aquatic resources.

Timing/Implementation: *During construction*

Implementation/Responsibility/Verification: *Developer*

BIO-4: **Northwestern Pond Turtle.** A qualified biologist shall conduct a pre-construction northwestern pond turtle survey in the Project Area (including impact areas, access roads, and staging areas) within 48 hours prior to construction activities. Any northwestern pond turtles discovered in the Project Area immediately prior to or during Project activities shall be kept out of harm's way and allowed to move out of the work area of their own volition. If this is not feasible, they shall be captured by a qualified biologist and relocated out of harm's way to the nearest suitable habitat at least 100 feet from the Project work area where they were found.

Timing/Implementation: *Prior to construction*

Implementation/Responsibility/Verification: *Developer/Project Biologists*

BIO-5: **Special-Status Birds and Migratory Bird Treaty Act-Protected Birds.** Implementation of general recommendation BIO-1 and the following specific measure would avoid and/or minimize potential adverse effects to nesting birds:

- 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 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: *Biologists and Developer*

BIO-6: **Pallid Bats.** Implementation of general recommendation BIO-1 and the following specific measure would avoid and/or minimize potential adverse effects to pallid bat:

- Within 14 days prior to Project activities that may impact bat roosting habitat (e.g., removal of trees), a qualified biologist shall survey for all suitable roosting habitat within the Project impact limits. If suitable roosting habitat is not identified, no further measures are necessary. If suitable roosting habitat is identified, a qualified biologist shall conduct an evening bat emergence survey that may include acoustic monitoring to determine whether bats are present. If roosting bats are determined to be present within the Project site, consultation with CDFW prior to initiation of construction activities and/or preparation of a Bat Management Plan outlining avoidance and minimization measures specific to the roost(s) potentially affected may be required.

Timing/Implementation: *Prior to construction*

Implementation/Responsibility/Verification: *Biologists and Developer*

BIO-7: **Riparian Habitat and Oak Woodlands.** Implementation of general recommendation BIO-1 and the following specific measure would avoid and/or minimize potential adverse effects to riparian vegetation and oak woodlands:

- Where feasible, avoid or minimize ground disturbance within the dripline of oak trees. Mapping of oak driplines in the Study Area and demarcation of avoidance zones during construction may be required.

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 Darrah Springs Solar Project near Paynes Creek in Shasta 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. Th Archaeological and Architectural History Resources Inventory Report for the Darrah Springs State fish Hatchery Facility is provided as Appendix C.

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 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 lower foothills of the Cascade Mountain range in southern Shasta County. The surrounding land is characterized by rolling hillsides within an oak woodland setting and open meadows. Project Area elevations range from 1,005 to 1,015 feet AMSL. The Project Area is devoid of trees and consists of an open field that contains short grasses. A channelized tributary of Baldwin Creek is located approximately 52 feet north of the proposed solar array field. A paved road (the main road providing access to the Darrah Springs State Fish Hatchery) is located approximately 106 feet south of the proposed solar array field. North Fork Battle Creek is located approximately 0.25 mile south of the southern terminus of the Project Area. Baldwin Creek flows southwest, north 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 solar array installation, vegetation removal, grading, trenching, stockpiling, staging, and other elements in the official Project description. The horizontal APE measures 2.59 acres which includes a 25-foot buffer from the solar field and the intertie alignment.

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. It could extend as deep as 10 feet below the current surface for electrical conduit 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 as high as 20 feet above the current surface, which is the maximum height 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 Northeast Information Center (NEIC) of the CHRIS at California State University, Chico on March 10, 2023. 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. NEIC staff completed and returned the records search to ECORP on March 13, 2023.

In addition to the official records and maps for archaeological sites and surveys in Shasta County, the following historic references were also reviewed: Built Environment Resource Directory; Historic Property Data File for Shasta 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 Local Bridge Survey; Caltrans State Bridge Survey; and *Historic Spots in California*.

Other references examined include a RealQuest Property Search and 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).

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. The Yana, a Hokan-language-speaking group, inhabited the upper Sacramento River valley and foothills east of the Sacramento River, south of the Pit River and north of Pine and Rock Creeks (primarily along the Deer Creek drainage). The crest of the southern Cascades continues north, includes Lassen Peak, and formed the eastern boundary. The Yana population likely never exceeded 2,000 individuals.

Much of what is known about Yana culture was provided by Ishi, who was Yahi Yana. He was brought to the University of California, Berkeley in 1911 after his family died and he was left alone to survive. Yana territory was divided among numerous tribelets, each consisting of a major village with a principal chief and assembly house and several allied villages. The chief's position was hereditary, but the chief's authority was limited to making suggestions, without the power of control or command. The chief's status within the community obtained certain favors, however. For instance, the chief did not have to hunt and was provided with other presents, as well. The southern Yana and Yahi lived in single-family dwellings,

which consisted of a shallow, oval depression 10 to 12 feet in diameter. The exterior structure was conical in shape and consisted of a covering of slabs of bark supported by a framework of poles.

Relations between the Yana and their neighbors were seldom cordial. The Maidu considered them their enemies, as did the Wintu and Achumawi. Despite the enmity, some trade did take place between the Yana and their adjacent neighbors. Goods acquired by the Yana included obsidian, arrows, quivers, buckskin, woodpecker scalps, clamshell disk beads, magnesite cylinders, dentalium shells and arrow points. The Yana supplied fire drills, deer hides, dentalia, salt, buckskin, and baskets for trade.

The Yana suffered severely during the period of European-American contact. In 1844, Mexican owned land was granted to Peter Lassen and Job F. Dye along the eastern side of the valley and extended into the foothills that were occupied by the Southern Yana. Daniel Sill settled on part of the Lassen grant in 1846. The first major hostile contact took place when Captain John Fremont attacked a peaceful gathering of Native Americans at the confluence of Battle Creek and the Sacramento River. The village supposedly belonged to the Yana. This initial conflict marked the beginning of the end for the Yana. Johnson estimates that within approximately 20 years of contact, their numbers were reduced from 1,900 individuals to fewer than 100.

Spanish colonization of Alta California began in 1769 with the Portolá land expedition. Led by Captain Gaspar de Portolá and Father Junipero Serra, the expedition proceeded north from San Diego to the Santa Clara Valley, where an advance party of scouts led by José Ortega ascended a hill and became the first Europeans to observe San Francisco Bay. Spain subsequently established a string of 21 Franciscan missions, 4 presidios (forts), and 4 pueblos (towns) in the coastal regions of Alta California (Starr 2005). In 1808, the explorer Gabriel Moraga led an expedition from San Jose pueblo into the Central Valley. Moraga named the valley's major rivers, including the Sacramento and San Joaquin, but made no attempt to establish missions, presidios, or pueblos in Alta California's interior.

The Republic of Mexico achieved independence from Spain in 1821. A year later, Alta California became a territory of Mexico with its capital at Monterey. In 1827, the American fur trapper Jedediah Smith led a party associated with the Rocky Mountain Fur Company across the Mojave Desert to Southern California, north up the Central Valley, and east into Nevada, demonstrating the possibility of overland travel across the Sierra Nevada Mountain range.

Between 1834 and 1836, the Mexican government confiscated mission lands and expelled Alta California's Franciscan friars. Former mission lands, along with unclaimed lands in the Sacramento and San Joaquin valleys, became granted to retired soldiers and other Mexican citizens. Vast swaths of Alta California's coastal regions and interior valleys became private *ranchos*, or cattle ranches. Three pueblos established by Spain—Los Angeles, San Jose, and Sonoma—survived as small Mexican settlements. Other settlements developed around presidios at San Francisco, Monterey, Santa Barbara, and San Diego. Many rancho owners maintained residences in town, while Hispanic vaqueros and Native American laborers worked on the ranchos, which produced cow hides and tallow (cow fat) prized by foreign merchants.

After 1821, the Mexican government began welcoming non-Hispanic immigrants to Alta California. Hundreds of Americans, British, and other foreigners arrived to establish trading relationships; others became naturalized Mexican citizens and applied for land grants. John Sutter, a German-speaking

immigrant from Switzerland, 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; he received nearly 49,000 acres along the Sacramento River in 1841.

Following the Mexican-American War of 1846-1848, Mexico ceded Alta California to the United States. Under the Treaty of Guadalupe Hidalgo, Congress agreed to protect the property rights of former Mexican citizens living within the new boundaries of the United States. This meant honoring Mexican land grants in California. In 1851, Congress passed the California Land Act creating the Board of Land Commissioners to determine the validity of grants, placing the burden of proof on individual patentees. The Board, with assistance from U.S. courts, confirmed most of California's Mexican land grants in subsequent decades.

In January 1848, one of John Sutter's hired laborers, James Marshall, discovered gold in the flume of Sutter's lumber mill at Coloma on the South Fork of the American River. News of the discovery spread around the world in 1848, leading to the California Gold Rush. Tens of thousands of prospectors arrived in 1849, causing hundreds of mining camps to appear along the streambeds of the Sierra Nevada foothills. The cities of Marysville, Sacramento, and Stockton sprang up in the Sacramento and San Joaquin valleys as supply centers for the mines; San Francisco became California's largest city and the focal point for all Gold Rush economic activity. In 1850, following a year of rapid growth, Congress admitted California as the 31st U.S. state. In the following decades, federal surveyors arrived in California to stake out 36-square-mile townships and 1-square-mile sections on California's unclaimed public lands. At general land offices, buyers paid cash for public lands. After 1862, many filed homestead applications to obtain 40, 80, and 160-acre tracts at low upfront costs in exchange for establishing farms.

4.5.2.2 Shasta County History

Fur trappers associated with the Rocky Mountain Fur Company and Hudson's Bay Company became the first Europeans and Americans to explore the upper Sacramento River and Trinity Mountains during the 1820s and 1830s. Manuel Micheltorena, the Mexican Governor of Alta California, granted the 26,632-acre Rancho Buena Ventura along the western banks of the Sacramento River to Pierson Barton Reading in 1844. Reading, one of the earliest Americans to settle in Alta California, discovered gold along Clear Creek in 1848. Thousands arrived in 1849 to work the region's streambeds, leading to the creation of Cottonwood, Whiskeytown, Shasta, and other Gold Rush mining camps. Shasta became the commercial focal point for mining activity in the region. Shasta County became one of California's original 27 counties in 1850 with Shasta as its county seat.

In 1873, a Central Pacific Railroad subsidiary, the California & Oregon, entered Shasta County near the town of Cottonwood and proceeded north up the western side of the Sacramento River. Five miles north of Cottonwood, the railroad established a station stop called Anderson and staked out a new town. Spurning Shasta, the Central Pacific's land agent, Benjamin B. Redding, opted to bridge the Sacramento River at a point five miles east of town. On the south side of the crossing, Redding established a station stop and staked out a town that he eponymously called *Redding*. The site became the railroad's temporary end-of-line terminal, making it a center of railroad employment. Redding soon overtook Shasta as the commercial focal point of Shasta County; it became the new county seat in 1888.

After the railroad's arrival, grain farming and livestock grazing became important agricultural activities in southern Shasta County. Logging and lumber milling gradually eclipsed mining in the county's western, northern, and eastern foothills and mountains. The towns of Shingletown, Burney, and Fall River Mills in eastern Shasta County developed around lumber milling operations. Over half of Shasta County's nearly 4,000 square miles became managed by the U.S. Forest Service during the early 20th century. The U.S. National Park Service assumed control of Lassen Volcanic National Park in southeastern Shasta County in 1916. During the 1930s, the U.S. Bureau of Reclamation built Shasta Dam on the Sacramento River north of Redding, creating Lake Shasta, a large storage reservoir that formed the basis of the Central California Project.

4.5.2.3 Darrah Springs Hatchery

Simon H. Darrah of Virginia arrived in Shasta County in about 1860. He later homesteaded in Section 30 (Township 31 North, Ranch 1 East) in the vicinity of an artesian well on the north side of Battle Creek. The well became known as *Darrah Springs*. In 1941, the State of California became interested in Darrah Springs as a trout hatchery. World War II delayed the project, but in 1949 state crews began building troughs and ponds to verify the water quality, which tested favorably. Beginning in 1954, the State of California developed Darrah Springs Hatchery at a cost of nearly $80,000. The facility included 60 ponds, 32 nursery tanks, 120 trough hatchery buildings, and multiple ancillary buildings, roads, and other infrastructure.

4.5.2.4 Records Search

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

4.5.3 Previous Research

Seven previous cultural resource investigations have been conducted within 0.5 mile of the Project Area, covering approximately 55 percent of the total area surrounding the Project Area within the records search radius. Of the seven studies, one was conducted in the Project Area. These studies revealed the presence of pre-contact and historic-era sites and resources.

In 1992, Rick Atwell and Gary Bowyer from INFOTECH Research, Inc. completed an archaeological survey of 38 access roads and associated offsite areas as part of the Construction Spread 4B of the PG&E Pipeline Expansion Project. Wildcat Road and the access road to the Darrah Springs Hatchery were part of the 1992 investigation. A segment of the PGT-PG&E pipeline bisects the trench alignment within the southern portion of the current Project Area. No cultural resources were recorded within the overlapping portion of the Project Area. Because the previous study of the Project Area was conducted more than 30 years ago, an updated pedestrian survey of the Project Area under current protocols was warranted.

The records search also determined that eight previously recorded cultural resources are located within 0.5 mile of the Project Area. Of these, four are believed to be associated with Native American occupation of the vicinity; however, three of the four pre-contact sites also contain historic-era cultural resources. In addition, there are four historic-era sites associated with early transportation and water conveyance systems. No previously recorded cultural resources are within the Project Area.

4.5.4 Records

The Office of Historic Preservation's (OHP) Built Environment Resource Directory for Shasta County (dated April 5, 2018, plus updates) lists the Coleman Canal as a resource within 0.5 mile of the Project Area. The Coleman Canal travels through the Darrah Springs State Fish Hatchery facility but does not bisect the Project Area. The canal was evaluated on June 13, 2013, and determined not eligible for listing on the National Register of Historic Places (NRHP). It was not evaluated for the California Register of Historical Resources (CRHR) or local listing.

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 23 miles southwest of the Project Area in Cottonwood, California.

ECORP reviewed resources listed as California Historical Landmarks by the OHP on February 27, 2023. The nearest listed landmark is #10: Reading Abode in Cottonwood, California, located approximately 23 miles southwest of the Project Area.

Historic Spots in California mentioned that a lumber center was in the town of Shingletown in the 1860s. Shingletown is located approximately 2 miles north of the Project Area.

Historic GLO land patent records from the BLM's patent information database did not list any patents within the Project Area.

A RealQuest online property search for APN 704-240-003 revealed that the parcel consists of 82.59 acres of public land; however, the Project Area does not encompass the entire acreage within the parcel boundary. No other property history information was on file with RealQuest.

The Caltrans Bridge Local and State Inventories (Caltrans 2018, 2023b) did not list any historic bridges within 0.5 mile of the Project Area.

The *Handbook of North American Indians* (Johnson 1978) indicates that the nearest Native American village, *Tcuidau,* is located approximately 19.7 miles southwest of the Project Area.

4.5.5 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 archaeological and architectural history resources on March 30, 2023. The Project Area is composed of a portion of the Darrah Springs State Fish Hatchery property and includes the locations of the proposed trench alignment and solar arrays. The Project Area also contains architectural history resources associated with the hatchery: a single utility shed and a paved road. The

trench alignment bisects a portion of the paved road. The paved surface of the road impedes visibility of the natural ground surface in that location. The entire Project Area is composed of mostly undeveloped property within a flat oak woodland setting surrounded by foothills. ECORP observed piles of modern debris in the southernmost portion of the proposed trench alignment area of the Project Area. In addition, ECORP observed a small amount of refuse of an undetermined age, including ceramic, glass, and terra cotta fragments and shoe sole, within the western end of the proposed solar array area of the Project Area. Overall, ground surface visibility was 60 to 70 percent due to short grasses, exposed natural ground surface, and moderate vegetation cover.

The records search results failed to indicate the presence of previously recorded archaeological or architectural history resources within the Project Area. As a result of the 2023 survey, ECORP recorded two previously unrecorded architectural history resources, and one previously unrecorded archaeological resource. Additionally, the Project Area may overlap with a larger historic district that extends beyond the Project Area to include the entire Darrah Springs State Fish Hatchery facility.

These resources have not been evaluated using NRHP and CRHR 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). It is also unknown whether previously unrecorded architectural history resources qualify as features of a Darrah Springs State Fish Hatchery historic district, or whether the district itself would be considered a Historical Resource under CEQA or Historic Property under Section 106. 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 records search results failed to indicate the presence of previously recorded archaeological or architectural history resources within the Project Area. As a result of the 2023 survey, ECORP recorded two previously unrecorded architectural history resources (DS-1 and DS-3), and one previously unrecorded archaeological resource (DS-2-ISO). Additionally, the Project Area may overlap with a larger historic district that extends beyond the Project Area to include the entire Darrah Springs State Fish Hatchery facility.

The potential for buried pre-contact archaeological sites varies throughout the Project Area from low to moderate. There is a low potential due to the presence of bedrock beginning approximately 23 inches below the surface. The potential slightly increases given the proximity of Baldwin Creek and North Fork Battle Creek, which are located less than 0.25 mile to the north and south of the Project Area, respectively, and the likelihood of pre-contact archaeological sites located along tributaries and perennial waterways. Additionally, the surrounding landscape and the general area embodies the characteristics that Native Americans would have exploited for resources, thereby increasing the potential for pre-contact subsurface cultural resources. Furthermore, the Project Area and vicinity may have been used for migration, trade routes, or gathering purposes, thus resulting in a moderate potential. There is also a moderate to high potential for surface or near surface bedrock mortars, due to the resources in the Project Area and surrounding vicinity.

There is a low potential for subsurface historic-era archaeological deposits due to the age of the buildings that are present within the Darrah Springs State Fish Hatchery, including the utility shed in the Project Area (which was constructed starting in 1949). The buildings and structures have had modern utilities, including indoor plumbing, electricity, and waste disposal services, thus eliminating the need for a privy.

Overall, the potential for subsurface pre-contact archaeological resources within the Project Area is moderate, the potential for surface or near surface resources is moderate to high and the potential for subsurface historic-era archaeological resources is low. However, ground disturbance associated with development of the Project Site has the potential to impact previously unknown, subsurface historic resources shall 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?	☐	☒	☐	☐

Less Than Significant Impact With Mitigation Incorporated.

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.

4.5.6 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

This IS/MND analyzes energy consumption due to the potential direct and indirect environmental impacts associated with the Project. Such impacts include the depletion of nonrenewable resources (e.g., oil, natural gas, coal) and emissions of pollutants during the construction and operational phases. The impact analysis focuses on the four sources of energy that are relevant to the Proposed Project: electricity, natural gas, the equipment-fuel necessary for Project construction, and the automotive fuel necessary for Project operations.

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 Shasta 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 (GHG) 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. This discussion will focus on the single source of energy that is relevant to the Proposed Project: the equipment-fuel necessary for Project construction.

Energy Consumption

Electricity use is measured in kilowatt-hours (kWh) and 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 Shasta County from 2018 to 2022 is shown in Table 4.6-1. As shown, automotive fuel consumption remained constant since 2018.

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

Year	Total Fuel Consumption (gallons)
2022	139,724,976
2021	140,778,734
2020	128,420,958
2019	140,962,466
2018	140,986,386

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 natural gas or electricity 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 associated with 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 (2016).

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 Shasta County.

Table 4.6-2. Proposed Project Fuel Consumption		
Energy Type	**Project Annual Fuel Consumption**	**Percentage Increase Countywide**
Vehicular/Equipment Fuel Consumption		
Construction Calendar Year One	14,077 gallons	0.010 percent

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 year of construction is estimated to be 14,077 gallons of fuel. This would increase the annual gasoline fuel use in the county by 0.010 and 0.009 percent, respectively. 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 in the north-central portion of the Great Valley geomorphic province of California. The Great Valley is an alluvial plain, about 50 miles wide and 400 miles long, between the Coast Ranges and the Sierra Nevada. The Great Valley is drained by the Sacramento and San Joaquin rivers, which join and then enter San Francisco Bay. The eastern border is the west-sloping Sierran bedrock surface, which continues westward beneath alluvium and older sediments. The western border is underlain by east-dipping Cretaceous and Cenozoic strata that form a deeply buried synclinal trough, lying beneath the Great Valley along its western side. The southern part of the Great Valley is the San Joaquin Valley. Its great oil fields follow anticlinal uplifts that mark the southwestern border of San Joaquin Valley and its southern basin. To the north, the Sacramento Valley plain is interrupted by the Marysville Buttes, an isolated Pliocene volcanic plug about 2,000 feet high (California Geological Survey [CGS] 2002).

4.7.1.1 Site Soils

According to the National Resource Conservation Service (NRCS) via the Web Soil Survey database, the Project Site is composed of two soil units: Guenoc very stony loam, 0 to 30 percent slopes and Guenoc very rocky loam, 0 to 30 percent slopes, both well-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 well-drained, have a slow runoff potential, and no frost action. The Project Site soils do not have an erosion potential rating and have a moderate linear extensibility (shrink-swell) (NRCS 2023).

