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Incidental Take Permit Application- Potentia-Viridi Battery Energy Storage System Project

February 5, 2025

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California Endangered Species Act

Incidental Take Permit Application for California tiger salamander (*Ambystoma californiense*) Central California Distinct Population Segment, Crotch's bumble bee (*Bombus crotchii*), San Joaquin kit fox (*Vulpes macrotis mutica*), and Western burrowing owl (*Athene cunicularia hypugaea*)

Potentia-Viridi Battery Energy Storage System Project

Alameda County, California

February 2025

Levy Alameda, LLC

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Table of Contents

List of Tables

Appendices

List of Abbreviated Terms

ºF	degrees Fahrenheit
AC	alternating current
Applicant	Levy Alameda, LLC
AMM	Avoidance and Minimization Measure
BESS	Battery Energy Storage System
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practices
BMS	battery management system
CAL FIRE	California Department of Forestry and Fire Protection
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
cy	cubic yards
DC	direct curent
DPS	Distinct Population Segment
EACCS	East Alameda County Conservation Strategy
HVAC	heating, ventilation, and air conditioning
ITP	Incidental Take Permit
LFP	lithium iron phosphate
LGIA	Large Generator Interconnection Agreement
MPT	main power transformer
MV	Medium voltage
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NWI	National Wetlands Inventory
O&M	operations and maintenance
PCS	Power Conversion Systems
PG&E	Pacific Gas and Electric
POCO	Point of Change of Ownership
POI	point of interconnection
Project	Potentia-Viridi Battery Energy Storage System Project
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
UL	Underwriters Laboratories
USACE	United States Army Corps of Engineers

USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

Chapter 1. Introduction

This report serves as the formal application for an Incidental Take Permit (ITP) under Section 2081(b) of the California Endangered Species Act (CESA) for the Potentia-Viridi Battery Energy Storage System (BESS) Project (Project). This application was prepared pursuant to Sections 702 and 2081(b,c) of the California Fish and Game Code, and contains the information requested herein.

This permit application is being submitted for the Incidental Take of the California tiger salamander (*Ambystoma californiense*) Central California Distinct Population Segment (DPS), Crotch's bumble bee (*Bombus crotchii*), San Joaquin kit fox (*Vulpes macrotis mutica*) and western burrowing owl (*Athene cunicularia hypugaea*) for construction activities associated with the Project. For Project location, refer to Appendix A, Figure 1 and Figure 2.

Additional State and federal permit applications may be required for proposed stormwater outfall work associated with the Project. These additional permits may include a United States Army Corps of Engineers (USACE) 404 Nationwide Permit, a Regional Water Quality Control Board (RWQCB) 401 Water Quality Certification and a California Department of Fish and Wildlife (CDFW) 1602 Streambed Alteration Agreement. The requirement for these permit applications will be determined based on proposed impacts to non-wetland waters of the United States and State.

1.1 Project Applicant

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1.4 Species for Which Incidental Take Coverage Is Requested

Levy Alameda, LLC is seeking authorization under Section 2081(b) of the California Fish and Game Code for incidental take of California tiger salamander, Crotch's bumble bee, San Joaquin kit fox and western burrowing owl because of construction activities for the Project as described in this application. These species are listed as follows:

- California tiger salamander Central California DPS – State threatened
- Crotch's bumble bee – State candidate threatened

- San Joaquin kit fox – State threatened
- Western burrowing owl – State candidate threatened

1.5 Location of Project

The Project would be located in Alameda County, California within a portion of Assessor Parcel Number (APN) 99B7890-002-04 located at 17257 Patterson Pass Road, southwest of Interstate 580 and Interstate 205 (Figure 1 Regional Map, Figure 2 Project Vicinity, and Figure 3 Project Site Aerial). Development of the BESS facility would occur within a 70-acre leased area of APN 99B-7890-002-04, which currently consists of fallow annual grasslands suitable for grazing. Of the approximately 70-acre lease area, approximately 58.8 acres would be permanently disturbed for development of the BESS facility. The gen-tie line would extend southeast from the Project substation, crossing Patterson Pass Rd, and then proceed east to the Point of Interconnection (POI) at the Tesla Substation. The Project's gen-tie line would be sited on APNs 99B-7890-2-4, 99B-7890-2-6, and 99B-7885-12. As shown on Figure 3 Project Site Aerial, a gen-tie study area of approximately 32 acres was evaluated. Out of the 32 acres evaluated, only 1.9 acres is expected to be permanently disturbed for installation of the transmission and interconnecting facilities. A total of 60.7 acres within the approximately 102-acre project area would disturbed as part of Project implementation.

The Project location was selected due to it being large enough to support development of the Project, its proximity to existing electrical infrastructure and the Tesla Substation, thereby minimizing length of the proposed gen-tie line to the POI, and because it is located immediately adjacent to existing roadways for construction and O&M access.

Chapter 2. Project Description

2.1 Project Objectives

The Project objectives are:

- Construct and operate an economically viable, and commercially financeable, 400-MW battery energy storage facility in Alameda County with an interconnection at the Tesla Substation.
- Assist California electric utilities in meeting obligations under California's Renewable Portfolio Standard Program and Senate Bills 100 and 1020, which require renewable energy sources and zero-carbon resources to supply 60% of all retail sales of electricity to California end-use customers by December 31, 2030, 90% of all retail sales of electricity to California end-use customers by December 31, 2035, 95% of all retail sales of electricity to California end-use customers by December 31, 2040, and 100% of all retail sales of electricity to California end-use customers by December 31, 2045.
- Assist California utilities in meeting obligations under the CPUC's Mid-Term Reliability Procurement Requirements.
- Develop an electricity storage facility in close proximity to a utility grid-connected substation with existing capacity available for interconnection to minimize environmental impacts.
- Relieve grid congestion, and enhance electricity reliability, without requiring the construction of new regional transmission infrastructure or substantial network upgrades.
- Construct and operate a battery energy storage facility in Alameda County, resulting in economic benefits to the County, creating prevailing wage construction jobs, and facilitating local community benefits.

2.2 Project Description

2.2.1 Project Components

The Project would include construction, O&M, and eventual decommissioning of a 400 MW BESS with an energy storage capacity up to 3,200 MWhs. Charging from or discharging to the electrical grid would be a 500kV gen-tie connecting the Project substation to the POI within the existing PG&E Tesla Substation. The BESS Facility would include the following components:

- Battery Energy Storage System (BESS) Enclosures
- Power Conversion Systems (PCS)
- Medium voltage (MV) Collection System
- Project Substation, Control Building, and Telecommunications Facilities
- Access Roads
- Laydown Yards
- Stormwater Facilities and Outfall
- Site Security and Fencing, including fire detection system

Project components are described in the following subsections. Figure 3, Project Design Features, shows the project layout. Table 1 summarizes the preliminary dimensions of major BESS facility components, and Table 2 summarizes the preliminary footprint/disturbance acreage associated with the BESS facility.

Table 1. Preliminary Dimensions of Major BESS Facility Components

Component	Quantity	Approximate Dimensions
BESS Enclosures	1,000*	20 ft x 8 ft x 10 ft (L x W x H)
PCS	140*	22 ft x 7 ft x 8 ft (L x W x H)
MV Collection system	—	Buried in trenches up to 5 ft x 10 ft (W x D)
Project Substation Area	1	500 ft x 450 ft; (5) 120 ft (H) (lightning masts)
Control Building	1	52 ft x 20 ft x 15 ft (L x W x H)
Wireless Communication Tower	1	18 ft x 18 ft x 199 ft (L x W x H)
Access Roads	—	20 ft (W) internal radii 50 ft minimum for outer loop
Laydown Yards	4	Variable
Stormwater Detention Facilities	5	Variable
Stormwater Outfall	1	500 ft x 5 ft x 10 ft (L x W x D)
Security Fencing	1	9 ft (H) 8 ft tall fence topped with 1 ft of barbed/razor wire
Operations and Maintenance Buildings	~~1~~3	100 ft x 48 ft x 24 ft (L x W x H)
Fire Water Storage Tank (30,000 Gallon) – Above Ground	2	10 ft x 24 ft (H x D)
Water Storage Tank (10,000 Gallon) – Above Ground	1	11.5 ft x 11.75 ft (H x D)
Wastewater Holding Tank (5,000 Gallon) – Below Ground	2	16.5 ft x 7.5 ft x 8 ft (L x W x H)
Emergency Generators	2	25 ft x 10 ft x 12 ft (L x W x H)

- Notes: * The number of BESS enclosures and PCS units would depend on the manufacturer selected. The total number of BESS enclosures and PCS units may increase or decrease in the final design. It is also possible that the BESS units ultimately procured may incorporate the PCS units within the BESS enclosures.