Table 4.7-1. Project Site Soil Characteristics

Soil (Map Unit Symbol, Map Unit Name)	Percentage of Site	Drainage	Flooding Frequency Class	Frost Action[1]	Runoff Potential[2]	Linear Extensibility[3]	Erosion Hazard[4]	Plasticity Rating[5]
Guenoc very stony loam, 0 to 30 percent slopes	88.6	Well drained	None	None	C (slow)	3.8%, moderate	Not Rated	17.2%
Guenoc very rocky loam, 0 to 30 percent slopes	11.4	Well drained	None	None	C (slow)	3.8%, moderate	Not Rated	17.2%

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 but is located within 0.45 mile of the Battle Creek Fault Zone directly north of the Site (CGS 2023a). The Project Site is not located on any known *active* earthquake fault trace. The Battle Creek Fault is one of the Quaternary faults making it inactive, according to the California State Geologist. 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 University of California Museum of Paleontology (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 Shasta 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 Shasta 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 with Mitigation Incorporated	Less than Significant 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) Less Than Significant Impact.

The Proposed Project Site is not located within the Alquist-Priolo Earthquake Zone (CGS 2011). 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. Although the Site is within 0.45 mile of the Battle Creek Fault Zone, that fault is of the Quaternary Period and not the Holocene. Faults that have not moved in the last 1.6 million years are typically considered inactive. There would be a less than significant 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 low to 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 (DOC) 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 2.59-acre Project Site is relatively flat with elevations ranging between 1,002 to 1,115 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, the Project Site's soils have not been rated for 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 (NRCS 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 with no land subsidence (USGS 2023). 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 Site being in an environment with low aridity. 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, 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 Project Site soils exhibit a linear extensibility value of 3.8 percent.

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

Soils with linear extensibility at this range correlate to having a moderate 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 wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

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?	☐	☒	☐	☐

Less Than Significant With Mitigation Incorporated.

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

Geology and Soils

GEO-1 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

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. CH4 traps more than 25 times more heat per molecule than CO_2, and N2O 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 shall 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 shall 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 (SB) 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.

The significance of the Project's GHG emissions is evaluated consistent with CEQA Guidelines Section 15064.4(b)(2) by considering whether the Project complies with applicable plans, policies, regulations and requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. The SCAQMD does not promulgate thresholds for GHG emissions. To determine if the Project will generate GHG emissions that may have a significant impact on the environment Project GHG emissions will be compared with the thresholds established by the California Air Pollution Control Officers Association (CAPCOA). CAPCOA has provided guidance for determining the significance of GHG emissions generated from land use development projects. CAPCOA also considers projects that generate more than 900 metric tons of CO2e to be significant. This threshold was developed to ensure at least 90 percent of new GHG emissions would be reviewed and assessed for mitigation, thereby contributing to the Statewide GHG emissions reduction goals for 2023 reduction goals and beyond promulgated under SB 32. Thus, both cumulatively and individually, projects that generate less than 900 metric tons CO2e per year have a negligible contribution to overall emissions.

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.

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	151
CAPCOA's Potentially Significant Threshold	*900*
Exceed Significance Threshold?	**No**

Source: California Emissions Estimator (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 151 metric tons of CO_2e over the course of the first calendar year. Once construction is complete, the generation of these GHG emissions would cease.

Operational GHG 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 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.

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?	☐	☐	☐	☒

No Impact.

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. 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 (including mining, construction, etc.), 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 ($gCO_2e/kWhe$)	
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 Photovoltaic (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.

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.

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 22 CCR Section 662601.10 as follows:

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

Transporters of hazardous waste in California are subject to several federal and state regulations. They must register with the California Department of Health Services (DHS) and ensure that vehicle and waste container operators have been trained in the proper handling of hazardous waste. Vehicles used for the transportation of hazardous waste must pass an annual inspection by the California Highway Patrol (CHP). Transporters must allow the CHP or DHS to inspect its vehicles and must make certain required inspection records available to both agencies. The transport of hazardous materials that are not wastes is regulated by the U.S. Department of Transportation through national safety standards.

Other risks resulting from hazardous materials include the use of these materials in local industry, businesses, and agricultural production. The owner or operator of any business or entity that handles a hazardous material above threshold quantities is required by state and federal laws to submit a business plan to the local Certified Unified Program Agency (CUPA). The Shasta County Department of Resource Management Environmental Health Division is designated by the State Secretary for Environmental Protection as the CUPA for Shasta County in order to focus the management of specific environmental programs at the local government level. The CUPA program is designed to consolidate, coordinate, and uniformly and consistently administer permits and conduct inspection and enforcement activities throughout Shasta County. This approach strives to reduce overlapping and sometimes conflicting requirements of different governmental agencies independently managing these programs. The County will refer large cases of hazardous materials contamination or violations to the Central Valley Regional Water Quality Control Board and the California Department of Toxic Substances Control (DTSC). It is not

uncommon for other agencies, such as federal and state Occupational Safety and Health Administrations, to become involved when issues of hazardous materials arise.

Under Government Code Section 65962.5, both the DTSC and the State Water Resources Control Board (SWRCB) are required to maintain lists of sites known to have hazardous substances present in the environment. Both agencies maintain up-to-date lists on their websites. The Project Site is not listed by the DTSC as a hazardous substances site on the list of hazardous waste sites compiled pursuant to Government Code Section 65962.5 (Cortese List). Per the SWRCB Cortese List, the only active hazardous waste site in Shasta County, Iron Mountain Mine, is approximately 50 miles away from the Proposed Project Site. The site is contaminated due to mining activities and currently undergoing USEPA clean up.

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.

Some hazardous materials, such as diesel fuel, would be used at the site during construction. The transport of hazardous materials by truck is regulated by federal safety standards under the jurisdiction of the U.S. Department of Transportation. Impacts associated with the operation of the facility would be less than significant. No mitigation necessary.

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.

See discussion under item a) above. Some hazardous materials, such as diesel fuel, would be used during construction. A SWPPP, would be prepared for the Proposed Project to prevent construction pollutants and products from violating any water quality standards or waste discharge requirements. The release of any spills to the environment would be prevented through the implementation of Best Management Practices listed in the SWPPP. Impacts therefore would be less than significant. No mitigation necessary.

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?	☐	☐	☐	☒

No Impact.

Construction and operation of the Proposed Project would include the use of common hazardous materials, such as diesel fuel, lubricants, and detergents. These materials would be handled consistent with state and federal regulations. The nearest school to the Proposed Project Site is Black Butte Elementary School, which is approximately 12 miles northeast of the Site. Handling of hazardous materials would not impact this school. Therefore, no impact would occur, and no mitigation is necessary.

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.

The Project Site is not on the list of known hazardous sites (DTSC 2023). The Site reconnaissance and records review did not find documentation or physical evidence of soil or groundwater impairments associated with the use or past use of the Property. The database review did not identify contaminated facilities within the appropriate American Society for Testing and Materials search distances that would be expected to impact the Property. Therefore, the project would not be located on a site which would result in a significant hazard to the public or the environment and no impact would occur. No mitigation required.

	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.

Redding Regional Airport, the nearest airport to the Proposed Project Site is approximately 25 miles away. There are no private airstrips in the vicinity of the project area. No impact would occur. No mitigation necessary.

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?	☐	☐	☒	☐

Less Than Significant Impact.

Because the Proposed Project would be limited to a solar PV power generation facility and would not generate substantial long-term traffic and would not result in any permanent road closures or affect any existing emergency shelters, the Proposed Project would not interfere with an adopted emergency response plan or evacuation plan. As a result, this impact is considered less than significant. No mitigation necessary.

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 moderate risk of wildfire (CAL FIRE 2023). However, 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

The Project site is located in the greater Sacramento River hydrologic region. The Sacramento River hydrologic region covers ±17.4 million acres (27,200 square miles). The region includes all or large portions of Modoc, Siskiyou, Lassen, Shasta, Tehama, Glenn, Plumas, Butte, Colusa, Sutter, Yuba, Sierra, Nevada, Siskiyou, Sacramento, El Dorado, Yolo, Solano, Lake, and Napa counties. Small areas of Alpine and Amador counties are also within the region. Geographically, the region extends south from the Modoc Plateau and Cascade Range at the Oregon border to the Sacramento-San Joaquin Delta (Department of Water Resources [DWR] 2006).

The Project Site is located within boundaries of the Sacramento River Watershed Program, which is 27,000 square miles in size and covers much of Northern California. The watershed drains the Cascade Range, Coast Ranges, Modoc Plateau, Sierra Nevada, and Sacramento Valley. The Sacramento River originates over 400 miles north of Shasta Lake and flow to the Sacramento River-San Joaquin River Delta. The Sacramento River Watershed Program (SRWP) identified the Feather, Yuba, Pit, and American rivers as major tributaries.

According to the Watershed Boundary Dataset, a seamless and national hydraulic unit dataset, the Project Site is located within the Battle Creek Watershed. The Battle Creek Watershed drains an area of approximately 370 square miles on the eastside of the Sacramento River in Shasta and Tehama Counties. The watershed is unique because of its volcanic geology and year-round cold and plentiful streamflow. Battle Creek may be the only remaining stream, other than the mainstem of the Sacramento River, that can successfully sustain breeding populations of steelhead trout and all four runs of Chinook salmon. For that reason, state and federal agencies have made it their highest priority in the effort to restore the declining runs of Sacramento River anadromous fish populations. Watershed topography ranges from the alpine areas high in Lassen Volcanic National Park, down through conifer forests, oak woodlands, and foothill areas, through rugged canyons to the floodplain and riparian forests along the Sacramento River (SRWP 2023).

4.10.1.2 Project Site Hydrology and Onsite Drainage

Surface Water

The less than 2.59-acre Project Site is relatively flat with elevations ranging between approximately 1,005 to 1,015 feet AMSL throughout the Site. The Project Site slopes northward towards the CDFW facility and

Baldwin Creek, with the highest elevation being the area proposed for the transformer. Baldwin Creek is located approximately 800 feet to the north of the Site.

The average annual precipitation at the Project site is 33.68 inches and the average daily hot season temperature is 80°F, with an average daily cold season temperature of 54°F. As indicated above in Section 4.7, the Site is sloped between 0 and 30 percent. Soils within the site consist of Guenoc very stony loam and Guenoc very rocky loam, both well-drained.

In the Project Area, the wetter season lasts 6.4 months, from October 26 to May 6, with a greater than 20% chance of a given day being a wet day. The month with the most wet days in area is February, with an average of 10.0 days with at least 0.04 inches of precipitation. The drier season lasts 5.6 months, from May 6 to October 26. The month with the fewest wet days in the area is July, with an average of 0.8 days with at least 0.04 inches of precipitation (Weatherspark 2023).

Groundwater

Groundwater in the State of California is managed and monitored by the DWR. While the Project site is within the Sacramento River hydrologic region, it is not located in a groundwater basin as identified by the DWR. No groundwater information is available for the Project site. The nearest monitoring well to the Project site is located approximately 12.4 miles to the west on Balls Ferry Road in Cottonwood, California (SGMA 2023).

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 Baldwin Creek watershed north of the Project Site.

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-a requires sedimentation and erosion from proposed developments shall be minimized through grading and hillside development ordinances and other similar safeguards as adopted and implemented by the County. Conforming to the USEPA NPDES program to control non-point source water pollution. Conformance with standard Regional Water Quality Control Board (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 (Shasta County 2004).

Additionally, prior to issuance of a grading permit, 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 applicable Policies and implementation of 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 renewable energy usage of the CDFW facility. 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 approximately 1.0-acre Site's potential groundwater recharge area due to the partial development of this area with impervious surfaces. However, this area would be insignificant in size and all rainfall on this small amount of impervious surface would be directed towards Baldwin Creek to the north. 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;	☐	☐	☒	☐
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	☐	☐	☒	☐

Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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 towards Baldwin Creek to the north. As such, the Project would have a less than significant impact in this area.

iv) Less Than Significant Impact.

Federal Emergency Management Agency flood hazard maps (Map 06089C2025G, 2023) shows that the Project site is in unshaded Zone A, with no flood elevations determined. The Project site is not located within a flood zone. Therefore, implementation of The Proposed Project will not have an impact related to impeding or redirecting flood flows.

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

No Impact.

The Project Site is not located within a dam inundation area and 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. There would be no 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 Project site is owned by the State of California. State-owned lands are under the jurisdiction of the State and are not controlled by local land use or zoning designations. However, as a matter of procedure, consistency with local designations is preferred. The land is designated as "Unclassified District" in the Shasta County General Plan, and the Proposed Project would be consistent with this designation. The Proposed Project site is located within the Darrah Springs Fish Hatchery property and would not change the current use of the property.

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?	☐	☐	☐	☒

No Impact.

The proposed project is located within the Darrah Springs Fish Hatchery property and would not physically divide an established community. No impacts would occur. No mitigation necessary.

Would the Project:	Potentially Significant Impact	Less than Significant 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.

The land use designation for the proposed Project Site is Unclassified District (Shasta County 2004). The placement of solar panels would not change the designation or use of the site. The proposed project would also not conflict with applicable land use plans, policies, or regulations. As such, no land use impacts would occur. No mitigation necessary.

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

Minerals are defined as any naturally occurring chemical elements or compounds formed by inorganic processes and organic substances. Minable minerals are defined as a deposit of ore or minerals having a value materially in excess of the cost of developing, mining, and processing the mineral and reclaiming the project area. The conservation, extraction, and processing of mineral resources is essential to meeting the needs of society.

The Surface Mining and Reclamation Act of 1975 (SMARA) states that cities and counties shall adopt ordinances "...that establish procedures for the review and approval of reclamation plans and financial assurances and the issuance of a permit to conduct surface mining operations..." (PRC Section 2774). The intent of this legislation is to ensure the prevention or mitigation of the adverse environmental impacts of mining, the reclamation of mined lands, and the production and conservation of mineral resources are consistent with recreation, watershed, wildlife, and public safety objectives (PRC Section 2712).

SMARA requires the State Geologist to classify land into Mineral Resource Zones (MRZs) according to the known or inferred mineral potential of that land. The process is based solely on geology, without regard to existing land use or land ownership. The primary goal of mineral land classification is to ensure that the mineral potential of land is recognized by local government decision makers and considered before land use decisions, which could preclude mining, are made. Areas subject to California mineral land classification studies are divided into the following MRZ categories that reflect varying degrees of mineral potential:

- MRZ-1: Areas of no mineral resource significance

- MRZ-2: Areas of identified mineral resource significance
- MRZ-3: Areas of undetermined mineral resource significance
- MRZ-4: Areas of unknown mineral resource significance

The Shasta County General Plan has identified a number of mineral resources that are found in the county including alluvial sand and gravel, crushed stone, volcanic cinders, limestone, diatomite, gold, and other metallic minerals (Shasta County 2004). According to the State Mining and Geology Board, the Proposed Project Area is listed as MRZ-1 (California Department of Conservation 1997).

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.

The proposed project would be constructed on a site within the Darrah Springs Fish Hatchery property which does not contain any know mineral resources. Therefore, no loss of known mineral resources would occur. No mitigation necessary.

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.

Darrah Springs Fish Hatchery is not located on a locally-important mineral resource recovery site. No impact would occur. No mitigation necessary.

4.12.3 Mitigation Measures

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

4.13 Noise

4.13.1 Environmental Setting

4.13.2 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 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).

4.13.2.1 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 shall 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.

4.13.2.2 Sensitive 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 Project is proposed to be constructed at the Darrah Springs Fish Hatchery, which contains housing for staff. Since the Project is proposing a solar generation system to improve this housing, the housing itself will not be evaluated as a sensitive receptor. It is further acknowledged that the housing onsite serves as temporary housing for Darrah Springs Fish Hatchery staff and does not accommodate permanent residents. The nearest permanent, off-site sensitive receptor to the Project Site is a rural single-family residence located approximately 3,000 feet east of the Project Site.

4.13.2.3 Vibration Sources and Characteristics

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.

4.13.2.4 Existing Ambient Noise Environment

Shasta County is impacted by various noise sources. It is subject to typical urban noise such as noise generated by traffic, heavy machinery, and day-to-day outdoor activities. Mobile sources of noise, especially cars and trucks, are the most common source of noise in the community. Other sources of noise are the various land uses (i.e., residential, commercial, agricultural, and recreational) throughout the County that generate stationary source noise. The Project Site is located within the Darrah Springs Fish Hatchery facility which is located in a very rural part of Shasta County.

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	dBA		
				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	66	58

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	dBA		
				Typical L_{dn}	Daytime L_{eq}	Nighttime L_{eq}
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	61	54
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	55	49
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	50	44
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	45	39
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	40	34

Source: American National Standards Institute (ANSI) 2013

4.13.3 Noise (XIII) 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 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 noise sensitive receptor to the Project Site is a rural single-family residence located approximately 3,000 feet east.

4.13.3.1 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.

The County does not promulgate a numeric threshold pertaining to the noise associated with construction. This is because construction noise is temporary, short term, intermittent in nature, and would cease on completion of the Project. As such, 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	49.0	*85*	**No**
Grading/Excavation	50.3	*85*	**No**
Building Construction & Paving	51.6	*85*	**No**

Source: Construction noise levels were calculated by ECORP Consulting, Inc. using the Federal Highway Administration (FHWA) Roadway Noise Construction Model (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.

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.

dBA = A-weighted decibels; Leq= Equivalent Noise Level;

As shown in Table 3.13-2, Project onsite construction activities would not exceed the NIOSH threshold of 85 dBA L_{eq} at the nearest noise-sensitive receptors.

4.13.3.2 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 13 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.

4.13.3.3 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 County of Shasta non-transportation source daytime and nighttime noise standards of 55 dBA and 50 dBA, respectively, contained in the County of Shasta General Plan Noise 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 located approximately 3,000 feet distant. 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
b) Result in generation of excessive ground-borne vibration or ground-borne noise levels?	☐	☐	☒	☐

Less Than Significant Impact.

4.13.3.4 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

Shasta 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 Project Site contains buildings that could potentially be impacted by construction vibration. However, they were not included in this analysis as they are located on the Project Site and the exact location of the proposed solar field is unknown at the time this analysis is being prepared. Thus, the nearest offsite structure of concern to the construction site, with regard to groundborne vibrations, is a rural residence located approximately 3,000 feet distant.

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 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 3,000 feet.

Table 4.13-4. Construction Vibration Levels at 3,000 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			
0.00006	0.0001	0.00006	0.00005	0.0001	0.00002	0.000002	**0.0001**	*0.3*	**No**

Note: in/sec = inches per second

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.

Would the Project:	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 16 miles southeast of the closest airport, Redding Regional 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.

4.13.4 Mitigation Measures

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

4.14 Population and Housing

4.14.1 Environmental Setting

The Proposed Project is located at the Darrah Springs Fish Hatchery in unincorporated, Shasta County, California. It lies east of I-5, north of SR-36, and south of SR-44. The Project Area land owned by CDFW is surrounded by grazing land intersected with rural roads.

As of July 2020, Shasta County had an estimated population of 182,155 people (U.S. Census Bureau 2020). The Proposed Project will be at the Darrah Springs Fish Hatchery which currently employs 5-9 people. The Fish Hatchery raises trout with Springtime as the busiest time for stocking fish and visitation (CDFW 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)?	☐	☐	☐	☒

No Impact.

The Proposed Project would not induce population growth. There would be no visitation or hatchery staff increase because of the Project. No impact would occur, and no mitigation is necessary.

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?	☐	☐	☐	☒

No Impact.

Construction of the Proposed Project would occur within the CDFW property on undeveloped land, as such no housing or people would be displaced. No impact would occur and no mitigation is necessary.

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

4.15.1.1 Police Services

The unincorporated areas of Shasta County receive general public safety and law enforcement services from the Shasta County Sheriff's Office. The Sheriff's Office has a total of 147 sworn deputy positions and 119 non-sworn positions. This includes the Sheriff's Civil Unit and Animal Control Unit. Approximately thirty-eight percent are assigned to the Custody Division (County Jail) (Shasta County 2004).

4.15.1.2 Fire Services

Fire agencies serving the unincorporated areas of Shasta County include twelve community fire districts, nineteen volunteer fire companies, two Amador fire stations (Station 58 and Station 74), and one Shasta County Fire District station at the Redding Station 43. The nineteen volunteer fire companies are operated under the jurisdiction of the Shasta County Fire Department, as are the Amador stations and the County Fire District station. The community fire districts on the other hand are separate legal entities with legally drawn boundaries. Community fire districts have boards of directors and budgets separate from that of the Shasta County Fire Department (Shasta County 2004).

4.15.1.3 Schools

Due to the spread out and rural nature of Shasta County, there are a total of 27 school districts supporting both public and private school services. The nearest school to the Proposed Project Site is Black Butte Elementary School, which is approximately 12 miles northeast of the Project Site (Shasta County Office of Education 2023).

4.15.1.4 Parks and Other Public Facilities

Schools, service organizations, campgrounds, and public lands play a major role in meeting most, if not all, the needs of rural community residents for developed recreation facilities. Palo Cedro Park is the nearest traditional park with a playground and trails, located approximately 22.5 miles northwest from the Project Site. Lassen Volcanic National Park is located approximately 32.5 miles east of the Project Site offering a variety of trails and campgrounds to residents of Shasta County (Shasta County 2004).

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?	☐	☐	☐	☒

No Impact.

The Proposed Project would not create a substantial new fire or public safety hazard. The Proposed Project would not generate new employees or visitors; therefore, there would be no additional demand for schools, parks, or other public facilities. The Proposed Project would not result in the need for new or physically altered government facilities nor affect response time or other performance objectives. No impact would occur. No mitigation measures are required.