Table 2. Preliminary Permanent Project Footprint

Component	Permanent Disturbance
BESS Yards	13.3 acres
Project Substation	5.4 acres
Access Roads	7.1 acres
Laydown Yards/Storage Areas	14.0 acres
O&M Area	1.8 acres
Stormwater Detention Areas	9.0 acres

Stormwater Outfall	0.6 acres
Other*	7.6 acres
Total BESS+	58.8 acres
Transmission and Interconnection Facilities	1.9 acres
Total BESS and Transmission and Interconnection+	60.7 acres

- Notes: * Other areas include maximum grading limits. The analyses assume that all areas used for the BESS facility are permanently disturbed and kept free of vegetation to comply with fire requirements.
- +The total permanent disturbance acreage is a conservative estimate, and final designs may require fewer acres. Underground components within the BESS facility would be located within the footprint of above ground disturbance areas.

2.2.1.1 BATTERY ENERGY STORAGE SYSTEM

The energy storage facility would utilize a modular and containerized BESS. There are several battery cell technologies commercially available, with one of the most common at present being lithium iron phosphate (LFP) cells (often colloquially referred to as 'lithium-ion'). LFP technology is considered one of the safest, most efficient, and commercially financeable energy storage technologies available on the market. The initial Project concept has been developed assuming an LFP technology; however, due to the continuous improvement of these energy storage systems, a specific manufacturer and model has not been selected at this time. By the time the Project reaches the procurement stage, it is possible for other battery cell technology with proven safety and performance records to be suitable for the Project. Although the number and dimensions of the containers may change (as it does between LFP technology providers), the technology ultimately procured would result in potential environmental impacts substantially similar to, or less than, those analyzed based on this Project Description.

The BESS enclosures would be prefabricated off-site and arrive at the site ready to be installed and commissioned. Each modular BESS enclosure would include battery packs on racks, a battery management system (BMS), fire protection, and ancillary power electronics within a specialized steel-framed, non-occupiable container. The BESS enclosures would not exceed approximately 10 feet in height. The BESS enclosures may also have a heating, ventilation, and air conditioning (HVAC) system for optimal performance and safety. Power for the HVAC system, lighting, and other electrical systems would be provided through separate auxiliary power connection to the on-site project substation with connection lines installed above and/or below ground.

2.2.1.2 POWER CONVERSION SYSTEM

A PCS is a packaged and integrated system consisting of a bi-directional inverter, MV transformers, protection equipment, direct current (DC) and alternating current (AC) circuit breakers, harmonic filters, equipment terminals, and a connection cabling system. A PCS functions to both convert between DC/AC and change the voltage level from the MV collection voltage to the voltage output of the BESS enclosures.

The PCS would convert electric energy from AC to DC when the energy is transferred from the grid to the battery, and from DC to AC when the energy is transferred from the battery to the grid. Each PCS would also include transformers that convert the AC side output of the inverter between low and medium AC voltage to increase the overall efficiency of the BESS. Inverters within the PCS units would be unattended systems designed to operate in all conditions. The inverters would be monitored and controlled remotely, and there would be on-site disconnects for use in case of an emergency or a situation requiring unscheduled maintenance.

PCS units would be installed on concrete foundations and connected to multiple BESS enclosures with wiring and cables installed underground. All outside electrical equipment would be housed in the appropriate National Electrical Manufacturers Association (NEMA) rated enclosures.

2.2.1.3 MV COLLECTION SYSTEM

The MV collection system would include multiple components that connect the PCS units to the Project substation including underground conductor circuits, switchboards, switchgear, and panels at 34.5kV voltage. The conductors for the MV collection system would be installed underground during construction using trenching.

2.2.1.4 PROJECT SUBSTATION

The Project substation would include three main power transformers (MPTs) – two active and a live spare. When the BESS facility is charging, power from the regional electric transmission grid would be stepped down from 500kV to 34.5kV and sent from the Project substation through the MV collection system and PCS units into the battery packs within the BESS enclosures. When the BESS facility is discharging, power from the battery packs within the BESS enclosures would be sent to the PCS units, stepped up to 34.5kV, and transported to the Project substation through the MV collection system before being stepped up to 500kV at the MPTs and delivered back to the regional electric transmission grid. A prefabricated control building would be installed within the Project substation area and contain an energy management system, metering, and telecommunication equipment for communication with PG&E/CAISO facilities and to support remote Project operations monitoring, as well as monitoring by the 18 full-time operations staff members. The Project substation area would also include five static masts for lightning protection and a wireless communication tower mounted with an antenna up to 15 feet in diameter for external telecommunications.

2.2.2 Access Roads

The Project's roadway system would include two new facility access roads and driveways, a perimeter road, and internal access roads, the Northern Access Road and the Southeast Emergency Access Road. The Northern Access Road would be constructed from an existing private road near the northeastern portion of the site and would serve as the primary access to the site. The Southeast Emergency Access Road would be constructed from Patterson Pass Road near the southeastern portion of the site and would be used for emergency access only. As such, the majority of Project traffic would not be expected to travel along the unimproved stretches of Patterson Pass Road. The driveway apron of the Southeast Emergency Access Road would be expanded to allow vehicles space to decelerate off the main road and to provide additional visibility for exiting vehicles to enter onto Patterson Pass Road. In addition, this emergency entrance road has been designed according to the Engineering Design Guidelines for Unincorporated Alameda County to provide 100' of straight driveway perpendicular to the centerline of Patterson Pass Road. The grade has been adjusted to provide a maximum 6% grade for 50' from the road edge.

A Project substation access road would be constructed outside of the perimeter fence, connecting the northeast and southwest driveways, to facilitate Project substation access by third parties during operations. All new access roads, driveways, internal and perimeter roads would be bladed, compacted, and surfaced with aggregate. All internal roadways and private driveways would be constructed to meet access requirements for construction, O&M, and emergency response requirements.

2.2.3 Laydown Yards/Storage Area

The Project would include up to 4 laydown yards for equipment and material staging and storage during construction. These areas would also be used for worker parking during construction. The primary laydown yard would be located directly adjacent to the Project substation area (see Figure 4). The primary laydown yard would be cleared of vegetation, bladed, compacted, and surfaced with aggregate. Landscape fabric may also be installed under the surface of all laydown yards to prevent vegetation growth, if required to comply with fire prevention standards.

If the BESS technology ultimately procured prior to construction requires larger BESS yards to accommodate BESS enclosures with larger dimensions, a greater number of BESS enclosures, or greater spacing requirements to comply with regulations, portions of the additional laydown yards may be used to accommodate larger BESS yards than those currently proposed. The proposed Project's preliminary layout, earthwork volumes, and Project component dimensions assumed for environmental analyses in subsequent chapters are conservatively large to allow for design flexibility and Project schedule preservation.

2.2.4 Stormwater Facilities

The proposed BESS facility site currently consists of annual grassland with rolling topography. Regulatory standards require that volumes and flow rates of stormwater discharge after construction not exceed pre-development conditions. Stormwater generated on-site would flow southwest to northeast to be captured in a detention basin located on the northeast end of the BESS site, and southward to a detention basin located parallel to Patterson Pass Road. Additional detention basins would be located around the perimeter of the site to capture stormwater runoff from side slopes (Figure 3). Stormwater treatment and storage sizing would be designed to hold the anticipated runoff from a 100-year, 24-hour storm event in compliance with applicable regulations. In the event stormwater basins reach capacity, stormwater would be discharged from the detention basins via storm drainpipes and sheet flow at rates no greater than pre-development conditions following natural drainage patterns.

A stormwater drainage outfall utilizing a new 36-inch corrugated metal pipe or bioswale/ditch would be constructed from one or more of the detention basins located in the southwest portion of the site to the inlet of a new or existing culvert on the north side of Patterson Pass Road. Approximately 10 cubic yards of clean riprap would be placed as an energy dissipator at the outfall to discharge clean stormwater at or below current rates at the elevation of the ordinary high water mark of the existing drainage on the south side of Patterson Pass Road.

2.2.5 Site Secuirty

The BESS facility site would be enclosed with an 8-foot-tall chain link fence topped with 1 foot of three-strand barbed wire or razor wire. The fence would be installed on the outside of the perimeter road. An additional fence with the same specifications would be installed around the Project substation area. The fences would be required to prevent unauthorized access and to comply with human health and safety regulations. Gates would be installed at various access points along the fence lines and equipped with lock boxes to allow for authorized personnel (e.g., transmission service provider, O&M staff, emergency response) to access appropriate portions of the BESS facility site.

Lighting would only be in areas where it is required for safety, security, or operations. Low-elevation (less than 14 feet) controlled security lighting would be installed at the Project substation and around the BESS yards, in accordance with applicable requirements and regulations. Permanent motion-sensitive, directional security lights would be installed to provide adequate illumination around the substation area and points of ingress/egress. All lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties, compliant with applicable codes and regulations. Security cameras would be placed on site and monitored 24/7.

2.2.6 Fire Protection System

Fire protection would include multiple fire detection systems on-site and within the individual BESS enclosures. An infrared camera system would be installed throughout the BESS facility to achieve 100% of electrical infrastructure and trigger an alarm in case of an onsite fire. Each BESS enclosure would have a fire rating in conformance with the California Fire Code 2022. In addition, each BESS enclosure would contain an onboard BMS that monitors the appropriate state of individual battery cells and relays information 24-7. In the event of an anomaly, the system is designed to shut down and mitigate the hazard.

The Project's fire protection design would comply with California Fire Code 2022, Section 1207 Electrical Energy Storage Systems, which adopts the National Fire Protection Association's Standard for the Installation of Stationary Energy Storage Systems (NFPA 855). BESS enclosures would be Underwriters Laboratories (UL) listed, tested, and certified to the most rigorous international safety standards. UL independently tests equipment for compliance with the latest fire safety code requirements, and the methods were developed to minimize fire risk and safety concerns about battery storage equipment raised by fire departments and building officials in the United States.

Faults, mechanical damage, or manufacturing defects in lithium-ion batteries can cause thermal runaway, which can lead to fires or other hazards. Should a thermal runaway event occur, the BESS enclosures are designed and constructed in such a way that fire would not propagate from one enclosure to a neighboring enclosure. The Project's BESS enclosures, as part of the testing and listing process, would be subjected to destructive testing including fire testing. The Project's BESS enclosures would include the following UL certifications:

- UL 1642 – Standard for Lithium Batteries (cell level certification).
- UL 1973 – Standard for Batteries for Use in Stationary Applications (module level certification).
- UL 9540 – Standard for Energy Storage Systems and Equipment (system level certification).
- UL 9540A – Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems.
- IEC 62619 – Standard for Battery Safety in Stationary Applications.

The California Department of Forestry and Fire Protection (CAL FIRE) would review and comment on the facility fire protection plans.

2.2.7 Operations and Maintenance Building

Following construction of the BESS facility, three O&M buildings would be constructed a minimum of 20' apart within the primary laydown yard for the Project's anticipated 18 full-time operations staff. The main O&M building would include basic offices, meeting rooms, and washroom facilities. A 10,000 gallon above ground potable water storage tank would provide water for washroom and sanitary facilities, and sewage/wastewater would be collected in a 2 separate 5,000 gallon below ground sewer holding tanks. Potable water would be trucked to the water storage tank periodically during O&M, and sewage/wastewater would be pumped from the storage tank, transported offsite via truck, and disposed of at a sanitary dump station, as needed, during operations. The remaining two O&M buildings would be used primarily for storage, maintenance and repair activities associated with the Project . Neither of these buildings would have washroom facilities. All O&M buildings would be powered via a distribution line from the Project substation.

2.2.8 Transmission and Interconnection Description, Design, and Operation

The Project would be interconnected to the regional electrical transmission grid via an approximately 2,884-foot long new single-circuit 500kV gen-tie line within a 200-foot wide corridor between the project substation and the PG&E Tesla Substation. The Applicant would construct and own the portion of the gen-tie line between the project substation and the Point of Change of Ownership (POCO) transmission structure, and PG&E would construct and own the remaining portion of the gen-tie from the POCO to the POI within the Tesla Substation. This ITP is seeking coverage that includes construction and operation of all transmission infrastructure from the project substation to the Tesla Substation, including the portions that would be constructed and owned by PG&E (POCO to Tesla Substation). The Project's transmission and interconnection facilities would include the following components:

- 500kV Gen-Tie Line including Transmission Structures and Conductors

- Fiber Optic Telecommunications Utility Poles and Fiber Optic Lines

- Access Paths
- Temporary Work Areas
- Interconnection Facilities within Existing PG&E Tesla Substation Footprint (PG&E constructed and owned)

The proposed route location was selected to minimize the number of existing utility crossings, cross existing utilities at the optimum locations, minimize the total gen-tie line length and number of transmission structures required, minimize the number of turning structures required, and enter the Telsa Substation as close as possible to the POI. The proposed transmission structures were sited to avoid potential impacts to environmental resources. Project components associated with transmission and interconnection facilities are described in the following subsections. Figure 3, Transmission Line Route, shows the gen-tie route, scattered rural residences, and existing transmission lines within 1 mile of the proposed route. Table 3 summarizes the preliminary dimensions of major transmission components, and Table 4 summarizes the preliminary new ground disturbance area associated with construction of the transmission and interconnection facilities.

Table 3. Preliminary Dimensions of Major Transmission Components

Component	Quantity	Approximate Dimensions
500kV Gen-Tie Line	1	Applicant Owned: 1,557ft long
		PG&E Owned: 1,327ft long
Substation Bay Dead-End Transmission Structure	2	Applicant Owned: 1 structure; up to 110ft above ground level; two seven-foot diameter foundations, installed up to 30ft deep; constructed within project substation area footprint
		PG&E Owned: 1 structure; up to 110ft above ground level; two seven-foot diameter foundations, installed up to 30ft deep; constructed within Tesla Substation footprint.
Angled Dead-End Transmission Structure	3	Applicant Owned: 2 structures; Up to 199ft above ground level; three nine foot diameter foundations, installed up to 40ft deep, per structure
		PG&E Owned: 1 structure; Up to 199ft above ground level; three nine foot diameter foundations, installed up to 40ft deep.
H-Frame Tangent Transmission Structure	1	Applicant Owned: Up to 199ft above ground level; two six-foot diameter foundations, installed up to 30ft deep.
Conductors	6	Two 2,300 kcmil 61W AAC “Pigweed” per phase. 30ft minimum ground clearance.
Overhead Shield Wire	2	Two 3/8in extra high strength 7-strand steel
Fiber Optic Utility Poles	16	Up to 40ft above ground level; up to 20in diameter wood poles direct embedded up to 8ft deep.
Fiber Optic Cables	2	All dielectric self-supporting fiber optic cable. Two redundant and diverse routes. Installed above ground on utility poles by Applicant from Project Substation to POCO. Installed by PG&E underground in trenches up to 2ft wide and 4ft deep between POCO and Tesla Substation.