4.15.3 Mitigation Measures

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

4.16 Recreation

4.16.1 Environmental Setting

In the rural areas of the County, the recreation demands of residents are no less than those of persons residing in urban areas, but they are of a different nature. Open lands are close at hand, population densities are low, and opportunities for informal or passive recreation activities are more readily available. Schools, service organizations, campgrounds, and public lands play a major role in meeting most, if not all, the needs of rural community residents for developed recreation facilities (Shasta County 2004). Palo Cedro Park is the nearest traditional park with a playground and trails, located approximately 22.5 miles northwest from the Project Site. Lassen Volcanic National Park is located approximately 32.5 miles east of the Project Site offering a variety of trails and campgrounds to residents of Shasta County.

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?	☐	☐	☐	☒

No Impact.

The Proposed Project is the construction of a solar PV power generation system and does not involve recreational uses. The solar project would be maintained periodically and would not include any permanent on-site staff. The proposed project would not induce population growth. Thus, there would be no substantial demand for existing parks and public facilities. No impact would occur. No mitigation necessary.

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?	☐	☐	☐	☒

No Impact.

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

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 and foothill communities 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 CA-36, before joining Wildcat Road. The CDFW facility's access road, entered from

has a private gate to limit public access. The Project Site is accessed by the facility access road, which as proposed will be crossed by the electrical conduit to transmit electricity from the solar arrays to the transformer. Wildcat Road is identified as a 2-lane collector street in the 2004 GP Circulation Element, Figure C-6. 2-Lane Collector streets are roadways that accommodates traffic between principal arterial, arterial streets and/or activity centers. For the purpose of Section 66484 of the Subdivision Map Act, a collector shall be considered a major thoroughfare. Collectors shall be shown on Plan maps. Direct access to individual residential lots shall be limited where feasible to improve traffic safety and efficiency (Shasta County 2004).

4.17.1.2 Transit Service, Pedestrian and Bicycle Facilities

Public Transportation

Public transportation includes a range of services for the general public as well as specialized services for people with disabilities, elderly, and those individuals unable to use traditional services. Public transit provides a widely accessible and affordable mobility option and is one of the primary strategies used to provide congestion relief and reduce vehicle miles traveled and associated greenhouse gas emissions (Shasta County 2018).

Public transportation in the Redding area is provided by the Redding Area Bus Authority (RABA) which provides both fixed route and demand response transit services. The fixed route service consists of 12 routes with more than 450 individual stops. A demand response service provides curb-to-curb transportation for individuals who, because of a mobility impairment, are not able to use a regular fixed route system. RABA's transportation system links residential, industrial, commercial, and retail centers within the Planning area. Rural services consist of Express routes (commuter) to Burney. Fixed route and demand response services are provided for the City of Anderson. There are also three local taxicab companies, and several social service transportation systems serving the elderly and people with disabilities. School buses provide transportation for various school districts (Shasta County 2004).

Tribal public transportation services are provided throughout the County. Pit River Health Service provides transportation to tribal members. The Redding Rancheria provides transportation to and from Redding Rancheria Tribal Health Center tribal for tribal members. The Susanville Rancheria provides rides Monday through Saturday using a fixed route service between Susanville and Redding via Red Bluff (Shasta County 2018).

Bus Line Service

Greyhound Trailways bus line has six northbound and eight southbound buses passing through Shasta County each day. Anderson and Redding are the only Shasta County stops. Red Bluff is the next stop to the south, and Dunsmuir to the north. Amtrak also provides bus service to the Sacramento area with connections to the San Joaquin Train Route and the California Zephyr, which has connections as far east as Chicago, Illinois (Shasta 2004). Trinity Transit offers Monday through Friday fixed route service between Weaverville and the Downtown Redding Transit Center. The Sage Stage provides intercity transit service between Alturas and the Downtown Redding Transit Center (Shasta County 2018).

Railroads

Shasta County is served by two railroad lines: The Union Pacific single track main line which parallels Interstate 5, and the McCloud Railway Company, a single-track short line running from McCloud to Burney. Union Pacific carries both passengers and freight, while the McCloud hauls only freight. Railroad transportation supplements and, in some instances, directly competes with transportation provided by trucks. Redding is also served by four daily round-trip Amtrak feeder buses to the state-supported San Joaquin passenger rail service between Sacramento, Stockton, and Bakersfield and to the Capital corridor service between Sacramento, Oakland, San Francisco, and San Jose (Shasta County 2004).

Bikeways

A regional Bikeway Plan was adopted by the Shasta County Regional Transportation Planning Agency in October 1984. It was prepared with the cooperation of the County and the Cities and focused primarily on the State Responsibility Area. The original plan was superseded by the 1995 Shasta County Bikeway Plan, which specifically addresses bicycle facilities for the unincorporated portions of the County, rather than utilizing a regional perspective. It was prepared in accordance with the California Streets and Highway Code in order to be eligible for Bicycle Lane Account funds. The Bikeway Plan also conforms with the California Bicycle Transportation Act. The overall goal of the Bikeway Plan is "to provide for a safe, effective, efficient, balanced, and coordinated bicycling system at reasonable cost that serves the needs of the people of Shasta County and supports the County General Plan." Additionally, the Bikeway Plan contains several specific goals, objectives, and policies that will guide its implementation. Several of these statements are reflected in the County General Plan Objectives and Policies section of the Circulation Element (Shasta County 2004).

The role of bicycling in Shasta County shall be emphasized, particularly as it might help (1) alleviate air quality problems associated with continued reliance on the automobile, and (2) minimize congestion impacts on the County's transportation network. Investments already made in the development and implementation of bikeway improvement plans attest to both the County's, as well as the Cities' and Caltrans' commitment to improving and expanding bicycling opportunities in Shasta County. The 2022 Shasta County Regional Transportation Plan/Sustainable Plan Supplemental EIR is currently being updated following a scoping meeting conducted on the 25th of October 2022 (Shasta 2018).

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 Darrah Springs Fish Hatchery 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 facility 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?	☐	☐	☒	☐

Significant Impact.

The Project Site will be accessed via Wildcat Road. Additionally, the facility's paved roadway will provide access to the undeveloped land where the solar array system would be installed. Wildcat Road connects to CA-36 to the south, and CA-44 to the north, both state highways have regional access from I-5 to the west. 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 (2023b) 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 NEIC of the CHRIS at California State University, Chico on March 10, 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: Greenville Rancheria of Maidu Indians, Quartz Valley Indian Community, Redding Rancheria, Winnemem Wintu Tribe, and the Wintu Tribe of Northern California. To date the project has not received responses.

4.18.1 Environmental Setting

The Yana, a Hokan-language-speaking group, inhabited the upper Sacramento River valley and foothills east of the Sacramento River, south of the Pit River and north of Pine and Rock Creeks (primarily along the Deer Creek drainage). The crest of the southern Cascades continues north, includes Lassen Peak, and formed the eastern boundary. The Yana population likely never exceeded 2,000 individuals.

Much of what is known about Yana culture was provided by Ishi, who was Yahi Yana. He was brought to the University of California, Berkeley in 1911 after his family died and he was left alone to survive. Yana territory was divided among numerous tribelets, each consisting of a major village with a principal chief and assembly house and several allied villages. The chief's position was hereditary, but the chief's authority was limited to making suggestions, without the power of control or command. The chief's status within the community obtained certain favors, however. For instance, the chief did not have to hunt and was provided with other presents, as well. The southern Yana and Yahi lived in single-family dwellings, which consisted of a shallow, oval depression 10 to 12 feet in diameter. The exterior structure was conical in shape and consisted of a covering of slabs of bark supported by a framework of poles.

Yana subsistence procurement consisted of the gathering of a wide variety of resources. They consumed a variety of plant foods, including acorns, berries, seeds, roots, tubers, and bulbs. The acorn, harvested in September and October, was the most important of all resources. Deer was the most important hunted animal and typically hunted by individual hunters, as were rabbits and quail. In addition to these animals, rodents and some insects such as grasshoppers and crickets, were a part of the Yana diet, as were fish such as salmon, trout, and suckers.

Relations between the Yana and their neighbors were seldom cordial. The Maidu considered them their enemies, as did the Wintu and Achumawi. Despite the enmity, some trade did take place between the Yana and their adjacent neighbors. Goods acquired by the Yana included obsidian, arrows, quivers, buckskin, woodpecker scalps, clamshell disk beads, magnesite cylinders, dentalium shells and arrow points. The Yana supplied fire drills, deer hides, dentalia, salt, buckskin, and baskets for trade.

The Yana suffered severely during the period of European-American contact. In 1844, Mexican owned land was granted to Peter Lassen and Job F. Dye along the eastern side of the valley and extended into the foothills that were occupied by the Southern Yana. Daniel Sill settled on part of the Lassen grant in 1846. The first major hostile contact took place when Captain John Fremont attacked a peaceful gathering of Native Americans at the confluence of Battle Creek and the Sacramento River. The village supposedly belonged to the Yana. This initial conflict marked the beginning of the end for the Yana. Johnson estimates that within approximately 20 years of contact, their numbers were reduced from 1,900 individuals to fewer than 100 (ECORP 2023b).

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:				
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 a response.

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

According to the Darrah Springs Hatchery staff, the facility is responsible for water, wastewater, and storm drainage for the Project Site. The existing facility receives its water from an onsite well. Wastewater is expelled into underground leach and septic systems. The facility contracts with Green Waste of Tehama to provide solid waste, mixed recyclables, and organic waste collection services for the Site. Electricity and natural gas is provided by PG&E, and once the Proposed Project is completed, a portion of the electricity would be provided by the proposed onsite PV solar array. The Project Site is not within a municipal stormwater service area. The North Fork of Battle Creek, located approximately 1,600 feet south and downhill of the Site, provides natural drainage for all stormwater at the facility.

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 facility, 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 will comply with all local, state, and federal statutes regarding solid waste, including Chapter 8.32 Refuse Collection and Disposal and Chapter 8.34 Organic Waste and Disposal, of the Shasta 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, the Project Site is gradually sloped and dominated by vacant undeveloped land. The area is designated as a Fire Hazard Severity Zone (FHSZ) Moderate Risk in a State Responsible Area (SRA, 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?	☐	☐	☒	☐

Less Than Significant Impact.

The Project Site is in an area designated by CAL FIRE as a FHSZ, moderate risk. Furthermore, the Project Site is in an SRA (CAL FIRE 2023). As the Project proposes the installation of a clean-energy solar array

system, with no components proposed that would impair an adopted emergency response or evacuation plan, the Project would have a less than significant 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 soils have a 0 to 30 percent slope, with elevations ranging from 1,005 to 1,015 feet AMSL, and in an SRA. However, the installation of the proposed solar array would be required to comply with the State Fire Marshall's Guidance for Photovoltaic Installation for State Owned and Specified State-Occupied Buildings, the California Building Code (CBC) and the California Fire Code ([CFC] CAL FIRE 2022). Additionally, the proposed project does not include occupants or structures to be occupied in the future, therefore, the proposed project would have a less than significant 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?	☐	☐	☒	☐

Less Than Significant Impact.

The Project is the installation of a solar array system, with no proposed internal roadways, no battery storage systems, nor power lines that would require further installation or infrastructure maintenance that could exacerbate fire risk or impact the environment. The electrical conduit supplying the clean energy gathered by the solar array would be transmitted underground. Furthermore, as discussed above, the Project is required to comply with all CBC and CFC codes, which include requiring a brush-free area of 10 feet around the array. There would be a less than significant impact.

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?	☐	☐	☒	☐

Less Than Significant Impact.

The Project proposes the installation of a solar array system, with no structures to be occupied. The nearest occupied structures are 5 single-family seasonal residences for employees of the facility, just beyond the ditch north of the Site. The ditch just north of the Site would direct water from the Site to Battle Creek in the event of flooding onsite. However, as the nature of the Project being the installation of a solar array that is required to comply with CBC and CFC code, with no large structure that could cause soil instability and with soils that are slightly sloped, there would very little impact of the Project on post-fire soil instability. There would be a less than significant impact regarding the potential of the Project exposing people of structures to risks relating to the Site's slope and wildfire.

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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LIST OF APPENDICES

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APPENDIX A

Energy Assessment for Darrah Springs Solar Ground Mount Project.
ECORP Consulting, Inc. March 22, 2023

Darrah Solar Project Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Darrah Solar Project
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	21.6
Location	29661 Wildcat Rd, Paynes Creek, CA 96075, USA
County	Shasta
City	Unincorporated
Air District	Shasta County AQMD
Air Basin	Sacramento Valley
TAZ	152
EDFZ	3
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	1.00	Acre	1.75	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.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.40	2.01	17.6	18.9	0.03	0.83	7.16	7.99	0.77	3.44	4.21	—	3,091	3,091	0.13	0.03	0.50	3,103
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.39	2.00	16.2	18.7	0.03	0.73	0.10	0.83	0.67	0.02	0.69	—	3,076	3,076	0.13	0.03	0.01	3,088
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.71	0.59	4.83	5.52	0.01	0.22	0.14	0.36	0.20	0.06	0.26	—	907	907	0.04	0.01	0.06	911
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.13	0.11	0.88	1.01	< 0.005	0.04	0.03	0.07	0.04	0.01	0.05	—	150	150	0.01	< 0.005	0.01	151

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

2023	2.40	2.01	17.6	18.9	0.03	0.83	7.16	7.99	0.77	3.44	4.21	—	3,091	3,091	0.13	0.03	0.50	3,103
2024	2.29	1.92	15.6	18.7	0.03	0.66	0.10	0.76	0.61	0.02	0.63	—	3,088	3,088	0.13	0.03	0.46	3,100
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	2.39	2.00	16.2	18.7	0.03	0.73	0.10	0.83	0.67	0.02	0.69	—	3,076	3,076	0.13	0.03	0.01	3,088
2024	2.28	1.90	15.6	18.5	0.03	0.66	0.10	0.76	0.61	0.02	0.63	—	3,074	3,074	0.13	0.03	0.01	3,086
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.71	0.59	4.83	5.52	0.01	0.22	0.14	0.36	0.20	0.06	0.26	—	907	907	0.04	0.01	0.06	911
2024	0.61	0.51	4.16	4.95	0.01	0.18	0.03	0.20	0.16	0.01	0.17	—	823	823	0.03	0.01	0.05	826
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2023	0.13	0.11	0.88	1.01	< 0.005	0.04	0.03	0.07	0.04	0.01	0.05	—	150	150	0.01	< 0.005	0.01	151
2024	0.11	0.09	0.76	0.90	< 0.005	0.03	< 0.005	0.04	0.03	< 0.005	0.03	—	136	136	0.01	< 0.005	0.01	137

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.	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.00	0.01	0.00	0.00	0.00	0.00	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.	0.00	0.01	0.00	0.00	0.00	0.00	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.	0.00	0.01	0.00	0.00	0.00	0.00	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.	0.00	< 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	TOG	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	0.00
Area	0.00	0.01	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	—	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	0.00	0.01	0.00	0.00	0.00	0.00	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	0.00
Area	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	—	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	0.00	0.01	0.00	0.00	0.00	0.00	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	0.00
Area	0.00	0.01	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	—	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	0.00	0.01	0.00	0.00	0.00	0.00	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	0.00
Area	0.00	< 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	—	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	0.00	< 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	TOG	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	1.84	1.54	15.1	13.7	0.02	0.72	—	0.72	0.66	—	0.66	—	2,063	2,063	0.08	0.02	—	2,070
Dust From Material Movement	—	—	—	—	—	—	6.26	6.26	—	3.00	3.00	—	—	—	—	—	—	—
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	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.08	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	11.3	11.3	< 0.005	< 0.005	—	11.3
Dust From Material Movement	—	—	—	—	—	—	0.03	0.03	—	0.02	0.02	—	—	—	—	—	—	—
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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.87	1.87	< 0.005	< 0.005	—	1.88
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	< 0.005	< 0.005	—	—	—	—	—	—	—
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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.04	0.03	0.51	0.00	0.00	0.06	0.06	0.00	0.01	0.01	—	69.7	69.7	< 0.005	< 0.005	0.30	70.8
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	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 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	0.35
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	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 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	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	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	TOG	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	2.12	1.78	17.5	16.3	0.02	0.83	—	0.83	0.77	—	0.77	—	2,453	2,453	0.10	0.02	—	2,462
Dust From Material Movement	—	—	—	—	—	—	7.08	7.08	—	3.42	3.42	—	—	—	—	—	—	—
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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.19	0.18	< 0.005	0.01	—	0.01	0.01	—	0.01	—	26.9	26.9	< 0.005	< 0.005	—	27.0

Dust From Material Movement	—	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.04	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.45	4.45	< 0.005	< 0.005	—	4.47
Dust From Material Movement	—	—	—	—	—	—	0.01	0.01	—	0.01	0.01	—	—	—	—	—	—	—
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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.04	0.68	0.00	0.00	0.08	0.08	0.00	0.02	0.02	—	92.9	92.9	< 0.005	< 0.005	0.40	94.4
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	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.92	0.92	< 0.005	< 0.005	< 0.005	0.93
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	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.15	0.15	< 0.005	< 0.005	< 0.005	0.15
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	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	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	TOG	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	1.67	1.39	11.0	11.5	0.02	0.48	—	0.48	0.44	—	0.44	—	1,983	1,983	0.08	0.02	—	1,989
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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.67	1.39	11.0	11.5	0.02	0.48	—	0.48	0.44	—	0.44	—	1,983	1,983	0.08	0.02	—	1,989
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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.47	0.39	3.11	3.24	0.01	0.13	—	0.13	0.12	—	0.12	—	559	559	0.02	< 0.005	—	561
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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.07	0.57	0.59	< 0.005	0.02	—	0.02	0.02	—	0.02	—	92.5	92.5	< 0.005	< 0.005	—	92.8
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	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	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	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	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	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	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	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	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	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	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	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	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	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	TOG	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	1.58	1.32	10.6	11.4	0.02	0.43	—	0.43	0.40	—	0.40	—	1,983	1,983	0.08	0.02	—	1,989
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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.58	1.32	10.6	11.4	0.02	0.43	—	0.43	0.40	—	0.40	—	1,983	1,983	0.08	0.02	—	1,989
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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.42	0.35	2.85	3.06	0.01	0.12	—	0.12	0.11	—	0.11	—	532	532	0.02	< 0.005	—	533
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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.06	0.52	0.56	< 0.005	0.02	—	0.02	0.02	—	0.02	—	88.0	88.0	< 0.005	< 0.005	—	88.3
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	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	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	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	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	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	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	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	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	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	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	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	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	0.00

3.9. Paving (2023) - Unmitigated

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

Location	TOG	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	0.65	0.55	5.09	6.53	0.01	0.25	—	0.25	0.23	—	0.23	—	992	992	0.04	0.01	—	995
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.65	0.55	5.09	6.53	0.01	0.25	—	0.25	0.23	—	0.23	—	992	992	0.04	0.01	—	995
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	0.15	1.43	1.84	< 0.005	0.07	—	0.07	0.07	—	0.07	—	280	280	0.01	< 0.005	—	280
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.26	0.34	< 0.005	0.01	—	0.01	0.01	—	0.01	—	46.3	46.3	< 0.005	< 0.005	—	46.4
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.07	0.05	0.85	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	116	116	0.01	< 0.005	0.50	118
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	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	0.06	0.63	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	102	102	0.01	< 0.005	0.01	103
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	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.02	0.18	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	29.5	29.5	< 0.005	< 0.005	0.06	30.0
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	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.89	4.89	< 0.005	< 0.005	0.01	4.97
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	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	0.00

3.11. Paving (2024) - Unmitigated

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

Location	TOG	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	0.63	0.53	4.90	6.53	0.01	0.23	—	0.23	0.21	—	0.21	—	992	992	0.04	0.01	—	995
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.63	0.53	4.90	6.53	0.01	0.23	—	0.23	0.21	—	0.21	—	992	992	0.04	0.01	—	995
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.17	0.14	1.30	1.74	< 0.005	0.06	—	0.06	0.06	—	0.06	—	264	264	0.01	< 0.005	—	265
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.03	0.24	0.32	< 0.005	0.01	—	0.01	0.01	—	0.01	—	43.7	43.7	< 0.005	< 0.005	—	43.9
Paving	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.04	0.78	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	114	114	0.01	< 0.005	0.46	116
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	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.06	0.58	0.00	0.00	0.10	0.10	0.00	0.02	0.02	—	99.8	99.8	0.01	< 0.005	0.01	101
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	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.16	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	27.4	27.4	< 0.005	< 0.005	0.05	27.8
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	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.03	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.53	4.53	< 0.005	< 0.005	0.01	4.60
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	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	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	TOG	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	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	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	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	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	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	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	TOG	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	TOG	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

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
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
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
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
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

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	TOG	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	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	—	0.00
Total	0.00	0.01	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 Products	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	—	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	—	0.00
Total	0.00	< 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	TOG	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	TOG	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	TOG	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)

Equipme Type	TOG	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	TOG	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)

Equipment Type	TOG	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	TOG	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	TOG	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	TOG	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	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Remove	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	8/1/2023	8/3/2023	5.00	2.00	—
Grading	Grading	8/4/2023	8/9/2023	5.00	4.00	—
Building Construction	Building Construction	8/10/2023	5/16/2024	5.00	200	—
Paving	Paving	8/10/2023	5/15/2024	5.00	200	—