Transmission Structure Access Path	1	Applicant Owned: 20ft wide; up to 1,750ft long
		PG&E Owned: 20ft wide; up to 950ft long
Transmission Line Corridor	1	200ft wide

Table 4. Approximate New Ground Disturbance Area Associated with Transmission and Interconnection Facilities

Component	Permanent Disturbance	Temporary Disturbance
Applicant Portion		
Transmission Structure Pads	0.4 acres	-
Transmission Structure Access Path	0.7 acres	-
Fiber Optic Utility Poles	0.1 acres	-
Tension and Pulling Site	-	3.6 acres
Applicant Total	*~1.2 acres*	*~3.6 acres*
PG&E Portion		
Transmission Structure Pad	0.2 acres	-
Transmission Structure Access Path	0.5 acres	-
Tension and Pulling Site	-	3.1 acres
PG&E Total	*~0.7 acres*	*~3.1 acres*
Total	*~1.9 acres*	*~6.7 acres*

2.2.9 500kV Gen-Tie Line

The 500kv gen-tie line would originate at the Project substation within the BESS facility site and extend southeast, crossing Patterson Pass Rd overhead until reaching the POCO structure. After reaching the POCO structure the route would proceed east to an angled dead-end structure outside of the Tesla Substation fence line before extending north to a new substation dead-end structure at the POI bay within the Tesla Substation footprint. The 200-foot-wide transmission corridor would be within the BESS facility lease area on APN 99B-7890-2-4 and within an easement on APN 99B-7890-2-6 until reaching the parcel's eastern boundary about 255 feet east of the POCO structure. Both parcels comprising the BESS facility lease area and transmission corridor easement are private lands owned by the same landowner. After crossing the eastern boundary of APN 99B-7890-2-6, the remaining portion of the gen-tie would be on the same PG&E-owned parcel that includes the 500kV Tesla Substation and POI. Table 2 includes the approximate number and dimensions of the three different types of transmission structures that would be used. The gen-tie would be designed consistent with the Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee 2006).

2.2.10 Transmission Structure Access Path

A transmission structure access path would be located within portions of the transmission corridor outside of the BESS facility and Tesla Substation footprints and generally follow the centerline of the gen-tie. The portion of the transmission structure access path between Patterson Pass Road and the POCO structure would include an Arizona crossing of Patterson Run and require clean fill material

(e.g., large cobbles, clean, native gravel, prefabricated mats) to be placed beneath the ordinary high water mark elevation for stabilization and erosion and sedimentation control.

2.2.11 Telecommunication Facilities

Telecommunications equipment would be installed between the control building at the Project substation and the Tesla Substation to facilitate communication with PG&E/CAISO facilities. PG&E interconnection policies require two redundant fiber optic cables to be installed on diverse paths without a single point of failure (i.e., both fiber optic lines cannot be installed on a single set of structures). Between the control building within the Project substation area and the POCO structure, the Applicant would install the two fiber optic lines above ground on separate utility structures within the transmission corridor. One route would be installed near the northern boundary of the transmission corridor and the other would be installed near the southern boundary of the transmission corridor. The fiber optic utility poles would be accessed via overland travel from the transmission structure pads or the transmission structure access path. At the POCO structure, each of the fiber optic cables would be brought down to an underground pull box. PG&E would install the fiber optic cables underground from the pull boxes to the PG&E control building at the Tesla Substation. A microwave antenna installed on a communications tower within the Project substation area, an optical ground wire installed on the 500kV structures, or placed underground within the transmission structure access path, between the Project substation and POCO may be used in lieu of a second set of utility poles.

2.2.12 Interconnection Facilities within Existing PG&E Tesla Substation Footprint

To facilitate interconnection of the BESS facility to the electric transmission grid, PG&E would need to install a substation bay dead-end transmission structure and expand the POI's 500kV breaker-and-a-half bay with a new circuit breaker.

2.2.13 Transmission System Impact Studies

The Applicant filed an Interconnection Request with CAISO in the Cluster 13 Interconnection Request window. CAISO, in cooperation with PG&E, prepared the Phase I Interconnection Study (February 12, 2021), and Phase II Interconnection Study (November 22, 2021). The Applicant entered into a Large Generator Interconnection Agreement (LGIA) with CAISO and PG&E on October 31, 2022. No Affected Systems controlled by CAISO or PG&E were identified during the interconnection study process. Non-CAISO systems potentially affected by the Project and other Cluster 13 projects are Western Area Power Administration and Modesto Irrigation District. The Applicant is working with both system operators to identify specific impacts and will take all reasonable steps to address potential reliability system impacts prior to the initial synchronization of the Project.

2.2.14 Construction

The following sections detail the approximate construction schedule and workforce, construction activities, estimated water use, and materials handling proposed by the Project.

2.2.14.1 Schedule and Workforce

The Project is anticipated to be built over an approximately 18-month period from the onset of site preparation activities through energization, with seasonal restrictions (May 1 to October 30) to avoid impacts to covered species. Following energization, testing and commissioning would take place over 6 months. Initial mobilization and site preparation is anticipated to begin no later than Q4 2026 and testing and commissioning is anticipated to conclude no later than Q2 2028. It is anticipated that construction crews would work 8 to 10 hours per day, with work occurring Monday through Friday. Overtime, night work, and weekend work would be used only as necessary to meet the project schedule or complete time-sensitive or safety critical work. All work schedules would comply with applicable California labor laws, county regulations, and the Project Labor Agreement. Estimated durations of construction activities are presented in Table 5. However, the duration of particular

construction activities may be affected by weather, unanticipated site conditions, the supply chain, and coordination between the different activities.

The expected average workforce for each construction activity is also included in Table 5.

Table 5. Estimated Construction Activity Duration and Average Workforce Expected

Construction Activity	Estimated Duration	Average Workforce Expected (Number of Employees)
Site Preparation	8 Weeks	25
Civil Work and Grading	24 Weeks	55
Foundations and Underground Equipment	16 Weeks	50
BESS Equipment Installation	20 Weeks	60
Project Substation Installation	32 Weeks	20
Gen-Tie Foundations and Structure Erection	8 Weeks	10
Gen-Tie Line Stringing and Pulling	2 Weeks	10
Testing and Commissioning	22 Weeks	10
PG&E Interconnection Facility Upgrades within Tesla Substation	26 Weeks	10

2.2.14.2 SEQUENCING

During construction activities, multiple crews would be working on the site with various equipment and vehicles. The total number of construction workers (consisting of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel) would range from approximately 5 to 200 workers, depending on the phase of construction. It is estimated that construction would require the vehicle trips and equipment listed in Table 6.

Table 6. BESS Project - Construction Equipment and Usage Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total One-Way Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Site Preparation	50	10	600	Graders	2	8
				Rubber Tired Loaders	2	8
				Skid Steer Loaders	2	8
				Tractors/Loaders/ Backhoes	2	8
	110	76	30,240	Graders	4	8

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total One-Way Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Site Grading and Civil Work				Rollers	4	8
				Rubber Tired Loaders	4	8
				Skid Steer Loaders	4	8
				Tractors/Loaders/ Backhoes	4	8
				Pavers	2	8
				Paving Equipment	2	8
				Rollers	2	8
				Plate Compactors	1	8
				Cement and Mortar Mixers	1	4
				Rock Crushers	4	8
Foundations and Underground Equipment Installation*	100	10	20	Paving Equipment	2	8
				Rollers	2	8
				Plate Compactors	2	8
				Cement and Mortar Mixers	2	8
				Bore/Drill Rig	3	8
				Tractors/Loaders/ Backhoes	6	8
				Excavators	2	8
				Rubber Tired Dozers	2	8
				Trenchers	4	8
				Skid Steer Loaders	2	8
BESS Installation*	160	20	2,636	Air Compressors	2	8
				Cranes	3	8
				Generator Sets	4	8
				Rough Terrain Forklifts	2	8
				Skid Steer Loaders	2	8
	40	20	0	Air Compressors	2	8
				Aerial Lifts	6	8

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total One-Way Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Project Substation Installation				Cranes	2	8
				Generator Sets	2	8
				Rough Terrain Forklifts	2	8
Gen-tie foundation and tower erection	28	2	0	Bore/Drill Rig	1	8
				Cranes	2	8
				Forklifts	2	8
				Boom Truck	1	8
				Flat Bed Truck	1	8
				Cement and Morter Mixer	1	8
				Bucket Lift Truck	1	8
Gen-tie stringing and pulling	24	2	0	Heavy-duty Truck (Puller)	1	8
				Heavy-duty Truck (Tensioner)	1	8
				Forklifts	2	8
				Generator Sets	2	8
				Tractors/Loaders/ Backhoes	2	8
				Boom Truck	1	8
				Trencher	1	8
PG&E Interconnection Facility Upgrades	40	20	0	Air Compressors	4	8
				Cranes	2	8
				Excavators	2	8
				Generator Sets	4	8
				Rough Terrain Forklifts	2	8
				Skid Steer Loaders	2	8
				Tractors/Loaders/ Backhoes	2	8
				Trencher	1	8
Testing and Commissioning	52	0	0	Rough Terrain Forklift	1	8
				Off-Highway Trucks	3	8
Decommissioning	40	2	2,640	Concrete/Industrial Saws	2	8

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total One-Way Haul Truck Trips	Equipment Type	Quantity	Usage Hours
				Cranes	2	8
				Rubber Tired Dozers	2	8
				Tractors/Loaders/ Backhoes	2	8

Notes: * The project layout depicted in Figure 3 shows the "End of Life" configuration of the BESS, meaning it shows the equipment layout after all augmentation units are implemented. The numbers in this table conservatively assume that foundations and BESS equipment installation related to augmentation occurs during initial construction of the facility. Construction of foundations and BESS equipment installation for augmentation may occur during O&M periodically within the BESS facility footprint.

2.2.14.3 SITE PREPARATION

Environmental clearance surveys would be performed at the Project site prior to commencement of construction activities. The limits of construction disturbance areas delineated in the final approved engineering design packages would be surveyed and staked. Initial ground disturbing activities in preparation for construction would include installation of erosion and sediment control measures prior to start of major earthworks activities. Rough grading and grubbing/vegetation removal would be performed where required to accommodate site drainage and allow construction equipment to access the site. Detention basins and stormwater facilities would be created for hydrologic control. The construction contractor would be required to incorporate applicable best management practices (BMPs) including the guidelines provided in the California Stormwater Quality Association's Construction BMP Handbook (CASQA 2019), as well as a soil erosion and sedimentation control plan to reduce potential impacts related to construction of the proposed Project. Stabilized construction entrances and exits would be installed at driveways to reduce tracking of sediment onto adjacent public roadways.

Site preparation would be consistent with applicable BMPs and the Bay Area Air Quality Management District's Fugitive Dust Rules. Site preparation would involve the removal and proper disposal of existing debris that would unduly interfere with Project construction or the health and safety of on-site personnel. Dust-minimizing techniques would be employed, such as placement of wind control fencing, application of water, and application of dust suppressants. All applicable governmental requirements and BMPs would be incorporated into the construction activities for the Project site.

Vegetation on the site would be removed where necessary to ensure the BESS facility is free from combustible vegetation to allow for fire protection and defensible space. Where feasible, in compliance with fire protection requirements, vegetation root mass within appropriate portions of the BESS facility lease area on the outside of the perimeter and substation access roads would be left in place for soil stabilization. However, the environmental analyses in subsequent sections conservatively assume that all areas within the maximum anticipated grading limits of the BESS facility would be permanently disturbed.

2.2.14.4 SITE GRADING AND CIVIL WORK

Following site preparation activities, grading and civil work would commence. Construction activities during this phase would include excavation and grading of the Project site. Earthwork on the site is ultimately anticipated to result in nearly balanced cut and fill volumes, but the preliminary designs conservatively assume that grading would include up to approximately 588,018 cubic yards (cy) of cut and up to approximately 344,900 cy of fill, resulting in up to approximately 243,118 cy of export

material. As appropriate, all, or a portion of, of the Project's excess material resulting from earthwork may be used beneficially used on-site for the construction of berms or other onsite needs. Where appropriate, excess material would be processed in one or more different types of rock crushing equipment depending on the requirements of the various potential beneficial uses onsite.

Conventional grading would be performed throughout the Project site but minimized to the maximum extent feasible to reduce unnecessary soil movement that may result in dust. Land-leveling equipment, such as a smooth steel drum roller, would be used to even the ground surface and compact the upper layer of soil to a value recommended by a geotechnical engineer for structural support. Following major civil work within the BESS facility site, site access roads and driveways, the perimeter and substation access roads, and interior roadways to access the laydown areas and BESS yards would be graded, compacted, and surfaced with gravel or aggregate. Class II road base would be imported to create necessary compaction under the equipment, as determined by geotechnical testing and Project specifications. Once the roadways have been constructed, the Project perimeter fence and access gates would be constructed.

2.2.14.5 FOUNDATIONS AND UNDERGROUND EQUIPMENT INSTALLATION

Following completion of major site grading and civil work, equipment foundations and below grade equipment would be installed. A grounding grid and underground conduit would be installed below grade beneath the Project substation area and BESS components. Typical ground grids consist of direct-buried copper conductors with copper-clad ground rods arranged in a grid pattern. After installation of the grounding grid, the area would be backfilled, compacted, and leveled followed by application of an aggregate rock base. A containment area within the MPT foundations would be sized to hold the full volume of oil within the MPTs. The MPT foundations within the substation area are anticipated to be concrete slab foundations poured into excavations up to 10 feet deep. Foundations for the control building, static masts, other aboveground substation equipment, O&M building, BESS enclosures, PCS units, DC/DC converters, and BESS auxiliary transformers and panels are anticipated to be pile foundations embedded up to 40 feet below ground level. Depending on soil conditions, the piles may be drilled or driven and set with a slurry. However, some of these Project components may be installed on concrete slab foundations depending on the geotechnical conditions at the final locations.

Additional underground work would include trenching for the placement of underground electrical and communications lines, including the MV collection system, AC and DC cables, and fire alarm cable. The wires would either be installed in conduit, cable-trays, or direct-buried, depending upon final design and application

2.2.14.6 BESS AND PROJECT SUBSTATION EQUIPMENT INSTALLATION

Where possible, major equipment would be delivered directly to its permanent location and offloaded directly into place with a crane or heavy equipment. Where staging or sequencing does not allow, equipment would be stored at one of the laydown areas near its permanent location and installed at a later date. Major aboveground equipment would be the MPTs and other Project substation components, control building, BESS enclosures, PCS units, DC/DC converters, BESS auxiliary transformers and panels, and O&M building.

Electrical work would include installing cables, terminations, and splices. Electrical wiring would be installed underground, at-grade, and above ground, depending on the application and location. The wires would either be installed in conduit, cable-trays, or direct-buried, depending upon final design and application.

2.2.14.7 GEN-TIE STRUCTURE ERECTION

Environmental clearance surveys would be performed within the gen-tie corridor prior to commencement of construction activities. The gen-tie corridor boundaries, gen-tie centerline, telecommunications route centerlines, and transmission structure access path would be surveyed and

flagged. Initial activities would include the installation of erosion and sediment control measures and materials to facilitate the dry crossing of Patterson Run, and preparation of the transmission structure and fiber optic utility pole work areas. The transmission structure access path may be bladed, compacted, and surfaced with gravel where necessary to facilitate transmission structure deliveries and construction equipment access. The surface of the access path would be at-grade to allow water to sheet flow across the gen-tie corridor, as it currently does. Access to the fiber optic utility pole locations would be via overland travel from the transmission structure pads or access path. Overland travel and temporary construction activities associated with the gen-tie and telecommunications facilities may occur anywhere within the 200-foot-wide transmission corridor and 50 feet on either side of the transmission corridor boundary. Vegetation at the transmission and fiber optic utility pole work areas would be trimmed, mowed, or removed. At locations where gen-tie line structures and fiber optic utility poles would be installed, minor cuts may be required where the foundation would be installed.

Cast-in-place concrete foundations would be installed by placing reinforcing steel and a structure stub or anchor bolt cage into the foundation hole, positioning the stub, and encasing it in concrete. Each transmission structure foundation would be set on anchor bolts on top of the foundation with cranes. Fiber optic utility poles would be direct embedded in holes up to 8 feet deep. Holes would be excavated using a truck-mounted drill rig or standalone auger rig. Poles would be delivered on a flat-bed trailer and hoisted into place with a crane. The annular space between the poles and holes would be backfilled with concrete or soil. Excavated spoil material not used for backfilling would be spread around the structure work areas.