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	Rubber Tired Dozers	Diesel	Average	1.00	7.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	6.00	367	0.29
Building Construction	Forklifts	Diesel	Average	1.00	6.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	84.0	0.37
Building Construction	Welders	Diesel	Average	3.00	8.00	46.0	0.45
Paving	Cement and Mortar Mixers	Diesel	Average	1.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	6.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38

Paving	Tractors/Loaders/Backh	Diesel	Average	1.00	8.00	84.0	0.37
Building Construction	Trenchers	Diesel	Average	1.00	7.00	40.0	0.50

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	7.50	11.1	LDA,LDT1,LDT2
Site Preparation	Vendor	—	6.95	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	10.0	11.1	LDA,LDT1,LDT2
Grading	Vendor	—	6.95	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	0.00	11.1	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	6.95	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	12.5	11.1	LDA,LDT1,LDT2
Paving	Vendor	—	6.95	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

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)
Site Preparation	—	—	1.88	0.00	—
Grading	—	—	4.00	0.00	—
Paving	0.00	0.00	0.00	0.00	1.75

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Other Non-Asphalt Surfaces	1.75	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	4,574

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	25.2	annual days of extreme heat
Extreme Precipitation	7.70	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	25.9	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	3	0	0	N/A
Extreme Precipitation	3	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	0	0	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	3	1	1	3
Extreme Precipitation	3	1	1	3
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
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	61.0
AQ-PM	2.63
AQ-DPM	1.00
Drinking Water	29.1
Lead Risk Housing	13.5
Pesticides	66.8
Toxic Releases	3.50
Traffic	0.30
Effect Indicators	—
CleanUp Sites	7.71
Groundwater	6.97
Haz Waste Facilities/Generators	26.7
Impaired Water Bodies	33.2
Solid Waste	91.0
Sensitive Population	—
Asthma	47.7
Cardio-vascular	69.8
Low Birth Weights	10.4
Socioeconomic Factor Indicators	—
Education	49.2
Housing	31.7
Linguistic	0.92
Poverty	60.0
Unemployment	32.3

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	42.17887848
Employed	1.116386501
Median HI	32.45220069
Education	—
Bachelor's or higher	31.19466188
High school enrollment	100
Preschool enrollment	1.873476197
Transportation	—
Auto Access	46.70858463
Active commuting	39.52264853
Social	—
2-parent households	91.38970871
Voting	89.70871295
Neighborhood	—
Alcohol availability	93.34017708
Park access	12.37007571
Retail density	0.705761581
Supermarket access	20.68523033
Tree canopy	98.93494161
Housing	—
Homeownership	88.78480688
Housing habitability	80.97010137
Low-inc homeowner severe housing cost burden	48.71038111
Low-inc renter severe housing cost burden	49.92942384
Uncrowded housing	79.21211344

Health Outcomes	—
Insured adults	45.81034262
Arthritis	0.0
Asthma ER Admissions	76.2
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	9.9
Cognitively Disabled	0.8
Physically Disabled	0.6
Heart Attack ER Admissions	49.2
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	19.6
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	96.2
SLR Inundation Area	0.0

Children	78.7
Elderly	2.4
English Speaking	98.1
Foreign-born	0.9
Outdoor Workers	21.4
Climate Change Adaptive Capacity	—
Impervious Surface Cover	99.7
Traffic Density	0.2
Traffic Access	0.0
Other Indices	—
Hardship	42.8
Other Decision Support	—
2016 Voting	88.9

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	20.0
Healthy Places Index Score for Project Location (b)	32.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
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
Land Use	Lot acreage updated to match the project
Construction: Construction Phases	Building construction and paving account for installation of the solar field.
Construction: Off-Road Equipment	Trencher added to account for trenching activity.
Operations: Consumer Products	Solar field- no operational emissions

APPENDIX B

Biological Resource Assessment for Darrah Springs Solar Ground Mount Project.
ECORP Consulting, Inc. November 2023

Biological Resources Assessment

Darrah Springs Solar Ground Mount Project

Shasta 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
AC	Alternating current
AEP	Association of Environmental Professionals
BCC	Birds of Conservation Concern
BRA	Biological Resources Assessment
CARI	California Aquatic Resources Inventory
CBOC	California Burrowing Owl Consortium
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	Darrah Springs Solar Ground Mount Project
RWQCB	Regional Water Quality Control Board

Term	Definition
SFEI	San Francisco Estuary Institute
SSC	Species of Special Concern
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WBWG	Western Bat Working Group
WL	Watch List

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 Darrah Springs Solar Ground Mount Project (Project) located in Shasta 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 for biological resources.

1.1 Study Area Location

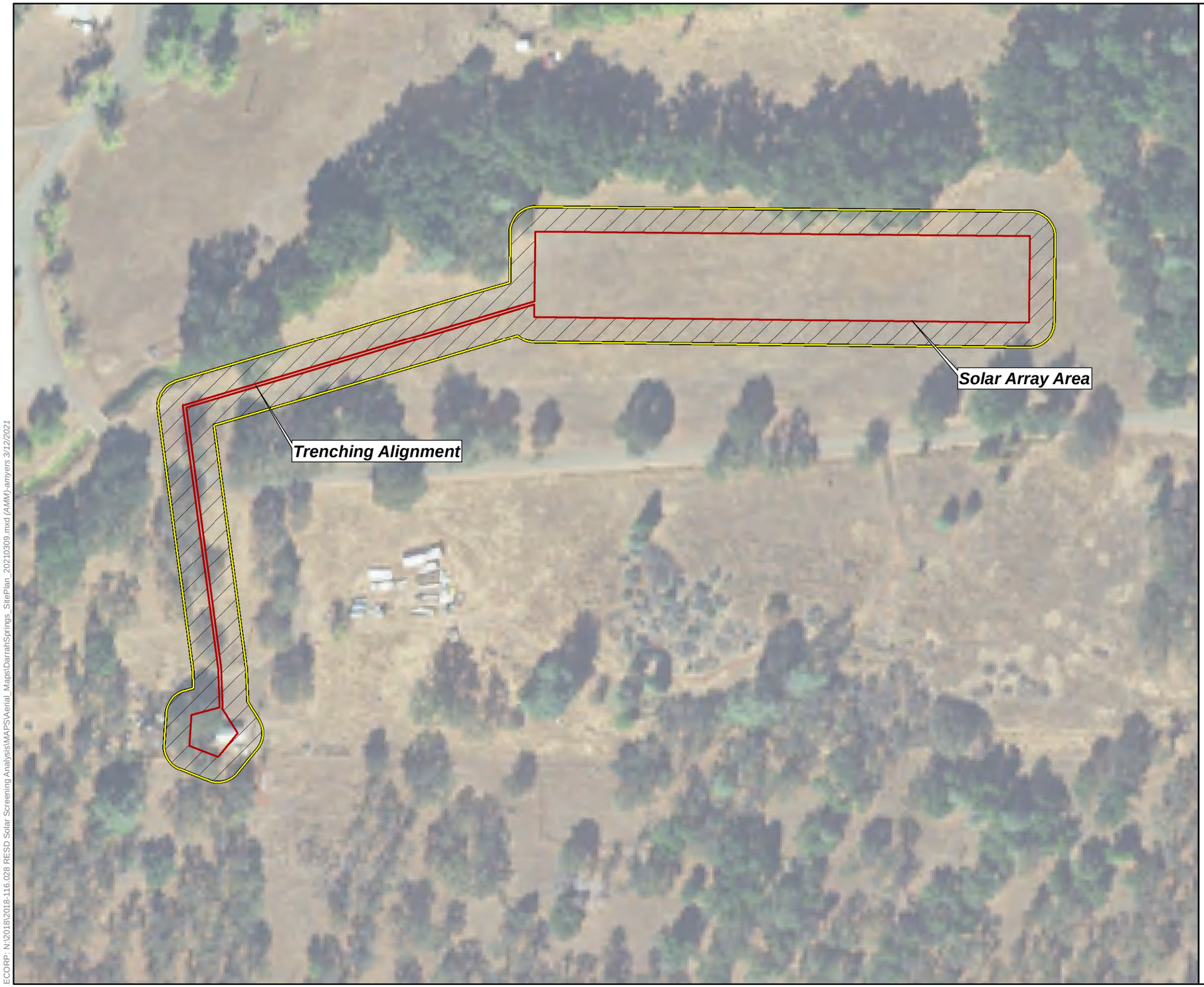
The approximately 2.56-acre Study Area includes the impact limits of the Project (Project Area) plus a 25-foot buffer (Buffer Area). The Project Area includes the area where the solar array will be installed and a trenching alignment from the solar array area to a transformer. All components of the Study Area are depicted on Figure 1. *Study Area Components*.

The Study Area is located within the facility for the Darrah Springs State Fish Hatchery located at 29661 Wildcat Road in the community of Paynes Creek in Shasta County, California (Figure 2. *Study Area Location and Vicinity*). The Study Area corresponds to the northern portion of Section 29, Township 30 North, Range 01 West (Mount Diablo Base and Meridian) within the "Shingletown, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1985). The approximate center of the Study Area is located at latitude 40.430185° and longitude -121.994037° (NAD83). The Study Area is within the Battle Creek watershed (Hydrologic Unit Code #18020153) (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 Darrah Springs Wildlife Area California Department of Fish and Wildlife (CDFW) 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 (AC) by string inverters before being delivered to the Pacific Gas & Electric Company distribution system.

The solar system would be configured into two 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 depending on the time of day to the extent a tracking system is utilized. A security fence would be installed around the solar arrays.



Map Features

- Study Area - 2.59 acres
- Project Area - 1.04 acres
- Buffer Area - 1.54 acres

Base Source: NAIP 2018

ECORP: N:\2018\2018-116.028 RESD Solar Screening Analysis\MAPS\Aerial_Maps\DarrahSprings_SitePlan_20210309.mxd (AMW)-amyers 3/12/2021

Map Date: 3/12/2021

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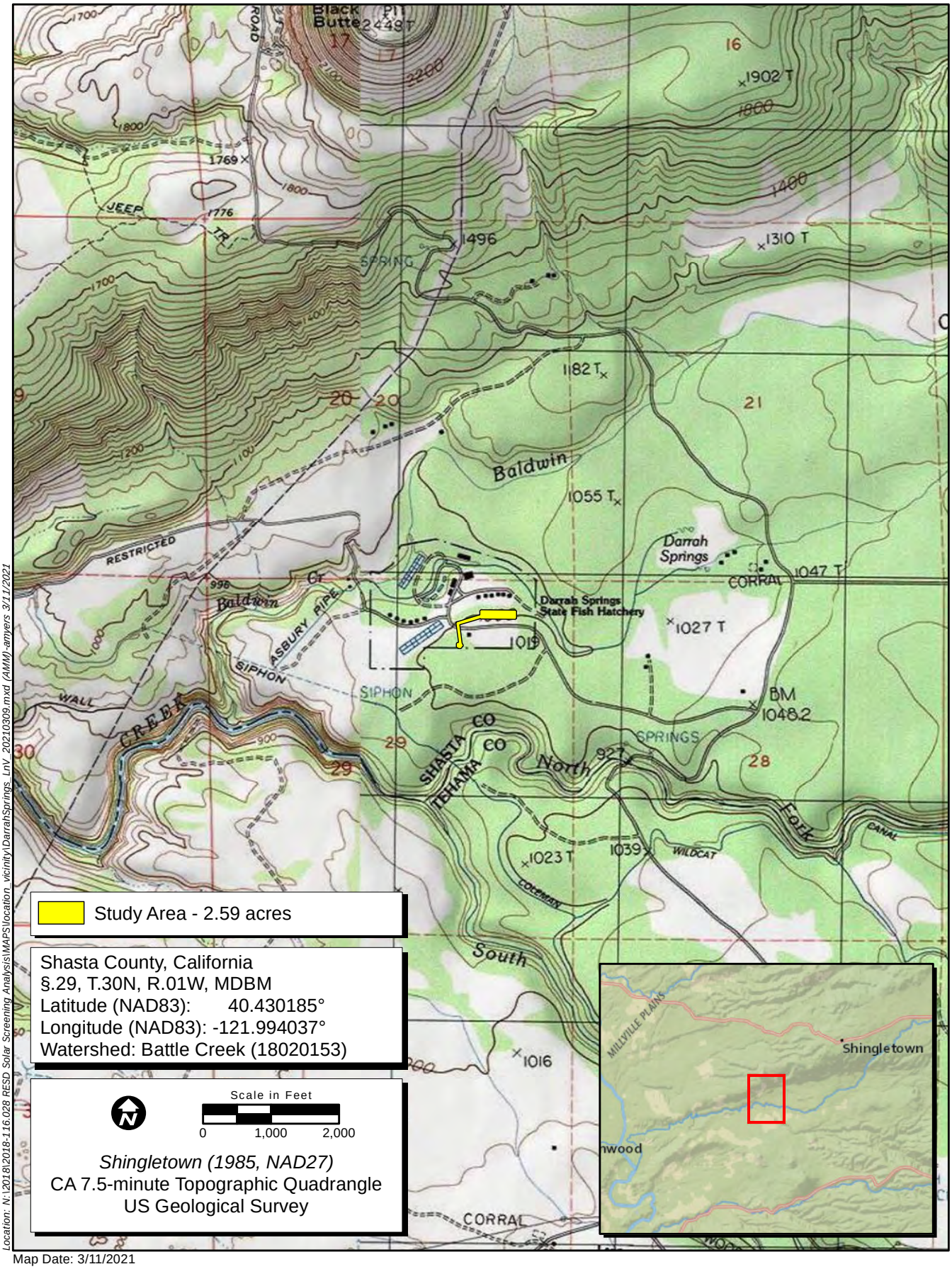
Scale in Feet
0 100

Figure 1. Study Area Components

2018-116.028/001 RESD - Screening Analysis - Solar: Darrah Springs



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Map Date: 3/11/2021

Figure 2. Study Area Location and Vicinity

2018-116.028/001 RESD - Screening Analysis - Solar: Darrah Springs

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Solar panel wiring (also known as stringing) would be buried in a trench that runs between rows and/or installed above grade to connect the output of each string to an inverter. The inverter would send AC electricity to an onsite transformer to step the electricity up to the interconnection voltage. Trenching would either be excavated and backfilled, pending the final conduit size and equipment utilized, or may be directionally drilled to avoid any existing natural resources or infrastructure features.

Prior to installation of the solar arrays, the Project site would be cleared of debris and vegetation. Minimal site grading would be required for the installation of the system. Construction equipment would include the following: bobcat or tractor with mower attachment, dump truck, grader, water truck, backhoe, forklift, pile-driving rig, and generator. Dust generation would be minimized by use of the water truck.

All staging would occur within the Project Area as depicted on Figure 1 or within existing roadways or developed areas. The Project would utilize existing roads for access.

Once construction 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.

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 Regulations

2.1.2 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.

2.1.3 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.

2.1.4 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

Species of Special Concern (SSC) are defined by the CDFW 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 (WL) 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 (SNCs) 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 "Shingletown, California" 7.5-minute USGS quadrangle and the nine surrounding USGS quadrangles (CDFW 2023a).
- USFWS Information, Planning, and Consultation System Resource Report List for the Study Area (USFWS 2023a).
- CNPS Rare Plant Inventory data for the "Shingletown, California" 7.5-minute USGS quadrangles and the nine surrounding quadrangles (CNPS 2023a).
- NMFS Resources data for the "Shingletown, California" 7.5-minute USGS quadrangle (National Oceanic and Atmospheric Administration [NOAA] 2021).

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 Site Reconnaissance

ECORP Biologist Hannah Stone conducted a reconnaissance-level field survey of the Study Area on February 23, 2021. The Study Area was surveyed on foot using an Eos Arrow Global Positioning System unit, topographic maps, and aerial imagery to ensure total site coverage. 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.

- Representative photographs.

3.2.2 Special-Status Plant Survey

ECORP biologist Hannah Stone conducted a special-status plant survey within the Study Area on April 24 and June 14, 2023. The biologist 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 C.

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 1). 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 on relatively flat terrain situated at an elevational range of approximately 1,005 to 1,015 feet above mean sea level (MSL) in the Cascade Ranges Foothills subregion of the California floristic province (Jepson eFlora 2023). The average winter low temperature in the vicinity of the Study Area is 37.3 degrees Fahrenheit (˚F) and the average summer high temperature is 95.1˚F. Average annual precipitation is approximately 34.62 inches (NOAA 2021).

The majority of the Study Area is a mowed annual grassland. The Study Area also includes a portion of oak woodland and a small portion of Wildcat Road.

The Study Area is maintained as part of the Darrah Springs Fish Hatchery facility, and lands surrounding the facility are largely undeveloped oak woodlands.

Representative photographs of the Study Area are included in Attachment B.

4.1.2 Soils

According to the Web Soil Survey (NRCS 2023), two soil units, or types, have been mapped within the Study Area (Figure 3. *Natural Resources Conservation Service Soil Types*):

- GsD - Guenoc very stony loam, 0 to 30 percent slopes
- GuD - Guenoc very rocky loam, 0 to 30 percent slopes

The GsD - Guenoc very stony loam, 0 to 30 percent slopes map unit consists of 85 percent Guenoc and similar soils and 15 percent minor components. The Guenoc series consists of moderately deep, well drained soils formed in material weathered from volcanic and metamorphic rocks, mainly basaltic rock. This map unit does not include any soils rated as hydric (NRCS 2023).

The GuD - Guenoc very rocky loam, 0 to 30 percent slopes consists of 70 percent Guenoc and similar soils, 15 percent rock outcrop, and 15 percent minor components. This map unit does not include any soils rated as hydric (NRCS 2023).

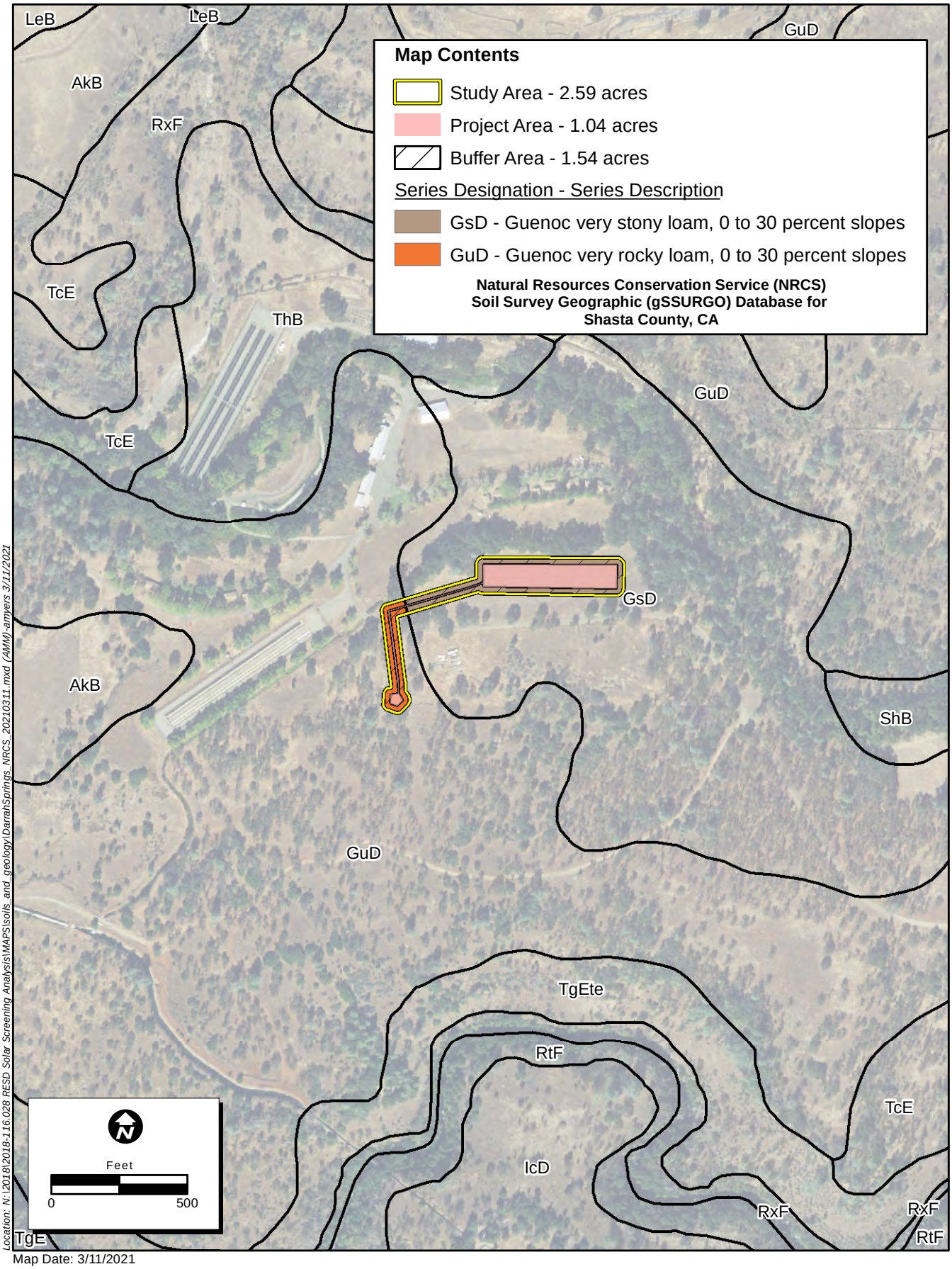
No soil units derived from serpentinite or other ultramafic parent materials have been reported to occur within the Study Area or its immediate vicinity (Horton 2017; Jennings et al. 1977; NRCS 2023).