2.2.14.8 GEN-TIE STRINGING AND PULLING

Conductors would be strung between transmission structures with heavy duty trucks and a telescoping boom lift. Cables would be pulled through one segment of the transmission line at a time. To pull cables, truck-mounted cable-pulling equipment is placed alongside the first and last towers or poles in a segment. Power pulling equipment is used at the front end of the segment, while power braking or tensioning equipment is used at the back end. The conductors are then pulled through the segment and attached to the insulators. Equipment is then moved to the next segment; the front end pull site previously used becomes the back end pull site for the next segment. After conductors have been pulled into place in a section, the conductor tension is increased to achieve a ground clearance of at least 30 feet prior to moving to the next section.

Three tension and pulling sites are anticipated to facilitate construction of the gen-tie: one within the BESS facility footprint near the first angled dead-end structure, one at the POCO structure, and another at the PG&E-constructed angled dead-end structure near the Tesla Substation fence line.

2.2.14.9 PG&E-OWNED GEN-TIE SEGMENT AND INTERCONNECTION FACILITIES WITHIN TESLA SUBSTATION FOOTPRINT

PG&E would construct the segment of the gen-tie between the POCO and the POI within the Tesla Substation, and the fiber optic routes between the POCO and the PG&E control building within the Tesla Substation footprint. The Applicant would bring the fiber optic cables to underground pull boxes at the POCO structure, and PG&E would install the segment of the fiber optic cables between the POCO and control building in conduit placed in underground trenches. The trenches are anticipated to be up to 3 feet wide, and the trenches for the redundant routes would need to be at least 10 feet apart to meet PG&E's diverse path requirements. It is anticipated that PG&E would install the trenches within the access road to the angled dead-end structure outside the Tesla Substation fence line. However, PG&E may install the cables within existing roadways or other pre-disturbed areas along the perimeter of the substation fence depending on final design and routing.

PG&E would also construct the interconnection upgrades within the Tesla Substation footprint at the POI. These upgrades would include erection of a new substation bay dead-end transmission structure and expanding the POI's existing 500kV substation bay-and-a-half bay with a new circuit breaker. Other activities within the Tesla Substation footprint and/or property boundary may include relocation

or modification of existing PG&E infrastructure. Additional potential disturbance acreage associated with PG&E's work to facilitate interconnection of the Project to the grid are not anticipated to exceed 5 additional acres of disturbance beyond the estimates Table 4.

2.2.14.10 CONSTRUCTION WATER USE

During construction, an estimated 16,000,000 million gallons (~49.1 acre-feet) of untreated water would be required for common construction-related purposes, including but not limited to dust suppression, soil compaction, and grading. Dust-control water may be used during ingress and egress of on-site construction vehicle equipment traffic and during the construction of the Project. A sanitary water supply line would not be required during construction because restroom facilities would be portable units, serviced by licensed providers, and water and sewage from the restroom facilities would be stored in onsite tanks and serviced by trucks. Drinking water would be provided via portable water coolers. Construction water is anticipated to be purchased from a local water purveyor and trucked to the site.

2.2.14.11 SOLID AND NON-HAZARDOUS WASTE

The Project would produce a small amount of solid waste from construction activities. This may include paper, wood, glass, plastics from packing material, waste lumber, insulation, scrap metal and concrete, empty nonhazardous containers, and vegetation waste. This waste would be segregated, where practical, for recycling. Non-recyclable waste would be placed in covered dumpsters and removed on a regular basis by a certified waste-handling contractor for disposal at a Class III (non-hazardous waste) landfill.

2.2.14.12 HAZARDOUS MATERIALS

The hazardous materials used for construction would be typical of most construction Projects of this type. Materials may include small quantities of gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol, dust palliatives, herbicides, and welding materials/supplies. A hazardous materials business plan would be prepared prior to commencement of construction activities. The hazardous materials business plan would include a complete list of all materials used on site and information regarding how the materials would be transported and in what form they would be used. This information would be recorded to maintain safety and prevent possible environmental contamination or worker exposure. During Project construction, material safety data sheets for all applicable materials present at the site would be made readily available to on-site personnel.

2.2.14.13 HAZARDOUS WASTE

Small quantities of hazardous waste would most likely be generated over the course of construction. This waste may include waste paint, spent construction solvents, waste cleaners, waste oil, oily rags, waste batteries, and spent welding materials. Workers would be trained to properly identify and handle all hazardous materials. Hazardous waste would be either recycled or disposed of at a permitted and licensed treatment, recycling, or disposal facility in accordance with law. All hazardous waste shipped off site would be transported by a licensed hazardous waste hauler.

2.2.15 Commissioning

As part of Project construction activities, and after installation, equipment will be tested and commissioned. Commissioning work will be completed by qualified personnel, and in accordance with various codes, standards and specifications including Institute of Electrical and Electronic Engineers, National Electrical Code (NFPA 70), International Electrical Testing Association, specific provisions of National Fire Protection Association, and the relevant manufacturers installation and commissioning manuals. Documentation necessary for commissioning will include (but is not limited to) complete sets of electrical plans, itemized equipment descriptions, control narratives, and other procedural requirement such as persons or entities to notify when equipment has become available for acceptance tests.

Commissioning will include testing of mechanical, electrical, fire protection, and other systems at substantial completion. Systems to be commissioned and tested include (but are not limited to) BESS enclosures, PCS units, auxiliar service transformers, MV collection system, DC cables, Supervisory Control and Data Acquisition (SCADA) systems, power backup systems, and fire protection system. Performance testing will also be completed to ensure charge and discharge performance of the systems as designed and in accordance with the utility requirements. Full details of the commissioning activities will be made available in a commissioning plan, prepared by the BESS supplier and construction contractor and reviewed by the Engineer of Record, as part of the construction documentation package.

2.2.16 Operations and Maintenance

Once constructed, the Project would operate 7 days per week, 365 days per year. The facility would be remotely monitored by the original equipment manufacturer or an affiliated company. Project operations would be monitored remotely through the SCADA system and by the Project's anticipated three full-time operations staff members located onsite.

Onsite maintenance would be required, which would include replacement of inverter power modules, filters, and miscellaneous electrical repairs on an as-needed basis. During operation of the project substation, O&M staff would visit the substation periodically for switching and other operation activities. Maintenance trucks would be utilized to perform routine maintenance, including but not limited to equipment testing, monitoring, repair, routine procedures to ensure service continuity, and standard preventative maintenance. Typically, one major maintenance inspection would take place annually.

Batteries within utility-scale BESS facilities degrade with use over time, leading to a loss of capacity. To maintain the Project's capacity in compliance with interconnection requirements and commercial contracts, periodic augmentation by installing new batteries and related equipment within the Project site would occur to maintain the capacity over an approximate 35-year life. Augmentation would include constructing new foundations, installing BESS equipment on the foundations, and completing electrical work within the existing Project footprint. The preliminary site layout depicted on Figure 3 shows an "end of life" configuration, meaning it shows the equipment layout after all augmentation units are implemented. The construction sequencing and equipment usage assumptions in Tables 3 and 4 above, and environmental analyses in subsequent Chapters, conservatively assume that all initial BESS equipment and augmentation BESS equipment are constructed at the same time.

2.2.16.1 Solid and Nonhazardous Waste

The Project will produce a small amount of waste associated with maintenance activities, which could include broken and rusted metal, defective or malfunctioning electrical materials, empty containers, and other miscellaneous solid waste, including typical refuse generated by workers. Most of these materials would be collected and delivered back to the manufacturer or to recyclers. Non-recyclable waste would be placed in covered dumpsters and removed on a regular basis by a certified waste-handling contractor for disposal at a Class III landfill.

2.2.16.2 Hazardous Materials

Limited amounts of hazardous materials would be stored or used on the site during operations, including diesel fuel, gasoline, and motor oil for vehicles; mineral oil to be sealed within the transformers; and lead-acid-based batteries for emergency backup. Appropriate spill containment and cleanup kits would be maintained during operation of the Project. A spill prevention control and countermeasures plan would be developed for site operations.