4.1.3 Vegetation Communities and Land Cover Types

Vegetation communities or land cover types observed within the Study Area include annual grassland, blue oak (*Quercus douglasii*) woodland, and developed areas. These are described in the following sections.

Annual Grassland

Annual grassland is located within the solar array area and most of the trenching alignment (Figure 1). The annual grassland is a flat open area that appeared to be regularly mowed to maintain the facility grounds. At the time of the site reconnaissance, vegetation was still in very early stages and the annual grassland was dominated by unidentifiable annual grasses and yellow star-thistle (*Centaurea solstitialis*). Grasses observed in un-mowed portions of the Study Area included wild oats (*Avena* sp.), medusahead grass (*Elymus caput-medusae*), and hedgehog dog-tail grass (*Cynosurus echinatus*). Common forbs observed within the grassland included red-stemmed filaree (*Erodium cicutarium*), vetch (*Vicia* sp.) and miner's lettuce (*Claytonia* sp.).



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Map Date: 3/11/2021
Photo Source: NAIP 2018

Figure 3. Natural Resources Conservation Service Soil Types

2018-116.028/001 RESD - Screening Analysis - Solar: Darrah Springs

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The site reconnaissance was not conducted during the optimum identifiable period for most plant species and the annual grassland could not be positively keyed to the alliance level; however, the grassland is expected to be consistent with the Wild Oats and Brome (*Bromus* sp.) Herbaceous Semi-natural Alliance (CNPS 2023a). Semi-natural alliances are strongly dominated by non-native plants that have become naturalized in the state and do not have State rarity rankings.

Blue Oak Woodland

Blue oak woodland is located within the trenching alignment (Figure 1). At the time of the site reconnaissance, blue oak was the dominant species within the woodland and valley oak (*Quercus lobata*) was present at lesser density. Vegetation in the understory was the same as described for the annual grassland. The blue oak woodland was consistent with the Blue Oak Forest & Woodland Alliance (CNPS 2023b), which has a State Rarity Ranking of S4 and is not considered to be a sensitive natural community.

Developed/Disturbed

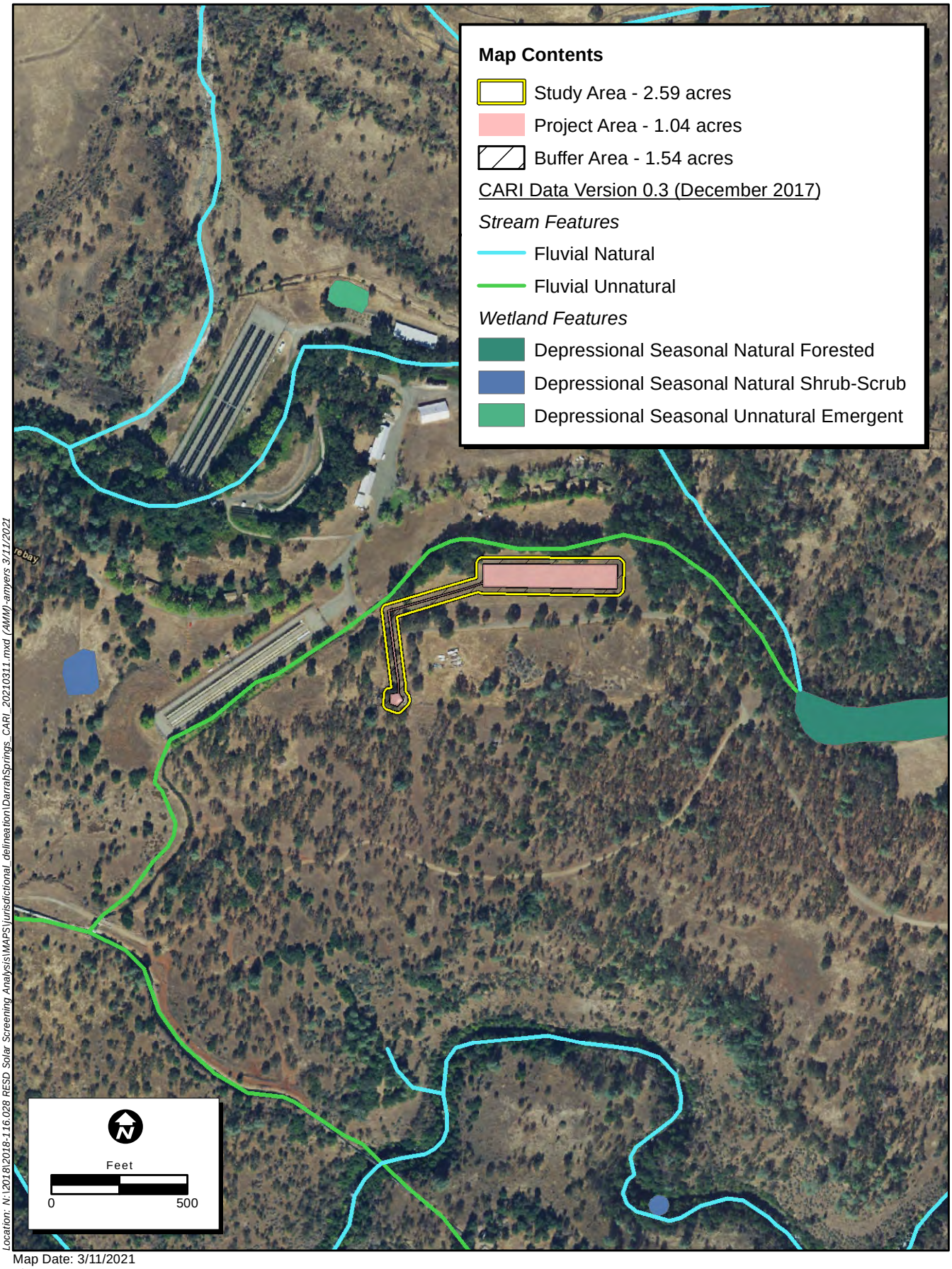
A portion of Wildcat Road is located within the Study Area. Wildcat Road is a paved one-lane road that is devoid of vegetation except for along the narrow road shoulders. Vegetation along the road shoulders included wild oats, yellow star-thistle, and vetch.

4.1.4 Aquatic Resources

A preliminary aquatic resources assessment to identify potential Waters of the U.S. and State was conducted within the Study Area concurrent with the reconnaissance-level field survey. No potential aquatic resources were observed within the Study Area, and no aquatic resources are mapped within the Study Area in the California Aquatic Resources Inventory (CARI) data (San Francisco Estuary Institute [SFEI] 2017) (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. The nearest aquatic resource to the Study Area is a ditch that is located north and east of the Study Area (Figure 4).

4.1.5 Wildlife Observations

Wildlife observed within or flying over the Study Area during the site reconnaissance includes California scrub-jay (*Aphelocoma californica*), house sparrow (*Passer domesticus*), and American goldfinch (*Spinus tristis*). Sign of wildlife included mule deer (*Odocoileus hemionus*) scat and disturbance from fossorial mammals.



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Map Date: 3/11/2021
Photo Source: NAIP 2018

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Figure 4. California Aquatic Resources Inventory

2018-116.028/001 RESD - Screening Analysis - Solar: Darrah Springs

4.2 Evaluation of Species Identified in the Literature Search

Table 1 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 1. Special-Status Species Evaluated for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Plants						
Red-flowered bird's-foot trefoil (*Acmispon rubriflorus*)	–	–	1B.1	Cismontane woodland and valley and foothill grassland (656'–1,395').	April–June	Low potential to occur. The grassland and oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Henderson's bent grass *(Agrostis hendersonii)*	–	–	3.2	Vernal pools and mesic areas in valley and foothill grasslands (230'–1,001').	April–June	Absent. No suitable habitat within Study Area.
Sanborn's onion *(Allium sanbornii* var. *sanbornii)*	–	–	4.2	Chaparral, cismontane woodland, and lower montane coniferous forests, usually with gravelly, serpentinite soils (853'–4,954').	May–September	Low potential to occur. The oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Depauperate milk-vetch *(Astragalus pauperculus)*	–	–	4.3	Vernally mesic areas on volcanic soils within chaparral, cismontane woodland, and valley and foothill grassland habitats (197'–3,986').	March–June	Absent. No suitable habitat within Study Area.

Table 1. Special-Status Species Evaluated for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Rattlesnake fern (*Botrypus virginianus*)	–	–	2B.2	Streams of bogs and fens, mesic lower montane coniferous forest, meadows and seeps, and riparian forest habitats (2,345'–4,446').	June–September	Absent. No suitable habitat within Study Area.
Watershield *(Brasenia schreberi)*	–	–	2B.3	Freshwater marshes and swamps (98'–7,218').	June–September	Absent. No suitable habitat within Study Area.
Thread-leaved beakseed *(Bulbostylis capillaris)*	–	–	4.2	Lower montane coniferous forest, meadows and seeps, and upper montane coniferous forest (1,296'–6,808').	June–August	Absent. No suitable habitat within Study Area.
Callahan's mariposa lily *(Calochortus syntrophus)*	–	–	1B.1	Cismontane woodland and vernally mesic valley and foothill grassland (1,722'–3,757').	May–June	Absent. Study Area is outside of known elevational range for this species.
Shasta clarkia (*Clarkia borealis ssp. arida*)	–	–	1B.1	Cismontane woodland and openings of lower montane coniferous forest (1,607–1,953').	June–August	Absent. Study Area is outside of known elevational range for this species.
Silky cryptantha (*Cryptantha crinita*)	–	–	1B.2	Gravelly streambeds of cismontane woodland, lower montane coniferous forest, riparian forest, riparian woodland, and valley and foothill grassland habitats (200'–3,987').	April–May	Absent. No suitable habitat within Study Area.
Red-stemmed cryptantha (*Cryptantha rostellata*)	–	–	4.2	Often gravelly volcanic openings and roadsides of cismontane woodland and valley and foothill grassland (131'–2,625').	April–June	Low potential to occur. The grassland and oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Hot rock daisy (*Erigeron inornatus* var. *calidipetris*)	–	–	4.3	Sandy or volcanic substrates in lower montane coniferous forest (3,610'–6,350').	June-September	Absent. Study Area is outside of known elevational range for this species and does not include suitable habitat.

Table 1. Special-Status Species Evaluated for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Shield-bracted monkeyflower *(Erythranthe glaucescens)*	–	–	4.3	*Serpentine seeps and sometimes streambanks of chaparral,* cismontane woodland, lower montane coniferous forest, and valley and foothill grassland (196'–4,069').	February–August	Absent. No suitable habitat within Study Area.
Stony Creek spurge *(Euphorbia ocellata ssp. rattanii)*	–	–	1B.2	*Chaparral, streambanks of riparian scrub, and sandy or rocky substrates of valley and foothill grassland (213'–2,625').*	May–October	Low potential to occur. The grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Butte County fritillary *(Fritillaria eastwoodiae)*	–	–	3.2	Chaparral, cismontane woodland, and openings in lower montane coniferous forest and occasionally is found on serpentinite soils (164'–4,921').	March–June	Low potential to occur. The oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Boggs Lake hedge-hyssop *(Gratiola heterosepala)*	–	CE	1B.2	Marshes, swamps, lake margins, and vernal pools (33'–7,792').	April–August	Absent. No suitable habitat within Study Area.
Baker cypress (*Hesperocyparis bakeri*)	–	–	4.2	Serpentinite or volcanic substrates of chaparral and lower montane coniferous forest (2,690'–6,545').	Any season	Absent. No suitable habitat within Study Area.

Table 1. Special-Status Species Evaluated for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Jepson's horkelia (*Horkelia daucifolia* var. *indicta*)	–	–	1B.1	Quaternary pyroclastic flows, volcanic substrates, vernally mesic areas, and openings of cismontane woodland (787'–2,199').	April–June	Low potential to occur. The oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Baker's globe mallow (*Iliamna bakeri*)	–	–	4.2	Volcanic soils (often in burned areas) of chaparral, Great Basin scrub, lower montane coniferous forest openings, and pinyon and juniper woodland (3,280'–8,203').	June–September	Absent. No suitable habitat within Study Area.
Finger rush *(Juncus digitatus)*	–	–	1B.1	Openings within cismontane woodland and lower montane coniferous forest, as well as xeric vernal pools (2,165'–2,592).	April–June	Absent. Study Area is outside of the known elevational range for this species.
Red Bluff dwarf rush *(Juncus leiospermus* var. *leiospermus)*	–	–	1B.1	Vernally mesic areas in chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools (115'–4,101').	March–June	Absent. No suitable habitat within Study Area.
Legenere *(Legenere limosa)*	–	–	1B.1	Various seasonally inundated areas including wetlands, wetland swales, marshes, vernal pools, artificial ponds, and floodplains of intermittent drainages (USFWS 2005) (3'–2,887').	April–June	Absent. No suitable habitat within Study Area.
Broad-lobed leptosiphon *(Leptosiphon latisectus)*	–	–	4.3	Broadleafed upland forest and cismontane woodland (560'–4,920').	April–June	Low potential to occur. The oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.

Table 1. Special-Status Species Evaluated for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Woolly meadowfoam *(Limnanthes floccosa* ssp. *floccosa)*	–	–	4.2	Vernally mesic chaparral, cismontane woodland, valley and foothill grassland, and vernal pools (197'–4,380').	March–May	Absent. No suitable habitat within Study Area.
Tehama navarretia (*Navarretia heterandra*)	–	–	4.3	Mesic areas in valley and foothill grassland and vernal pools (98'–3,314').	April–June	Absent. No suitable habitat within Study Area.
Baker's navarretia *(Navarretia leucocephala* ssp. *bakeri)*	–	–	1B.1	Vernal pools and mesic areas within cismontane woodlands, lower montane coniferous forests, meadows and seeps, and valley and foothill grasslands (16'–5,709').	April–July	Absent. No suitable habitat within Study Area.
Awl-leaved navarretia (*Navarretia subuligera*)	–	–	4.3	Rocky, mesic areas of chaparral, cismontane woodland, and lower montane coniferous forest (492'–3,609').	April–August	Absent. No suitable habitat within Study Area.
Slender Orcutt grass *(Orcuttia tenuis)*	FT	CE	1B.1	Vernal pools, often gravelly (115'–5,774').	May–September	Absent. No suitable habitat within Study Area.
Ahart's paronychia (*Paronychia ahartii*)	–	–	1B.1	Well-drained rocky outcrops, often vernal pool edges, and volcanic upland (Hartman and Rabeler 2012) of cismontane woodland, valley and foothill grassland, and vernal pools (98'–1673').	February–June	Low potential to occur. The grassland and oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Coleman's rein orchid *(Piperia colemanii)*	–	–	4.3	Sandy soils in chaparral and lower montane coniferous forest (3,937'–7,546').	June–August	Absent. No suitable habitat within Study Area.

Table 1. Special-Status Species Evaluated for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Bidwell's knotweed (*Polygonum bidwelliae*)	–	–	4.3	Volcanic soils of chaparral, cismontane woodland, and valley and foothill grassland (196'–3,938').	April–July	Low potential to occur. The oak woodland and grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Brownish beaked-rush *(Rhynchospora capitellata)*	–	–	2B.2	Mesic areas in lower montane coniferous forest, upper montane coniferous forests, meadows, seeps, marshes, and swamps (148'–6,562').	July–August	Absent. No suitable habitat within Study Area.
Sanford's arrowhead *(Sagittaria sanfordii)*	–	–	1B.2	Shallow marshes and freshwater swamps (0'–2,133').	May–October	Absent. No suitable habitat within Study Area.
Redding checkerbloom (*Sidalcea celata*)	–	–	3	Cismontane woodland, sometimes on serpentine substrates (442'–5,004').	April–August	Low potential to occur. The oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Giant checkerbloom *(Sidalcea gigantea)*	–	–	4.3	Meadows and seeps within lower and upper montane coniferous forests (2,198'–6,398').	January–June	Absent. No suitable habitat within Study Area.
Western campion (*Silene occidentalis* ssp. *occidentalis*)	–	–	4.3	Dry, sometimes rocky, openings within chaparral and lower and upper montane coniferous forest (3,380'–6,855').	June–August	Absent. Study Area is outside of known elevational range for this species and does not include suitable habitat.

Table 1. Special-Status Species Evaluated for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Maverick clover *(Trifolium piorkowskii)*	–	–	1B.2	Volcanic clay, openings, and often streambanks of chaparral, cismontane woodland, lower montane coniferous forest, mesic valley and foothill grasslands, and vernal pools (525'-2,231').	April-May	Low potential to occur. The oak woodland within the Study Area may The oak woodland and grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.
Invertebrates						
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	–	–	Elderberry shrubs (host plant for this species).	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.
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.
Monarch butterfly (*Danaus plexippus*)	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 habitat within Study Area.

Table 1. Special-Status Species Evaluated for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Fish						
Pacific lamprey (*Lampetra tridentata*)	–	–	SSC	Anadromous; undammed streams rivers, streams, and creeks with gravel spawning substrates.	N/A	Absent. No suitable habitat within Study Area.
Chinook salmon (Central Valley spring-run evolutionarily significant unit) (*Oncorhynchus tshawytscha*)	FT	CT	–	Anadromous; undammed cold-water rivers and streams having riffles with large gravel substrates and relatively deep pools.	N/A	Absent. No suitable habitat within Study Area.
Steelhead (Central Valley distinct population segment [DPS]) (*Oncorhynchus mykiss*)	FT	–	–	Anadromous; undammed cold-water rivers and streams having riffles with gravel substrates and relatively deep pools.	N/A	Absent. No suitable habitat within Study Area.
Amphibians						
Southern long-toed salamander *(Ambystoma macrodactylum sigillatum)*	–	–	SSC	Inhabits alpine meadows, high mountain ponds, and lakes at elevations up to about 10,000 ft. In California, this subspecies occurs in the northeast and along the northern Sierra Nevada south to Garner Meadows and Spicer Reservoir, and in Trinity and Siskiyou counties near the Trinity Alps.	January-April after snowmelt	Absent. No suitable habitat within Study Area.
Foothill yellow-legged frog (Northwest/North Coast clade) (*Rana boylii*)	–	–	SSC	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. No suitable habitat within Study Area.
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. Species not known to occur in the vicinity of the Study Area.

Table 1. Special-Status Species Evaluated for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Reptiles						
Northwestern pond turtle (*Actinemys marmorata*)	FPT	–	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 grassland and oak woodland within the Study Area may represent suitable upland habitat for this species.
Birds						
Osprey *(Pandion haliaetus)*	–	–	CDFW WL	Nesting habitat requires close proximity to accessible fish, open nest site free of mammalian predators, and extended ice-free season. The nest in large trees, snags, cliffs, transmission/communication towers, artificial nest platforms, channel markers/buoys.	April-September	Absent. No suitable habitat within Study Area.
Northern goshawk *(Accipiter gentilis)*	–	–	SSC	Nesting occurs in mature to old-growth forests composed primarily of large trees with high canopy closure. In California, nests are built primarily in conifer trees in the Sierra Nevada, Cascade and northwestern coastal Ranges.	March-August	Absent. No suitable habitat within Study Area.
Bald eagle (*Haliaeetus leucocephalus*)	Delisted	CE	CFP, BCC	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	February – September (nesting); October-March (wintering)	Absent. No suitable habitat within Study Area.

Table 1. Special-Status Species Evaluated for the 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	Potential to occur. The burrows in the oak woodland within the Study Area may represent suitable nesting habitat for this species.
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	Potential to occur. The oak trees within the Study Area may represent suitable nesting habitat for this species.
American peregrine falcon (*Falco peregrinus anatum*)	Delisted	De-listed	BCC, CFP	In California, breeds in coastal region, northern California, and Sierra Nevada. Nesting habitat includes cliff ledges and human-made ledges on towers and buildings. Wintering habitat includes areas where there are large concentrations of shorebirds, waterfowl, pigeons or doves.	CA Residents nest in February-June	Absent. No suitable habitat within Study Area.
Least Bell's vireo (*Vireo bellii pusillus*)	FE	CE	BCC	In California, breeding range includes Ventura, Los Angeles, Riverside, Orange, San Diego, and San Bernardino counties, and rarely Stanislaus and Santa Clara counties. Nesting habitat includes dense, low shrubby vegetation in riparian areas, brushy fields, young second-growth woodland, scrub oak, coastal chaparral and mesquite brushland. Winters in southern Baja California Sur.	April 1-July 31	Absent. No suitable habitat within Study Area.

Table 1. Special-Status Species Evaluated for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Oak titmouse (*Baeolophus inornatus*)	–	–	BCC	Nests in tree cavities within dry oak or oak-pine woodland and riparian; where oaks are absent, they nest in juniper woodland and open forests (gray, Jeffrey, Coulter, pinyon pines and Joshua tree).	March-July	Potential to occur. The oak woodland within the Study Area may represent suitable nesting habitat for this species.
Wrentit (*Chamaea fasciata*)	–	–	BCC	Coastal sage scrub, northern coastal scrub, chaparral, dense understory of riparian woodlands, riparian scrub, coyote brush and blackberry thickets, and dense thickets in suburban parks and gardens.	Nests March-August	Absent. No suitable habitat within Study Area.
Song sparrow "Modesto" (*Melospiza melodia heermanni*)	–	–	BCC, SSC	Resident in central and southwest California, including Central Valley; nests in marsh, scrub habitat.	April-June	Absent. No suitable habitat within Study Area.
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.
San Clemente spotted towhee (*Pipilo maculatus clementae*)	–	–	BCC, SSC	Resident on Santa Catalina and Santa Rosa islands; extirpated on San Clemente Island, California. Breeds in dense, broadleaf shrubby brush, thickets, and tangles in chaparral, oak woodland, island woodland, and Bishop pine forest.	Year-round resident; breeding season is April-July	Absent. This species is found only on the Channel Islands.