2.2.16.3 Hazardous Waste

Fuels and lubricants used in operations would be subject to the spill prevention control and countermeasures plan to be prepared for the proposed Project. Solid waste, if generated during operations, would be subject to the material disposal and solid waste management plan to be prepared for the proposed Project.

2.2.16.4 DECOMMISSIONING

In general, the BESS would be recycled at the end of the Project's life (estimated to be 35 years). Most parts of the proposed system are recyclable. Batteries include lithium-ion, which degrades but can be recycled or repurposed. Steel, wood, and concrete from the decommissioned facilities would be recycled. Metal and scrap equipment and parts that do not have free-flowing oil may be sent for salvage. Materials three feet or more below the ground surface would be left in place.

Fuel, hydraulic fluids, and oils would be transferred directly to a tanker truck from the respective tanks and vessels. Storage tanks and vessels would be rinsed and transferred to tanker trucks. Other items that are not feasible to remove at the point of generation, such as smaller container lubricants, paints, thinners, solvents, cleaners, batteries, and sealants, would be kept in a locked utility structure with integral secondary containment that meets Certified Unified Program Agencies and Resource Conservation and Recovery Act requirements for hazardous waste storage until removal for proper disposal and recycling. It is anticipated that all oils and batteries would be recycled at an appropriate facility. Site personnel involved in handling these materials would be trained to properly handle them. Containers used to store hazardous materials would be inspected regularly for any signs of failure or leakage. Additional procedures would be specified in a Hazardous Materials Business Plan closure plan submitted to the Certified Unified Program Agencies. Transportation of the removed hazardous materials would comply with regulations for transporting hazardous materials, including those set by the Department of Transportation, the U.S. Environmental Protection Agency, California Department of Toxic Substances Control, California Highway Patrol, and California State Fire Marshal.

2.3 Existing Environmental Conditions

The Project site is relatively flat, with an approximate elevation of 383 to 523 feet at mean sea level. According to the US Department of Agriculture (USDA) Natural Resources Conservation Service, three soil types are present: Linne clay loam, 3% to 15% slopes (65.65 acres); Linne clay loam, 15% to 30% slopes, MLRA 15 (2.80 acres); and Rincon clay loam, 0% to 3% slopes (19.75 acres) (USDA 2024). The Linne series consists of moderately deep, well drained soils that formed in material from soft shale and sandstone. The Rincon series consists of deep, well drained soils that formed in alluvium from sedimentary rock. None of the three soil types mapped on site are included on the USDA list of hydric soils (USDA 2023) commonly associated with wetlands or other waters.

The Project site occurs within the North Diablo Range of the Alameda Creek Watershed (USGS 2023). According to the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), there are several freshwater ponds, freshwater wetlands, and riverine aquatic features in the vicinity of the Project (USFWS 2023a; Appendix B). The NWI is based on coarse aerial mapping and does not involve ground-truthing. The national hydrography dataset shows Patterson Run and one other drainage crossing the Project site from south to north. Patterson Run is an ephemeral stream system that runs parallel to Patterson Road adjacent to the Project site, flows in a northerly direction, and eventually terminates approximately 2.3 miles northeast of the Project site in agricultural land just north of the Delta Mendota Canal. Patterson Run is classified in the NWI as a freshwater emergent wetland (USFWS 2023a). The second drainage is classified by the NWI as freshwater emergent wetland (USFWS 2023a), however, there is no physical evidence of this drainage within the Project site either on aerial imagery or when surveyed on the ground.

2.3.1 Climate

The Project site is within a Mediterranean climate where annual temperatures range from 38.3 degrees Fahrenheit (°F) to 92.6°F (WRCC 2023). According to the Tracy Pumping Plant (049001) Weather Station Gauge, yearly precipitation averages 12.03 inches, with the highest average rainfall recorded in January (2.54 inches) (WRCC 2023). The past winter season has had higher than average rainfall.

2.3.2 Potential Jurisdictional Features

A preliminary wetland assessment was conducted during the reconnaissance survey on August 2, 2023, to generally identify and coarsely map aquatic resources that may require further protocol jurisdictional delineations. Dudek then conducted a complete aquatic resources delineation concurrent with the reconnaissance-level biological field survey on January 18, 2024, to identify and map the extent of aquatic resources within the entire Project site that are potentially subject to regulation under federal Clean Water Act Sections 401 and 404, CFGC Section 1602, or under the Porter-Cologne Act.

There is one seasonal channel (EPH-01; 0.37 acre, 846.07 linear feet), Patterson Run, within the Project site where the BESS facility site connects to the gen-tie alignment, paralleling Patterson Pass Road (Figure 4). This seasonal channel flows southwest to northeast. The channel had moderate flow during the March 2023 and January 2024 surveys and was dry during the May and August 2023 surveys.

2.3.3 Vegetation

Vegetation communities are based on descriptions provided in Manual of California Vegetation. One vegetation community occurs in the Project site, Wild oats and annual brome grassland (*Avena* spp. – *Bromus* spp. Herbaceous Semi-Natural Alliance) (CNPS 2023a). This community, often referred to as California annual grassland, is characterized by an herbaceous layer dominated by non-native grass species including wild oats (*Avena* spp.), bromes (*Bromus* spp.), and barleys (*Hordeum* spp.). The herbaceous layer is less than 1.2 meters in height and cover is open to continuous (CNPS 2023). Annual grassland covers the entire Project site outside of the aquatic features (88.24 acres).

Protocol-level rare plant surveys were conducted on May 16, 2023, August 2, 2023, January 18, 2024, April 15, 2024, May 3, 2024, and May 24, 2024, to identify special-status rare plant species within the updated Project site boundaries. Dudek qualified biologists surveyed the entire Project site on foot in approximately 20-meter parallel transects to provide complete visual coverage within the updated project boundaries and gen-tie alignment. Rare plants surveys were conducted in accordance with the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 2000), the Protocol for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018), and the CNPS Botanical Survey Guidelines (CNPS 2001). Three individuals of big tarplant (*Blepharizonia plumosa*) were observed during protocol-level botanical surveys conducted on August 2, 2023.

Big tarplant is an annual herb that endemic to California, with limited distribution throughout the state. This species has a California Rare Plant Rank rank of 1B.1 (rare, threatened or endangered in California and elsewhere), and is a covered species under the East Alameda County Conservation Strategy (EACCS). This species prefers habitats in valley grassland vegetation communities, as well as in foothill woodlands and chaparral (Calflora 2023). Threats to this species include urbanization, disking, residential development, and encroachment by non-native plant species (CNPS 2023b). All three individuals are located near the southwest corner of the PG&E substation in an area of sparse grassland that shows evidence of drainage patterns from the surrounding hills, including cracked soils, reduced grass cover and increased scrub species cover, and increased bare ground.

2.4 Conservation Measures Incorporated into the Project

The Project has been designed to minimize its footprint and thereby minimize disturbance of habitat. In addition, the Project will adhere to applicable Avoidance and Minimization Measures (AMMs) directly from the EACCS and the Programmatic Biological Opinion for the EACCS (USFWS 2012). These approaches to address the potential impacts of Project activities are described in Chapter 5.

Chapter 3. Project Impacts to Special-Status Species

This effects analysis evaluates the potential direct and indirect effects of Project activities on California tiger salamander, Crotch's bumble bee, San Joaquin kit fox and western burrowing owl and their habitats compared to current baseline conditions. Direct effects are the immediate effects of the construction activities on these species or their habitats. Indirect effects occur later in time and may occur outside of the construction area but are reasonably certain to occur.

3.1 California Tiger Salamander

3.1.1 Distribution, Biology, and Habitat Requirements

The Central California DPS of California tiger salamander is federally listed as threatened. This species is a large, stocky, terrestrial salamander with a broad, rounded snout. Total body length of adults range from 6 to 9.5 inches and coloration consists of randomly occurring white or yellow spots on an all-black body (USFWS 2017). Larvae coloration is variable, with a majority being pale and sometimes having dark grey spots.