Table 1. Special-Status Species Evaluated for the 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	Absent. No suitable nesting habitat within Study Area.
Mammals						
Spotted bat *(Euderma maculatum)*	–	–	SSC	Roost in cracks, crevices, and caves, usually high in fractured rock cliffs. Found in desert, sub-alpine meadows, desert-scrub, pinyon-juniper woodland, ponderosa pine, mixed conifer forest, canyon bottoms, rims of cliffs, riparian areas, fields, and open pastures (Western Bat Working Group [WBWG] 2021).	April-September	Absent. No suitable habitat within Study Area.
Pallid bat (*Antrozous pallidus*)	–	–	SSC	Crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of redwoods, cavities of oaks, exfoliating pine and oak bark, deciduous trees in riparian areas, and fruit trees in orchards). Also roosts in various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (WBWG 2023).	April-September	Potential to occur. The cavities of the oak trees within and adjacent to the Study Area may represent suitable roosting habitat for this species.

Table 1. Special-Status Species Evaluated for the Study Area

Common Name (*Scientific Name*)	Status			Habitat Description[1]	Survey Period	Potential to Occur Onsite
	ESA	CESA	Other			
Fisher- West Coast DPS *(Pekania pennanti)*	–	–	SSC	Northern coniferous and mixed forests of Canada and northern United States.	Any season	Absent. No suitable habitat within Study Area.
California wolverine *(Gulo gulo)*	FPT	CT	FP	Scarce resident of North Coast mountains and Sierra Nevada. Wide variety of high elevation habitats.	Any season	Absent. Study Area is outside of geographic range for this species.

Status Codes:

FESA	Federal Endangered Species Act
CESA	California Endangered Species Act
FE	FESA listed, Endangered.
FPT	Formally Proposed for FESA listing as Threatened.
FT	FESA listed, Threatened.
FC	Candidate for FESA listing as Threatened or Endangered
BCC	USFWS Bird of Conservation Concern
CT	CESA- or NPPA-listed, Threatened.
CE	CESA or NPPA listed, Endangered.
CFP	California Fish and Game Code Fully Protected Species (§ 3511-birds, § 4700-mammals, §5 050-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	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).

4.2.1 Plants

A total of 37 special-status plant species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Table 1). Of those, 25 species are considered to be absent from the Study Area due to the lack of suitable habitat (Table 1). No further discussion of those species is provided in this assessment. A brief description of the remaining 11 species that have potential to occur within the Study Area is presented below.

Red-flowered Bird's-foot Trefoil

Red-flowered bird's-foot trefoil (*Acmispon rubriflorus*) 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 cismontane woodland, and valley and foothill grassland. Red-flowered bird's-foot trefoil blooms from April through June and is known to occur at elevations ranging from 656 to 1,395 feet above MSL. Red-

flowered bird's-foot trefoil is endemic to California; the current range of this species includes Colusa, Stanislaus, and Tehama counties (CNPS 2023a).

There are no CNDDB occurrences of red-flowered bird's-foot trefoil within five miles of the Study Area (CDFW 2023a). The oak woodland and grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Red-flowered bird's-foot trefoil has low potential to occur.

Sanborn's Onion

Sanborn's onion (*Allium sanbornii* var. *sanbornii*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.2 species. This species is a bulbiferous herbaceous perennial that usually occurs on serpentinite or gravelly soils in chaparral, cismontane woodlands, and lower montane coniferous forest. Sanborn's onion blooms from May through September and is known to occur at elevations ranging from 853 to 4,954 feet above MSL. The current range of this species in California includes Butte, Calaveras, El Dorado, Nevada, Placer, Plumas, Shasta, Tehama, Tuolumne, and Yuba counties (CNPS 2023a).

There are no CNDDB occurrences of Sanborn's onion within five miles of the Study Area (CDFW 2023a). The oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.. Sanborn's onion has low potential to occur within the Study Area.

Red-stemmed Cryptantha

Red-stemmed cryptantha (*Cryptantha rostellata*) 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 gravelly, volcanic openings and often on roadsides in cismontane woodland and valley and foothill grassland (CNPS 2023b). Red-stemmed cryptantha blooms from April through June and is known to occur at elevations ranging from 131 to 2,625 feet above MSL (CNPS 2023b). The current range of this species in California includes Butte, Colusa, Glenn, Mariposa, Napa, Shasta, Siskiyou, Sutter, Tehama, and Trinity counties (CNPS 2023b).

There are no CNDDB occurrence of red-stemmed cryptantha within the "Shingletown, California" 7.5-minute quadrangle (CDFW 2023b). . The oak woodland and grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Red-stemmed cryptantha has low potential to occur within the Study Area.

Stony Creek Spurge

Stony Creek spurge (*Euphorbia ocellata ssp. rattanii*) 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 chaparral, streambanks of riparian scrub, and on sandy or rocky substrates of valley and foothill grassland. Stony Creek spurge blooms from May through October and is known to occur at elevations ranging from 213 to 2,625 feet above MSL. Stony Creek spurge is endemic to California; its current range includes Glenn and Tehama counties (CNPS 2023a).

There are no CNDDB occurrences of Stony Creek spurge within five miles of the Study Area. The grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.. Stony Creek spurge has low potential to occur within the Study Area.

Butte County Fritillary

Butte County fritillary (*Fritillaria eastwoodiae*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 3.2 species. This species is an herbaceous bulbiferous perennial that occurs in chaparral, cismontane woodland, and lower montane coniferous forest, and is occasionally found on serpentinite soils. Butte County fritillary blooms from March through June and is known to occur at elevations ranging from 164 to 4,921 feet above MSL. The current range of this species in California includes Butte, El Dorado, Nevada, Placer, Plumas, Shasta, Tehama, and Yuba counties (CNPS 2023a).

There are three CNDDB occurrences of Butte County fritillary within five miles of the Study Area (CDFW 2023a). The oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. . Butte County fritillary has low potential to occur within the Study Area.

Jepson's Horkelia

Jepson's horkelia (*Horkelia daucifolia* var. *indicta*) 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 perennial that occurs in Quaternary pyroclastic flows, volcanic substrates, vernally mesic areas, and openings of cismontane woodland. Jepson's horkelia blooms from April through June and is known to occur at elevations ranging from 787 to 2,199 feet above MSL. Jepson's horkelia is endemic to California; the current range of this species includes Shasta, Siskiyou, and Tehama counties (CNPS 2023a).

There are no CNDDB occurrences of Jepson's horkelia within five miles of the Study Area. The oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. . Jepson's horkelia has low potential to occur within the Study Area.

Broad-lobed Leptosiphon

Broad-lobed leptosiphon (*Leptosiphon latisectus*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.3 species. This species is an annual herb that occurs in broadleafed upland forest and cismontane woodland. Broad-lobed leptosiphon blooms from April through June and is known to occur at elevations ranging from 560 to 4,920 feet above MSL. Broad-lobed leptosiphon is endemic to California; the current range of this species includes Colusa, Del Norte, Humboldt, Lake, Marin, Mendocino, Monterey, Napa, San Benito, San Francisco, San Mateo, Shasta, Sonoma, Tehama, Trinity, and Yolo counties (CNPS 2023a).

There are no CNDDB occurrences of broad-lobed leptosiphon within five miles of the Study Area. The oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. . Broad-lobed leptosiphon has low potential to occur within the Study Area.

Ahart's Paronychia

Ahart's paronychia (*Paronychia ahartii*) 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 well-drained rocky outcrops, often vernal pools edges, and volcanic upland (Hartman and Rabeler 2012) of cismontane woodland, valley foothill and grassland and vernal pools (CNPS 2023a). Ahart's paronychia blooms from February through June and is known to occur at elevations ranging from 98 to 1,674 feet above MSL. Ahart's paronychia is endemic to California; the current range of this species includes Butte, Shasta and Tehama counties (CNPS 2023a).

There are nine CNDDB occurrences of Ahart's paronychia within five miles of the Study Area (CDFW 2023a). The oak woodland and grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. . Ahart's paronychia has low potential to occur within the Study Area.

Bidwell's Knotweed

Bidwell's knotweed (*Polygonum bidwelliae*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 4.3 species. This species is an herbaceous annual that occurs in volcanic soil in areas of chaparral, cismontane woodland, and valley and foothills grassland. Bidwell's knotweed blooms from April through July and is known to occur at elevations ranging from 197 to 3,937 feet above MSL. This species is endemic to California; the current range of this species includes Butte, Shasta, and Tehama counties (CNPS 2023a).

There are no CNDDB occurrence of Bidwell's knotweed within the "Shingletown, California" 7.5-minute quadrangle (CDFW 2023b). The oak woodland and grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.. Bidwell's knotweed has low potential to occur within the Study Area.

Redding Checkerbloom

Redding checkerbloom (*Sidalcea celata*) is not listed pursuant to either the federal or California ESAs, but is designated as a CRPR 3 species. Redding checkerbloom is an herbaceous perennial that occurs cismontane woodland, sometimes of serpentinite substrates. Redding checkerbloom blooms from April through August and is known to occur at elevations ranging from 442 to 5,004 feet above MSL. Redding checkerbloom is endemic to California; the current range of this species includes Shasta, Siskiyou, and Tehama counties (CNPS 2023a).

There are no CNDDB occurrence of Redding checkerbloom within the "Shingletown, California" 7.5-minute quadrangle (CDFW 2023b). The oak woodland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey.. Redding checkerbloom has low potential to occur within the Study Area.

Maverick Clover

Maverick clover (*Trifolium piorkowskii*) 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 volcanic clay,

openings, and often streambanks within chaparral, cismontane woodland, lower montane coniferous forest, mesic valley and foothill grasslands, and vernal pools. Maverick clover blooms from April through May and is known to occur at elevations ranging from 524 to 2,231 feet above MSL. The current known range of this species in California includes Shasta County (CDFW 2023a).

There are two CNDDB occurrences of maverick clover within five miles of the Study Area (CDFW 2023a). The oak woodland and grassland within the Study Area may provide suitable habitat; however, this species was not observed during the special-status plant survey. Maverick clover has low potential to occur within the Study Area.

4.2.2 Invertebrates

Five special-status invertebrate species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Table 1). However, upon further analysis and after the site visit, all five species are considered to be absent from the Study Area due to the lack of suitable habitat. No further discussion of special-status invertebrates is provided within this assessment.

4.2.3 Fish

Three special-status fish species or ESUs were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Table 1). However, upon further analysis and after the site visit, all three species or ESUs are considered to be absent from the Study Area due to the lack of suitable habitat. No further discussion of special-status fish is provided within this assessment.

4.2.4 Amphibians

Three special-status amphibian species were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Table 1). However, upon further analysis, all three species are considered to be absent from the Study Area due to the lack of suitable habitat. No further discussion of special-status amphibians is provided within this assessment.

4.2.5 Reptiles

One special-status reptile species, northwestern pond turtle, was identified as having potential to occur in the vicinity of the Study Area based on the literature review (Table 1). A brief description of northwestern pond turtle is 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 and hatchlings 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 two CNDDB occurrences of northwestern pond turtle within five miles of the Study Area (CDFW 2023a). The oak woodland and grassland within the Study Area may provide upland habitat for this species. Northwestern pond turtle has potential to occur within the Study Area.

4.2.6 Birds

A total of 13 special-status bird species were identified as having the potential to occur within the Study Area based on the literature review (Table 1). Of those, 10 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. A brief description of the remaining three species that have the potential to occur within the Study Area is presented below.

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. 2021). This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel (*Spermophilus beecheyi*) but may also use man-made 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 [CBOC] 1993; CDFG 2012).

There are no CNDDB occurrences of burrowing owl within five miles of the Study Area (CDFW 2023a). No suitable burrows for burrowing owl were observed within the Study Area; however, there were small burrows and other signs of burrowing mammals within the Study Area. The grassland within and adjacent to the Study Area may provide nesting habitat for this species. Burrowing owl has potential to occur within the Study Area.

Nuttall's Woodpecker

The Nuttall's woodpecker (*Dryobates nuttallii*) is not listed pursuant to the federal or California ESAs, but is considered a USFWS BCC. Nuttall's woodpeckers are resident from Siskiyou County south to Baja

California. Nuttall's woodpeckers nest in tree cavities primarily within oak woodlands, but also can be found in riparian woodlands (Lowther et al. 2021). Breeding occurs during April through July.

There are no CNDDB occurrence of Nuttall's woodpecker within the "Shingletown, California" 7.5-minute quadrangle (CDFW 2023b). The oak woodland within the Study Area may provide nesting habitat for this species. Nuttall's woodpecker has potential to occur within the Study Area.

Oak Titmouse

Oak titmouse (*Baeolophus inornatus*) is not listed pursuant to the federal or California ESAs, but is considered a USFWS BCC. Oak titmouse breeding range includes southwestern Oregon south through California's Coast, Transverse, and Peninsular ranges, western foothills of the Sierra Nevada, into Baja California; they are absent from the humid northwestern coastal region and the San Joaquin Valley (Cicero et al. 2021). They are found in dry oak or oak-pine woodlands but may also use scrub oaks or other brush near woodlands (Cicero et al. 2021). Nesting occurs during March through July.

There are no CNDDB occurrence of oak titmouse within the "Shingletown, California" 7.5-minute quadrangle (CDFW 2023b). The oak woodland within the Study Area may provide nesting habitat for this species. Oak titmouse 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 native birds protected under these regulations.

4.2.7 Mammals

Four special-status mammals were identified as having potential to occur in the vicinity of the Study Area based on the literature review (Table 1). Of those, three species were determined to be absent from the Study Area due to the lack of suitable habitat and/or because the Study Area is outside of the known geographic range for the species. No further discussion of those species is provided in this assessment. A brief description of the remaining species that has potential to occur within the Study Area is presented below.

Pallid Bat

The pallid bat (*Antrozous pallidus*) is not listed pursuant to either the California or federal ESAs, but is designated as a CDFW SSC. The pallid bat is a large, light-colored bat with long, prominent ears and pink, brown, or grey wing and tail membranes. This species ranges throughout North America from the interior of British Columbia, south to Mexico, and east to Texas. The pallid bat inhabits low elevation (below 6,000 feet) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forest (above 7,000 feet). This species roosts alone or in groups in the crevices of rocky outcrops and cliffs, caves, mines, trees, and in various human structures such as bridges and barns. Pallid bats are feeding generalists that glean a variety of arthropod prey from surfaces as well as capturing insects on the wing. Foraging occurs over grasslands, oak savannahs, ponderosa pine forests, talus slopes,

gravel roads, lava flows, fruit orchards, and vineyards. This species is not thought to migrate long distances between summer and winter sites (WBWG 2023).

There are no CNDDB occurrences of pallid bat within five miles of the Study Area (CDFW 2023a). However, the oak woodland within the Study Area may provide roosting habitat for this species. Pallid bat has potential to occur within the Study Area.

4.3 Critical Habitat and Essential Fish Habitat

There are no Critical Habitats mapped within the Study Area (USFWS 2023b).

Based on the literature review, anadromous fish Critical Habitat for chinook salmon (Central Valley spring-run ESA) and steelhead (Central Valley DPS), and Essential Fish Habitat for chinook salmon has the potential to occur within the vicinity of the Study Area (NOAA 2016). However, there is no habitat for fish within the Study Area.

4.4 Riparian Habitats, Oak Woodlands, and Sensitive Natural Communities

One sensitive natural community, Northern Interior Cypress Forest, was identified as having potential to occur within the vicinity of the Study Area based on the literature review (CDFW 2023b). Upon further analysis and site reconnaissance, this sensitive natural community was determined to be absent from the Study Area. No other sensitive natural communities were observed within the Study Area. Therefore, sensitive natural communities will not be discussed further in this analysis.

As described in Section 1.1, the Study Area includes the Project Area and a Buffer Area. Blue oak woodland is located within both the Project Area and Buffer Area along the trenching alignment (Figure 1). A riparian woodland is adjacent to the offsite ditch northeast of the Study Area, and a small portion of the canopy of the riparian woodland is in the Buffer Area for the solar array.

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 and creeks in the vicinity of the Study Area 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 specifically addresses questions raised by the Biological Resources section of the Environmental Checklist Form in Appendix G of the CEQA Guidelines (Association of Environmental Professionals [AEP] 2021). This impact analysis assumes the Project will implement measures that fulfill the intent of recommended measures described in Section 6.0.

As described in Sections 4.3 and 4.4, no Critical Habitats or sensitive natural communities are located within the Study Area. Therefore, the Project would not impact those biological resources and they are not discussed further in this analysis.

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, plant and wildlife surveys have not been conducted. The Study Area includes potential habitat for special-status species within the Project Area, which is planned for impact. Potential effects to special-status species are summarized in the following sections by taxonomic group or species.

5.1.1 Special-Status Plants

No federally and State-listed plant species have potential to occur in the Study Area. However, there is potential for 11 non-listed special-status plant species to occur (Table 1). 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, PLANT1, and PLANT2 described in Section 6.0 would avoid or minimize potential effects to special-status plants.

5.1.2 Northwestern Pond Turtle

Northwestern pond turtle is proposed for listing under the federal ESA, is a CDFW SSC and has potential to occur (Table 1).

With implementation of recommendations described in Section 6.0, no direct impacts to northwestern pond turtle are expected. A small amount of potential upland habitat within the footprint of the solar arrays would be permanently removed or altered, and turtles may be temporarily displaced from upland habitats during construction. However, removal or alteration of a small amount of upland habitat and temporary displacement of turtles from the small Project footprint during construction is not expected to significantly impact the species.

Implementation of recommendations BIO1, BIO2, BIO3, and NPT1 described in Section 6.0 would avoid or minimize potential effects to northwestern pond turtles.

5.1.3 Special-Status and Other Protected Birds

No federally and State-listed reptiles species have potential to occur in the Study Area. However, there is potential for three non-listed special-status bird species (burrowing owl, Nuttall's woodpecker, and oak titmouse) to nest and forage within the Study Area. Additionally, a variety of other birds that are protected under the MBTA and the California Fish and Game Code may nest within or adjacent to the Study Area.

The Project is not expected to impact nesting birds. The Project would permanently remove or alter a minimal amount of potential nesting/foraging habitat for these species, and foraging birds may be temporarily displaced from the vicinity of the Study Area during construction. Removal or alteration of a small amount of habitat and temporary displacement of foraging birds during construction is not expected to significantly impact these species. Due to the small footprint of the solar arrays, mortality of birds due to collisions is not expected.

Implementation of recommendations BIO1 and BIRD1 described in Section 6.0 would avoid or minimize potential effects to special-status birds and other protected birds.

5.1.4 Special-Status Mammals

No federally or State-listed mammals have potential to occur in the Study Area. However, there is potential for one CDFW SSC, pallid bat, to roost and forage within the Study Area. The Project has a relatively small footprint and does not propose impacts to roosting habitat (i.e., trees). No impacts to pallid bat are expected if there is no removal of roosting habitat.

Implementation of recommendations BIO1 and BAT1 described in Section 6.0 would avoid or minimize potential effects to pallid bat.

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?

The Project would not impact sensitive natural communities. Riparian habitat and blue oak woodland are located within the Study Area. The Project does not propose removal of trees. A limited amount of ground disturbance for trenching activities may occur within the dripline of oak trees within the non-riparian oak woodland, and on the outermost edge of the dripline of trees within the riparian corridor. Ground disturbance within the dripline may impact tree roots and adversely affect the health of impacted trees. However, this is not expected to have a substantial adverse effect on riparian habitats or oak woodlands and is not expected to result in conversion of oak woodlands.

Implementation of recommendations BIO1 and TREE1 in Section 6.0 would avoid or minimize potential impacts to oak woodland and riparian habitat.

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 preliminary aquatic resources assessment, there are no potential aquatic resources within the Study Area. Therefore, the Project is not expected to have a substantial adverse effect on protected aquatic resources.

There is one offsite ditch located near the Study Area. Implementation of recommendations BIO1, BIO2, and BIO3 would avoid or minimize potential impacts to offsite aquatic resources.

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 on State-owned land and there are no known local policies or ordinances that would apply. Therefore, the Project would not conflict with local policies or ordinances.

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 any plans.

6.0 RECOMMENDATIONS

This section summarizes recommended measures to avoid or minimize potential impacts to biological resources from the proposed Project.

6.1 General Recommendations

The following general measures are recommended to avoid impacts to biological resources:

BIO1: The Project impact limits should be clearly demarcated prior to construction and all workers should be made aware of the impact limits and avoided areas. No work should occur outside of the Project impact limits. All vehicles and equipment should be restricted to the Project impact limits and/or existing designated access roads and staging areas.

BIO2: 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.

BIO3: 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.

6.2 Special-Status Species

Recommendations to minimize impacts to special-status species are summarized below by species or taxonomic group.

6.2.1 Plants

Implementation of general recommendation BIO1 and the following specific measures would avoid or minimize potential adverse effects to special-status plants:

PLANT1: Perform floristic plant surveys according to USFWS, CDFW, and CNPS protocols within 2 years prior to construction. Surveys should be conducted by a qualified biologist and timed according to the appropriate phenological stage for identifying target species. Known reference populations should be visited and/or local herbaria records should 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.

- **PLANT2:** 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. Avoidance zones should include the extent of the special-status plants plus a 25-foot buffer, unless otherwise determined by a qualified biologist, and should be maintained until the completion of construction. A qualified biologist/biological monitor should 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 should 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.

6.2.2 Northwestern Pond Turtle

Implementation of general recommendations BIO1, BIO2, BIO3, and the following specific measure would avoid or minimize potential adverse effects to northwestern pond turtles:

NPT1: A qualified biologist should conduct a pre-construction northwestern pond turtle survey in the Project Area (including impact areas, access roads, and staging areas) within 48 hours prior to construction activities. Any northwestern pond turtles discovered in the Project Area immediately prior to or during Project activities should be kept out of harm's way and allowed to move out of the work area of their own volition. If this is not feasible, they shall be captured by a qualified biologist and relocated out of harm's way to the nearest suitable habitat at least 100 feet from the Project work area where they were found.

6.2.3 Special-Status Birds and Migratory Bird Treaty Act-Protected Birds

Implementation of general recommendation BIO1 and the following specific measure would avoid and/or minimize potential adverse effects to nesting birds:

BIRD1: 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 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.

6.2.4 Pallid Bat

Implementation of general recommendation BIO1 and the following specific measure would avoid and/or minimize potential adverse effects to pallid bat:

BAT1: Within 14 days prior to Project activities that may impact bat roosting habitat (e.g., removal of trees), a qualified biologist should survey for all suitable roosting habitat within the Project impact limits. If suitable roosting habitat is not identified, no further measures are necessary. If suitable roosting habitat is identified, a qualified biologist should conduct an evening bat emergence survey that may include acoustic monitoring to determine whether bats are present. If roosting bats are determined to be present within the Project site, consultation with CDFW prior to initiation of construction activities and/or preparation of a Bat Management Plan outlining avoidance and minimization measures specific to the roost(s) potentially affected may be required.

6.3 Riparian Habitat and Oak Woodlands

Implementation of general recommendation BIO1 and the following specific measure would avoid and/or minimize potential adverse effects to riparian vegetation and oak woodlands:

TREE1: Where feasible, avoid or minimize ground disturbance within the dripline of oak trees. Mapping of oak driplines in the Study Area and demarcation of avoidance zones during construction may be required.

7.0 SUMMARY

No federally or State-listed species have potential to occur within the Study Area. However, northwestern pond turtle is proposed for federal listing, and there is potential for 13 other non-listed special-status species (nine plants, three birds, and one mammal) and various birds protected under the MBTA and the California Fish and Game Code to occur. No potential Waters of the U.S. or State are located within the Study Area, but an offsite ditch is located near the Study Area. A small amount of riparian habitat and oak woodland are located within the Study Area.

With implementation of recommendations described in Section 6.0, the Project is not expected to have a significant effect on biological resources.

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LIST OF ATTACHMENTS

ATTACHMENT A

Results of Database Searches

Selected Elements by Element Code

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Hagaman Gulch (4012157) OR Manton (4012147) OR Tuscan Buttes NE (4012241) OR Inskip Hill (4012138) OR Shingletown (4012148) OR Clough Gulch (4012251) OR Inwood (4012158) OR Dales (4012231) OR Finley Butte (4012137))

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
AAAAA01085	***Ambystoma macrodactylum sigillatum*** southern long-toed salamander	None	None	G5T4	S2	SSC
AAABH01051	***Rana boylii pop. 1*** foothill yellow-legged frog - north coast DPS	None	None	G3T4	S4	SSC
ABNKC01010	***Pandion haliaetus*** osprey	None	None	G5	S4	WL
ABNKC10010	***Haliaeetus leucocephalus*** bald eagle	Delisted	Endangered	G5	S3	FP
ABNKC12060	***Accipiter gentilis*** northern goshawk	None	None	G5	S3	SSC
ABNKD06071	***Falco peregrinus anatum*** American peregrine falcon	Delisted	Delisted	G4T4	S3S4	
ABNSB10010	***Athene cunicularia*** burrowing owl	None	None	G4	S2	SSC
ABPBW01114	***Vireo bellii pusillus*** least Bell's vireo	Endangered	Endangered	G5T2	S3	
ABPBXB0020	***Agelaius tricolor*** tricolored blackbird	None	Threatened	G1G2	S2	SSC
AFBAA02100	***Entosphenus tridentatus*** Pacific lamprey	None	None	G4	S3	SSC
AFCHA0205L	***Oncorhynchus tshawytscha pop. 11*** chinook salmon - Central Valley spring-run ESU	Threatened	Threatened	G5T2Q	S2	
AFCHA0209K	***Oncorhynchus mykiss irideus pop. 11*** steelhead - Central Valley DPS	Threatened	None	G5T2Q	S2	
AMACC05032	***Lasiurus cinereus*** hoary bat	None	None	G3G4	S4	
AMACC07010	***Euderma maculatum*** spotted bat	None	None	G4	S3	SSC
AMACC10010	***Antrozous pallidus*** pallid bat	None	None	G4	S3	SSC
AMAJF01020	***Pekania pennanti*** Fisher	None	None	G5	S2S3	SSC
AMAJF03010	***Gulo gulo*** wolverine	Proposed Threatened	Threatened	G4	S1	FP
ARAAD02030	***Emys marmorata*** western pond turtle	None	None	G3G4	S3	SSC
CTT83220CA	***Northern Interior Cypress Forest*** Northern Interior Cypress Forest	None	None	G2	S2.2	

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	
IICOL48011	***Desmocerus californicus dimorphus*** valley elderberry longhorn beetle	Threatened	None	G3T3	S3	
IICOL58010	***Atractelmis wawona*** Wawona riffle beetle	None	None	G3	S1S2	
IIHYM24252	***Bombus occidentalis*** western bumble bee	None	Candidate Endangered	G3	S1	
IIHYM35030	***Andrena blennospermatis*** Blennosperma vernal pool andrenid bee	None	None	G2	S1	
IMGASC7010	***Monadenia churchi*** Klamath sideband	None	None	G2G3	S3	
PDBOR0A0Q0	***Cryptantha crinita*** silky cryptantha	None	None	G2	S2	1B.2
PDCAB01010	***Brasenia schreberi*** watershield	None	None	G5	S3	2B.3
PDCAM0C010	***Legenere limosa*** legenere	None	None	G2	S2	1B.1
PDCAR0L0V0	***Paronychia ahartii*** Ahart's paronychia	None	None	G3	S3	1B.1
PDEUP0D1P1	***Euphorbia ocellata ssp. rattanii*** Stony Creek spurge	None	None	G4T2?	S2?	1B.2
PDFAB2A150	***Acmispon rubriflorus*** red-flowered bird's-foot trefoil	None	None	G2	S2	1B.1
PDFAB40410	***Trifolium piorkowskii*** maverick clover	None	None	G2	S2	1B.2
PDLIM02043	***Limnanthes floccosa ssp. floccosa*** woolly meadowfoam	None	None	G4T4	S3	4.2
PDMAL0K010	***Iliamna bakeri*** Baker's globe mallow	None	None	G4	S3	4.2
PDONA05061	***Clarkia borealis ssp. arida*** Shasta clarkia	None	None	G4T2	S2	1B.1
PDPLM0C0E1	***Navarretia leucocephala ssp. bakeri*** Baker's navarretia	None	None	G4T2	S2	1B.1
PDROS0W053	***Horkelia daucifolia var. indicta*** Jepson's horkelia	None	None	G4T1	S1	1B.1
PDSCR0R060	***Gratiola heterosepala*** Boggs Lake hedge-hyssop	None	Endangered	G2	S2	1B.2

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
PMALI040Q0	***Sagittaria sanfordii*** Sanford's arrowhead	None	None	G3	S3	1B.2
PMCYP0N080	***Rhynchospora capitellata*** brownish beaked-rush	None	None	G5	S1	2B.2
PMJUN011L2	***Juncus leiospermus var. leiospermus*** Red Bluff dwarf rush	None	None	G2T2	S2	1B.1
PMJUN013E0	***Juncus digitatus*** finger rush	None	None	G1	S1	1B.1
PMLIL0D1S0	***Calochortus syntrophus*** Callahan's mariposa-lily	None	None	G2	S2	1B.1
PMLIL0V060	***Fritillaria eastwoodiae*** Butte County fritillary	None	None	G3Q	S3	3.2
PMPOA040K0	***Agrostis hendersonii*** Henderson's bent grass	None	None	G2Q	S2	3.2
PMPOA4G050	***Orcuttia tenuis*** slender Orcutt grass	Threatened	Endangered	G2	S2	1B.1
PPOPH010H0	***Botrypus virginianus*** rattlesnake fern	None	None	G5	S2	2B.2

Record Count: 49

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

Shasta 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:

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2891	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

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8246	Endangered
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

Flowering Plants

NAME	STATUS
Slender Orcutt Grass Orcuttia tenuis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/1063	Threatened

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

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.

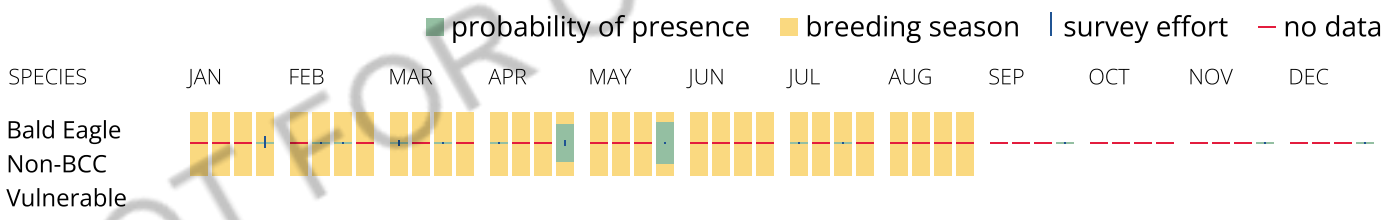
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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
Nuttall's Woodpecker *Picoides nuttallii* 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	Breeds Apr 1 to Jul 20
Oak Titmouse *Baeolophus inornatus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9656	Breeds Mar 15 to Jul 15
Tricolored Blackbird *Agelaius tricolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

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.

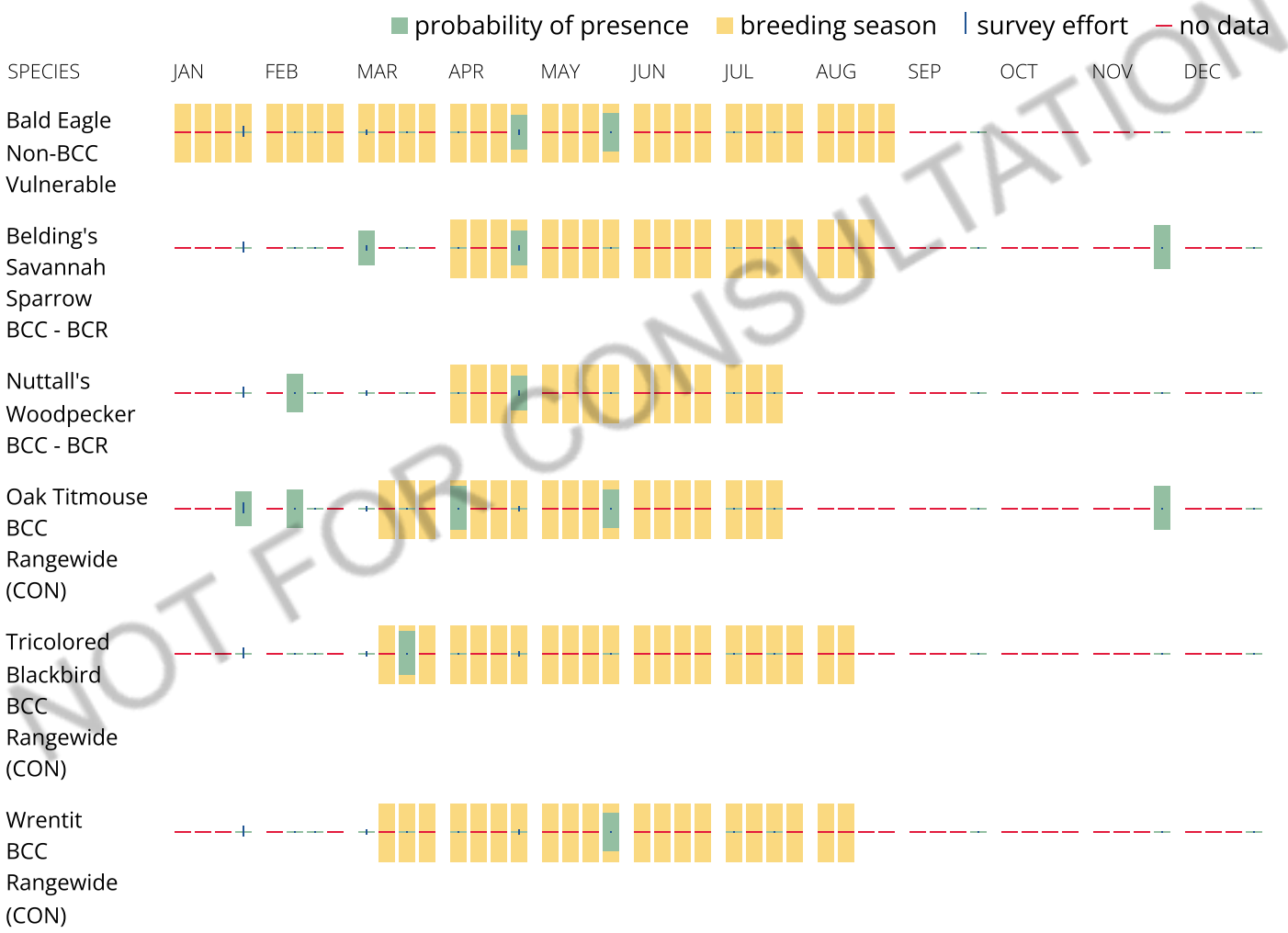
Survey Effort (|)

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

PEM1Cx

FRESHWATER FORESTED/SHRUB WETLAND

PFOCx

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.

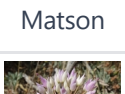
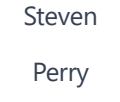
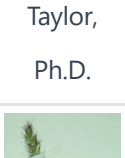
CNPS Rare Plant Inventory

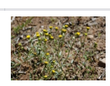
California Native Plant Society

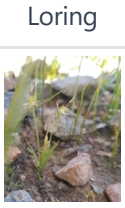
Search Results

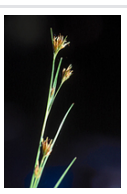
36 matches found. Click on scientific name for details

Search Criteria: 9-Quad include [**4012157:4012147:4012241:4012138:4012148:4012251:4012158:4012231:4012137**]

▲ 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
Acmispon rubriflorus	red-flowered bird's-foot trefoil	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	Yes	1974-01-01	 © 2011 Dean Wm. Taylor, Ph.D.
Agrostis hendersonii	Henderson's bent grass	Poaceae	annual herb	Apr-Jun	None	None	G2Q	S2	3.2		1974-01-01	 ©2005 Steve Matson
Allium sanbornii var. *sanbornii*	Sanborn's onion	Alliaceae	perennial bulbiferous herb	May-Sep	None	None	G4T4?	S3S4	4.2		1994-01-01	 ©2018 Steven Perry
Astragalus pauperculus	depauperate milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G4	S4	4.3	Yes	1974-01-01	 ©2012 Tim Kellison
Botrypus virginianus	rattlesnake fern	Ophioglossaceae	perennial herb	Jun-Sep	None	None	G5	S2	2B.2		2001-01-01	 ©2003 Martin J. Lenz
Brasenia schreberi	watershield	Cabombaceae	perennial rhizomatous herb (aquatic)	Jun-Sep	None	None	G5	S3	2B.3		2010-10-27	 ©2014 Kirsten Bovee

Bulbostylis capillaris	thread-leaved beakseed	Cyperaceae	annual herb	Jun-Aug	None	None	G5	S3	4.2		2001-01-01	 ©2016 Ryan Batten
Calochortus syntrophus	Callahan's mariposa-lily	Liliaceae	perennial bulbiferous herb	May-Jun	None	None	G2	S2	1B.1	Yes	2001-01-01	 ©2018 Julie Kierstead Nelson
Clarkia borealis ssp. *arida*	Shasta clarkia	Onagraceae	annual herb	Jun-Aug	None	None	G4T2	S2	1B.1	Yes	1980-01-01	No Photo Available
Cryptantha crinita	silky cryptantha	Boraginaceae	annual herb	Apr-May	None	None	G2	S2	1B.2	Yes	1980-01-01	 ©2009 Sierra Pacific Industries
Erigeron inornatus var. *calidipetris*	hot rock daisy	Asteraceae	perennial herb	Jun-Sep	None	None	G5T3	S3	4.3	Yes	1994-01-01	 ©2006 Dean Wm. Taylor
Erythranthe glaucescens	shield-bracted monkeyflower	Phrymaceae	annual herb	Feb-Aug(Sep)	None	None	G3G4	S3S4	4.3	Yes	1974-01-01	 Neal Kramer 2020
Euphorbia ocellata ssp. *rattanii*	Stony Creek spurge	Euphorbiaceae	annual herb	May-Oct	None	None	G4T2?	S2?	1B.2	Yes	1980-01-01	No Photo Available
Fritillaria eastwoodiae	Butte County fritillary	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3Q	S3	3.2		1974-01-01	 ©2009 Sierra Pacific Industries
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	None	CE	G2	S2	1B.2		1974-01-01	 ©2004 Carol W. Witham

Hesperocyparis bakeri	Baker cypress	Cupressaceae	perennial evergreen tree		None	None	G3	S3	4.2		1974-01-01	 © 2021 Scot Loring
Horkelia daucifolia var. *indicta*	Jepson's horkelia	Rosaceae	perennial herb	Apr-Jun	None	None	G4T1	S1	1B.1	Yes	2011-09-26	 © 2011 Dean Wm. Taylor, Ph.D.
Iliamna bakeri	Baker's globe mallow	Malvaceae	perennial herb	Jun-Sep	None	None	G4	S3	4.2		1974-01-01	 © 2021 Scot Loring
Juncus digitatus	finger rush	Juncaceae	annual herb	(Apr)May-Jun	None	None	G1	S1	1B.1	Yes	2009-01-02	 Image by Wendy Boes
Juncus leiospermus var. *leiospermus*	Red Bluff dwarf rush	Juncaceae	annual herb	Mar-Jun	None	None	G2T2	S2	1B.1	Yes	1974-01-01	 ©2016 Dylan Neubauer
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	Yes	1974-01-01	 ©2000 John Game
Leptosiphon latisectus	broad-lobed leptosiphon	Polemoniaceae	annual herb	Apr-Jun	None	None	G4	S4	4.3	Yes	2001-01-01	 © 2015 Steve Matson
Limnanthes floccosa ssp. *floccosa*	woolly meadowfoam	Limnanthaceae	annual herb	Mar-May(Jun)	None	None	G4T4	S3	4.2		1980-01-01	 © 2021 Scot Loring
Navarretia heterandra	Tehama navarretia	Polemoniaceae	annual herb	Apr-Jun	None	None	G4	S4	4.3		1974-01-01	 ©2021 Scot Loring

Navarretia leucocephala ssp. *bakeri*	Baker's navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G4T2	S2	1B.1	Yes	1994-01-01	 © 2018 Barry Rice
Navarretia subuligera	awl-leaved navarretia	Polemoniaceae	annual herb	Apr-Aug	None	None	G4	S4	4.3		1980-01-01	 ©2013 Jake Ruygt
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	May-Sep(Oct)	FT	CE	G2	S2	1B.1	Yes	1974-01-01	 © 2013 Justy Leppert
Paronychia ahartii	Ahart's paronychia	Caryophyllaceae	annual herb	Feb-Jun	None	None	G3	S3	1B.1	Yes	1988-01-01	 © 2004 Carol W. Witham
Piperia colemanii	Coleman's rein orchid	Orchidaceae	perennial herb	Jun-Aug	None	None	G4	S4	4.3	Yes	2001-01-01	 © 2005 Dean Wm. Taylor
Polygonum bidwelliae	Bidwell's knotweed	Polygonaceae	annual herb	Apr-Jul	None	None	G4	S4	4.3	Yes	1974-01-01	 ©2020 Neal Kramer
Rhynchospora capitellata	brownish beaked-rush	Cyperaceae	perennial herb	Jul-Aug	None	None	G5	S1	2B.2		1974-01-01	 ©2004 Dean Wm. Taylor
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
Sidalcea celata	Redding checkerbloom	Malvaceae	perennial herb	Apr-Aug	None	None	G2G3	S2S3	3	Yes	2012-07-11	 ©2014 Lawrence Janeway

Sidalcea gigantea	giant checkerbloom	Malvaceae	perennial rhizomatous herb	(Jan-Jun)Jul-Oct	None	None	G3	S3	4.3	Yes	2012-07-10	 ©2018 Sierra Pacific Industries
Silene occidentalis ssp. *occidentalis*	Western campion	Caryophyllaceae	perennial herb	Jun-Aug	None	None	G4T3	S3	4.3	Yes	2010-03-04	 ©2011 Sierra Pacific Industries
Trifolium piorkowskii	maverick clover	Fabaceae	annual herb	Apr-May	None	None	G2	S2	1B.2		2016-11-10	 ©2018 Al Keuter

Showing 1 to 36 of 36 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].

National Marine Fisheries Service – West Coast Region – California

December 2016 (Accessed October 2, 2023)

Intersection of USGS 7.5" Quadrangles with NOAA Fisheries ESA Listed Species, Critical Habitat, Essential Fish Habitat, and MMPA Species Data within California

An "X" following a listed feature indicates it may be present. Identified resources may be present throughout the entire quadrangle of only a portion of it.

Quad Name **Shingletown**
Quad Number **40121-D8**

ESA Anadromous Fish

SONCC Coho ESU (T) - None
CCC Coho ESU (E) - None
CC Chinook Salmon ESU (T) - None
CVSR Chinook Salmon ESU (T) - **X**
SRWR Chinook Salmon ESU (E) - **X**
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 - **X**
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 - **X**
Eulachon Critical Habitat - None
sDPS Green Sturgeon Critical Habitat - None

ESA Marine Invertebrates

Range Black Abalone (E) - None
Range White Abalone (E) - None

ATTACHMENT B

Representative Site Photographs

Photo 1. Representative photo of the annual grassland within the Study Area. Photo taken February 23, 2021, facing east.

Photo 2. Representative photo of the oak woodland within the Study Area. Photo taken February 23, 2021, facing southwest.

Photo 3. Representative photo of Wildcat Road. Photo taken February 23, 2021, facing west.

Photo 4. Representative photo of the offsite ditch and riparian habitat adjacent to the Study Area. Photo taken February 23, 2021, facing northeast.

ATTACHMENT C

Special-Status Plant Survey

July 25, 2023

Mr. Casey Miller
ForeFront Power, LLC
100 Montgomery Street, Suite 275
San Francisco, California 94104

RE: Darrah Springs Solar Ground Mount Project, Shasta County, California – Special-Status Plant Survey

Dear Mr. Miller:

On behalf of ForeFront Power, LLC, ECORP Consulting, Inc. conducted a special-status plant survey for the Darrah Springs Solar Ground Mount Project (Project). The survey location, purpose, methods, and results are included in the following sections.

LOCATION

The approximately 2.59-acre survey area for the Project (Survey Area) is located within the facility for the Darrah Springs State Fish Hatchery located at 29661 Wildcat Road in the community of Paynes Creek in Shasta County, California (Figures 1 and 2). The Survey Area corresponds to the northern portion of Section 29, Township 30 North, Range 01 West (Mount Diablo Base and Meridian) within the "Shingletown, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1985). The approximate center of the Survey Area is located at latitude 40.430185° and longitude -121.994037° (NAD83). The Survey Area is within the Battle Creek watershed (Hydrologic Unit Code #18020153; 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. The survey was conducted to support the California Environmental Quality Act documentation for the Project.

METHODS

Prior to conducting the survey, ECORP collected background information on the potential presence of special-status plants within or near the Survey Area from a variety of sources, including the California Department of Fish and Wildlife (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 10 species were included as targets for the survey:

- Red-flowered bird's-foot trefoil (*Acmispon rubriflorus*)
- Sanborn's onion (*Allium sanbornii* var. *sanbornii*)
- Stony Creek spurge (*Euphorbia ocellata* ssp. *rattanii*)
- Butte County fritillary (*Fritillaria eastwoodiae*)
- Jepson's horkelia (*Horkelia daucifolia* var. *indicta*)
- Broad-lobed leptosiphon (*Leptosiphon latisectus*)
- Ahart's paronychia (*Paronychia ahartii*)
- Bidwell's knotweed (*Polygonum bidwelliae*)
- Redding checkerbloom (*Sidalcea celata*)
- Maverick clover (*Trifolium piorkowskii*)

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. The review of reference sources confirmed that the survey coincided with identifiable periods for all target species.

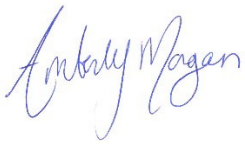
ECORP biologist Hannah Stone conducted the survey on April 24 and June 14, 2023 in accordance with guidelines promulgated by USFWS (2000), and CDFW (2018), CNPS (2001). Ms. Stone walked meandering transects throughout the Survey Area during the survey, including all suitable habitat for target species, and identified all plant species to the lowest possible taxonomic level required to assess rarity.

RESULTS

Ms. Stone 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.

_____. 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. Sacramento, California.

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_____. 2001. CNPS Botanical Survey Guidelines. California Native Plant Society. Available online: http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf.

Calflora. 2023. Information on California plants for education, research, and conservation. Berkeley, California: The Calflora Database [a non-profit organization]. Available online: https://www.calflora.org/.

Calphotos. 2023. Regents of the University of California, Berkeley. Available online at: http://calphotos.berkeley.edu/.

Jepson eFlora. 2023. Jepson Flora Project (eds.). Available online at: https://ucjeps.berkeley.edu/eflora/.

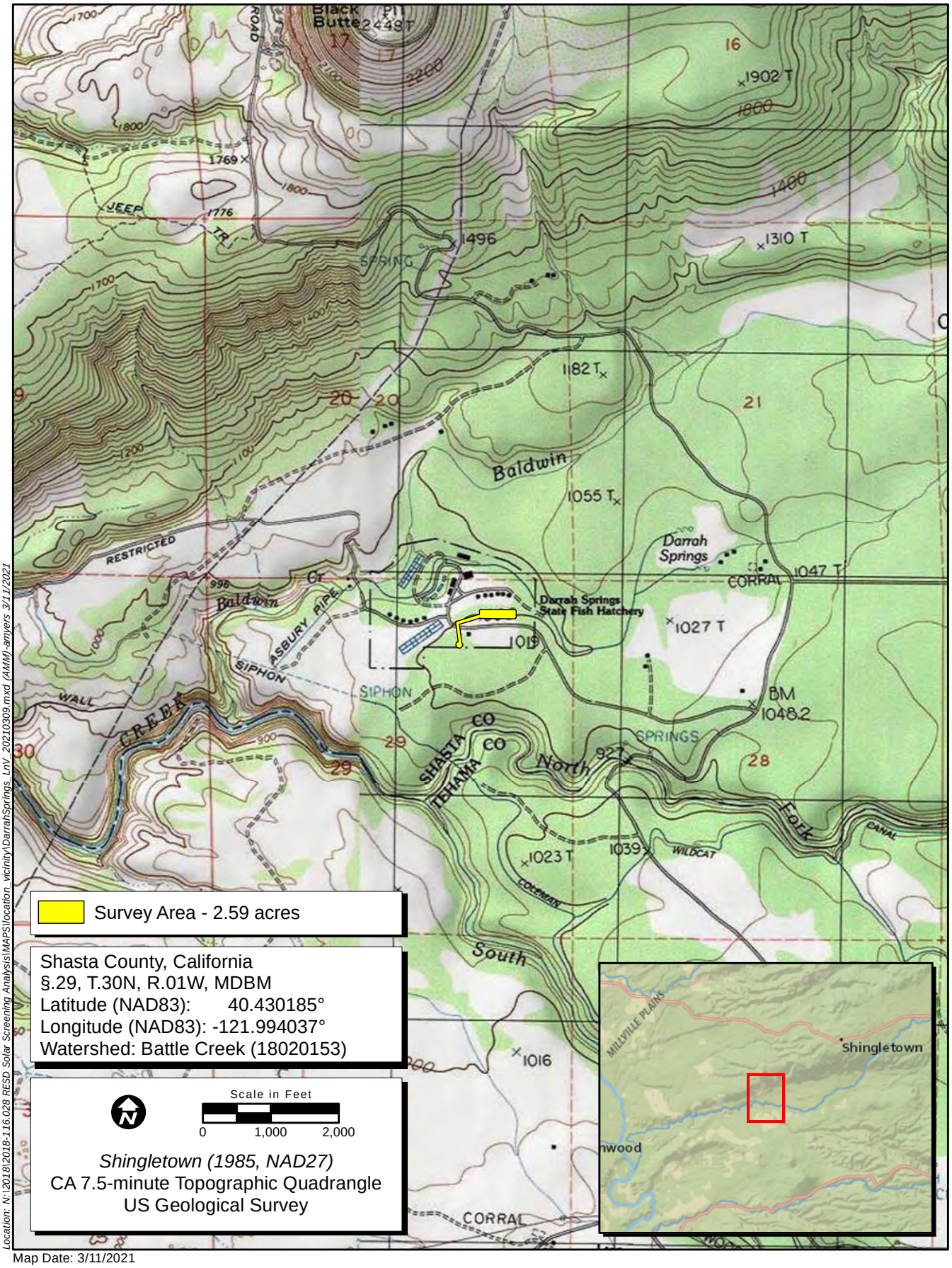
Natural Resources Conservation Service (NRCS), U.S. Geological Survey (USGS), and U.S. Environmental Protection Agency (USEPA). 2019. Watershed Boundary Dataset for California. Available online: https://datagateway.nrcs.usda.gov

U.S. Fish and Wildlife Service (USFWS). 2023. USFWS Resource Report List. Information for Planning and Conservation. Available online: https://ecos.fws.gov/ipac/.

_____. 2000. Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants. January.

U.S. Geological Survey (USGS) 1985. "Shingletown, California" 7.5-minute Quadrangle. Geological Survey. Denver, Colorado.

LIST OF FIGURES



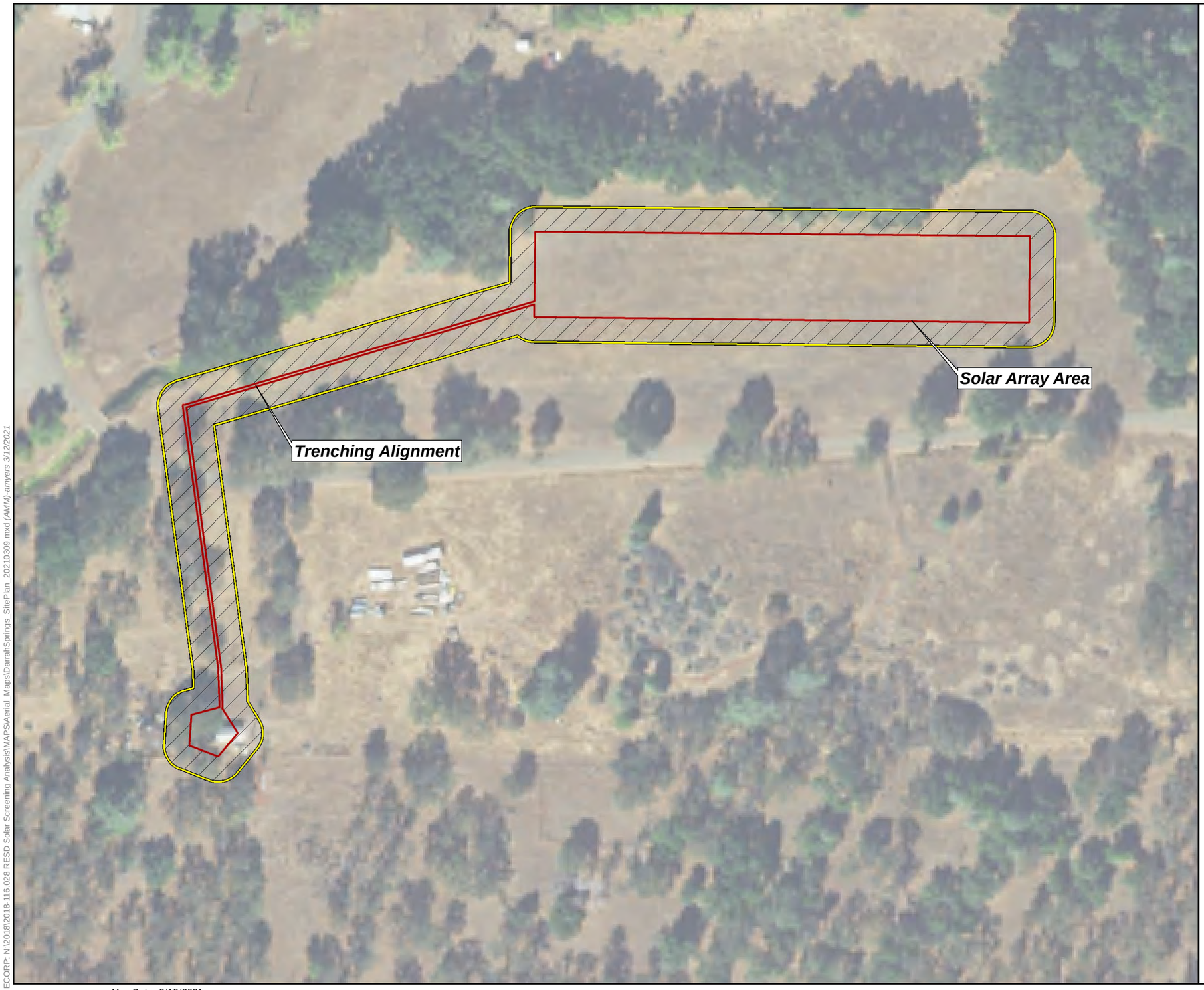
Location: N:\2018\2018-116.028 RESD Solar Screening Analysis\MAPS\location_vicinity\DarrahSprings_LnV_20210309.mxd (AMM)-amyers 3/11/2021

Map Date: 3/11/2021

Figure 1. Study Area Location and Vicinity

2021-112.01/Darrah Springs Solar Ground Mount Project

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS



Map Features

- Survey Area - 2.59 acres
- Project Area - 1.04 acres
- Buffer Area - 1.54 acres

Base Source: NAIP 2018

ECORP: N:\2018\2018-116.028 RESD Solar Screening Analysis\MAPS\Aerial_Maps\DarrahSprings_SitePlan_20210309.mxd (AMM) amyers 3/12/2021

Map Date: 3/12/2021

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Scale in Feet
0 100

Figure 2. Survey Area Components

2021-112.01/Darrah Springs Solar Ground Mount Project

APPENDIX A

Plant Species Observed Onsite (April 24 and June 14, 2023)

Darrah Springs Solar Ground Mount Project
Plant Species Observed (April 24 and June 14, 2023)

SCIENTIFIC NAME	COMMON NAME
APIACEAE	**CARROT FAMILY**
*Torilis arvensis**	Field hedge parsley
ASTERACEAE	**SUNFLOWER FAMILY**
*Carduus pycnocephalus**	Italian thistle
*Centaurea solstitialis**	Yellow star-thistle
*Hypochaeris radicata**	Rough cat's-ear
Lasthenia californica	California goldfields
*Logfia gallica**	Narrowleaf cotton rose
Madia sp.	Tarweed
Matricaria discoidea	Pineapple weed
Psilocarphus brevissimus var. *brevissimus*	Short woolly-marbles
*Silybum marianum**	Milk thistle
*Soliva sessilis**	Field burrweed
*Taraxacum officinale**	Common dandelion
BORAGINACEAE	**BORAGE FAMILY**
Amsinckia intermedia	Common fiddleneck
BRASSICACEAE	**MUSTARD FAMILY**
Athysanus pusillus	Common sandweed
Lepidium nitidum	Shining peppergrass
CARYOPHYLLACEAE	**PINK FAMILY**
*Cerastium glomeratum**	Mouse-ear chickweed
*Petrorhagia dubia**	Pink grass
Scleranthus annuus ssp. *annuus**	German knotgrass
*Spergularia rubra**	Purple sandspurry
*Stellaria media**	Common chickweed
CRASSULACEAE	**STONECROP FAMILY**
*Crassula tillaea**	Mediterranean pygmy-weed
FABACEAE	**LEGUME FAMILY**
Acmispon wrangelianus	Chilean trefoil
Astragalus gambelianus	Gambel's dwarf milk vetch
Lupinus bicolor	Bicolored lupine

Darrah Springs Solar Ground Mount Project
Plant Species Observed (April 24 and June 14, 2023)

SCIENTIFIC NAME	COMMON NAME
FABACEAE	**LEGUME FAMILY**
*Medicago polymorpha**	Bur clover
*Trifolium dubium**	Shamrock clover
*Trifolium hirtum**	Rose clover
*Trifolium subterraneum**	Subterranean clover
*Vicia villosa**	Hairy vetch
FAGACEAE	**OAK FAMILY**
Quercus douglasii	Blue oak
Quercus lobata	Valley oak
GERANIACEAE	**GERANIUM FAMILY**
*Erodium botrys**	Broadleaf filaree
*Erodium cicutarium**	Red-stemmed filaree
*Geranium molle**	Dovefoot geranium
HYDROPHYLLACEAE	**WATERLEAF FAMILY**
Nemophila heterophylla	Small baby blue eyes
LAMIACEAE	**MINT FAMILY**
*Lamium amplexicaule**	Henbit
MONTIACEAE	**MINER'S LETTUCE FAMILY**
Claytonia parviflora ssp. *parviflora*	Streambank springbeauty
OROBANCHACEAE	**BROOMRAPE FAMILY**
Castilleja attenuata	Narrow leaved owl's clover
PAPAVERACEAE	**POPPY FAMILY**
Eschscholzia californica	California poppy
POACEAE	**GRASS FAMILY**
*Aira caryophyllea**	Silvery hairgrass
*Avena barbata**	Slender wild oat
*Bromus diandrus**	Ripgut brome
*Bromus hordeaceus**	Soft brome
*Bromus madritensis**	Foxtail brome
*Elymus caput-medusae**	Medusahead grass
*Festuca myuros**	Rat-tail fescue

Darrah Springs Solar Ground Mount Project
Plant Species Observed (April 24 and June 14, 2023)

SCIENTIFIC NAME	COMMON NAME
POACEAE	**GRASS FAMILY**
*Festuca perennis**	Italian ryegrass
*Hordeum marinum**	Mediterranean barley
*Hordeum murinum**	Foxtail barley
*Poa bulbosa**	Bulbous bluegrass
POLEMONIACEAE	**PHLOX FAMILY**
Leptosiphon bicolor	True babystars
ROSACEAE	**ROSE FAMILY**
Aphanes occidentalis	Western lady's mantle
RUBIACEAE	**MADDER FAMILY**
Galium aparine	Common bedstraw
Galium porrigens	Wall bedstraw
*Sherardia arvensis**	Field madder
THEMIDACEAE	**BRODIAEA FAMILY**
Dipterostemon capitatus	Blue dicks

APPENDIX C

Archaeological and Architectural History Resources Inventory Report for the Darrah Springs Fish Hatchery Facility
ECORP Consulting, Inc. June 2023

THIS REPORT IS NOT PROVIDED IN THIS SUBMITTAL DUE TO CONFIDENTIALITY.
IT IS AVAILABLE UPON REQUEST.

APPENDIX D

Energy Assessment for Darrah Springs Solar Ground Mount Project.
ECORP Consulting, Inc. March 22, 2023

Proposed Project
Total Construction-Related
Gasoline Usage
Construction

Table 1. Construction Year One			
Action	**Carbon Dioxide Equivalents (CO_2e) in Metric Tons[1]**	**Conversion of Metric Tons to Kilograms[2]**	**Construction Equipment Emission Factor[2]**
Project Construction Year One	151	151,000	10.15
Total Gallons Consumed During Construction Year One:			**14,877**

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 Year Two	137	137,000	10.15
Total Gallons Consumed During Construction Year Two:			**13,498**

Sources:

[1]ECORP Consulting. 2023. Air Quality and Greenhouse Gas Emissions Assessment: Darrah Solar Project

[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

APPENDIX E

Noise Assessment for Darrah Springs Solar Ground Mount Project.
ECORP Consulting, Inc. March 22, 2023

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/22/2023
Case Description: Site Preparation

Description	**Affected Land Use**
Site Preparation	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Grader	No	40	85		3000
Dozer	No	40		81.7	3000
Tractor	No	40	84		3000

Calculated (dBA)

Equipment		***Lmax**	**Leq**
Grader		49.4	45.5
Dozer		46.1	42.1
Tractor		48.4	44.5
	Total	**49.4**	**49**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/22/2023
Case Description: Grading

Description	**Affected Land Use**
Grading	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Grader	No	40	85		3000
Dozer	No	40		81.7	3000
Tractor	No	40	84		3000
Tractor	No	40	84		3000

Calculated (dBA)

Equipment		***Lmax**	**Leq**
Grader		49.4	45.5
Dozer		46.1	42.1
Tractor		48.4	44.5
Tractor		48.4	44.5
	Total	**49.4**	**50.3**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 3/22/2023
Case Description: Building Construction & Paving

Description	**Affected Land Use**
Building Construction & Paving	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Crane	No	16		80.6	3000
Gradall	No	40		83.4	3000
Generator	No	50		80.6	3000
Tractor	No	40	84		3000
Welder / Torch	No	40		74	3000
Welder / Torch	No	40		74	3000
Welder / Torch	No	40		74	3000
Paver	No	50		77.2	3000
Paver	No	50		77.2	3000
Roller	No	20		80	3000
Tractor	No	40	84		3000
Auger Drill Rig	No	20		84.4	3000

	Calculated (dBA)	
Equipment	***Lmax**	**Leq**
Crane	45	37
Gradall	47.8	43.9
Generator	45.1	42.1

Tractor		48.4	44.5
Welder / Torch		38.4	34.5
Welder / Torch		38.4	34.5
Welder / Torch		38.4	34.5
Paver		41.7	38.6
Paver		41.7	38.6
Roller		44.4	37.4
Tractor		48.4	44.5
Auger Drill Rig		48.8	41.8
	Total	**48.8**	**51.6**

*Calculated Lmax is the Loudest value.