The California tiger salamander Central California DPS is restricted to disjunct populations that form a ring along the foothills of the Central Valley and Inner Coast Range from San Luis Obispo, Kern, and Tulare Counties in the south, to Sacramento and Yolo Counties in the north. The recovery priority number for the California tiger salamander Central California DPS is 9C, which indicates that the DPS faces a moderate degree of threat, has a high potential for recovery, and is in conflict with development projects, such as conversion to agriculture or urban development.

This species is found in annual grassland, valley-foothill hardwood, and valley-foothill riparian habitats and breeds in vernal pools, ephemeral pools, stock ponds, and (infrequently) along streams and human-made water bodies if predatory fishes are absent. This species has an obligate biphasic life cycle where it utilizes both aquatic habitats as larvae and terrestrial habitats as adults. Although larvae develop in the ponds and wetlands where they hatch, once an individual undergoes metamorphosis, it will leave its natal pond and enters a burrow or other upland refugia, and then spend most its life underground, generally only returning to aquatic habitats to breed. Adult California tiger salamander engage in mass migrations during a few rainy nights per year, typically from November through April, although migrating adults have been observed as early as October and as late as May. During these rain events, adults will travel overland to breeding ponds at night to mate before returning to their underground burrows. Males typically arrive before the females and generally remain in the ponds longer than females (USFWS 2017). This species has been documented to cover distances from 492 feet to 1.3 miles, traveling from breeding ponds to upland terrestrial habitat (Orloff 2011). On average, it is estimated that California tiger salamander migrate an average of 1,844 feet and could potentially migrate up to 1.5 miles each breeding season (Searcy and Shaffer 2011).

3.1.2 Occurrence of the California Tiger Salamander Central California Tiger Salamander in the Project Area

There are 209 California Natural Diversity Database (CNDDB) occurrences for California tiger salamander within a 9-quadrangle search of the Project site (Figure 5). The nearest documented occurrence is approximately 1.6 miles southwest of the Project site from 2012 (Occ. No. 1003), but there are numerous other records within 5 miles of the Project site (CDFW 2024). The Project site also occurs within the EACCS Conservation Zone 10 or designated as "California tiger salamander North" and is a high priority for the EACCS for protecting a substantial portion of potential breeding ponds within this area (ICF 2010).

The habitat on the Project site is suitable upland refuge and dispersal habitat for this species, consisting of grassland with small mammal burrows. Two nearby stock ponds provide suitable aquatic breeding habitat approximately 0.3 miles from the Project site (Appendix B). No California tiger salamanders were observed during the field surveys, but this species is extremely difficult to detect without focused surveys in accordance with USFWS and CDFW-sanctioned protocols (USFWS 2003). A protocol-level habitat assessment for California tiger salamander was conducted on August 2, 2023, for suitable aquatic habitats identified within, and in the vicinity of, the Project site to identify potential aquatic breeding sites within dispersal distance of the Project site. Not all aquatic habitats within 1.24 miles were able to be surveyed due to access restrictions. Habitat assessments were conducted in accordance with the USFWS Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (USFWS 2003). Aquatic features were coarsely mapped along top of bank using ArcGIS Field Maps (Esri).

3.1.3 Potential for Take of the Central California Tiger Salamander

The Project could result in direct or indirect impacts on California tiger salamander. Direct impacts include mortality or injury from ground-disturbing activities, construction equipment, grading, or other construction activities; and permanent loss of potential upland and dispersal habitat within the construction footprint. These species are known to use burrows for refuge, which may be crushed by the weight of construction equipment, building supplies, or grading on the surface, even if the burrow is of sufficient depth to avoid direct excavation. The AMMs in Chapter 5 are intended to reduce the likelihood of direct take during Project activities. Indirect impacts include disturbance due to increased human activity and impacts to water quality from construction activities.

3.2 Crotch's Bumble Bee

3.2.1 Distribution, Biology, and Habitat Requirements

Crotch's bumble bee is a state candidate for listing as endangered under CESA and is not covered under the EACCS. The Crotch's bumble bee occurs almost exclusively in California, currently primarily in the Central Valley, but has been described as having historically occupied grasslands and shrublands in southern to central California. Bumble bees are known to be generalist pollinators but have preferences based on flower color including purple, blue, and yellow. Specifically, this species is found in grasslands with food plant genera that include *Antirrhinum*, *Phacelia*, *Clarkia*, *Dendromecon*, *Eschscholzia*, and *Eriogonum*, among others (USFS 2012). The queen flight season for this species is February to March, and the colony active period (highest detection probability) is April to August (CDFW 2023). Additionally, suitable habitat may contain any of the following: 1) areas of grasslands and upland scrub that contain requisite habitat elements, such as small mammal burrows and forage plants; 2) potential nest habitat (late February through late October) containing underground abandoned small mammal burrows, perennial bunch grasses and/or thatched annual grasses, brush piles, old bird nests, dead trees or hollow logs; 3) overwintering sites (November through early February) utilized by mated queens in self-excavated hibernacula potentially in soft, disturbed soil, sandy, well-drained, or loose soils, under leaf litter or other debris with ground cover requisites such as barren areas, tree litter, bare-patches within short grass in areas lacking dense vegetation.

3.2.2 Occurrence of the Crotch's Bumble Bee in the Project Area

There is 1 CNDDB occurrence for Crotch's bumble bee within a 9-quadrangle search of the Project site (Figure 5). This documented occurrence is approximately 8 miles northeast of the Project site from 1959, a record of a collection in May (Occ. No. 323; CDFW 2024).

The habitat on site is suitable for this species as the only vegetation community is annual grassland. Focused Crotch's bumble bee habitat assessments were conducted on May 16 and August 2, 2023, and January 18, 2024. Scattered floral resources were observed including lupines (*Lupinus* spp.), Mexican whorled milkweed (*Asclepias fascicularis*), and exserted Indian paintbrush (*Castilleja exserta*), along with potential nesting substrates such as bare cracked soil, small rocky areas, and small rodent burrows. No bumble bee species were seen during the field surveys.

3.2.3 Potential for Take of the Crotch's Bumble Bee

Direct impacts to Crotch's bumble bee include mortality or injury from ground-disturbing activities, construction equipment, grading, or other construction activities; and permanent loss of potential foraging and nesting habitat within the construction footprint. Direct mortality and habitat reduction will contribute to further population declines in this species. The AMMs in Chapter 5 are intended to reduce the likelihood of direct take during Project activities.

3.3 San Joaquin Kit Fox

3.3.1 Distribution, Biology, and Habitat Requirements

San Joaquin kit fox is federally listed as endangered. This species is a small, tan fox with a bushy black-tipped tail. They are the smallest foxes in North America, with an average body length of 20 inches and a weight of about 5 pounds. It has a narrow nose and a small, slim body. The foot pad of kit foxes are small by comparison with other canids. The fox is specially adapted for its desert habitat because it's large, close-set ears help dissipate heat, keeping it cool in the hot desert (USFWS 2024).

Currently, they occur in some areas of suitable habitat within the San Joaquin Valley and in the surrounding foothills of the Coast Range, Sierra Nevada, and Tehachapi Mountains from Kern County north to Contra Costa, Alameda, and San Joaquin Counties. Historically, San Joaquin kit fox were believed to inhabit the area from Contra Costa and Jan Joaquin Counties in the north to Kern County in the south (USFWS 1998).

This species occurs in a variety of habitats, including grasslands; scrublands; vernal pool areas; alkali meadows and playas; and an agricultural matrix of row crops, irrigated pastures, orchards, vineyards, and grazed annual grasslands. They prefer habitats with loose textured soils that are suitable for digging, but they occur on virtually every soil type. Dens are generally located in open areas with grass and/or scattered brush, and seldom occur in areas with thick brush. They feed primarily on small mammals, including California ground squirrels, rabbits, mice, kangaroo rats, and have been known to prey on ground-nesting birds, reptiles, and insects (USFWS 1998).

3.3.2 Occurrence of the San Joaquin Kit Fox in the Project Area

There are 44 CNDDB occurrences for San Joaquin kit fox within a 9-quadrangle search of the Project site (Figure 5). The nearest documented occurrence is approximately 0.3 miles southwest of the Project site, a historical record from 1984 (Occ. No. 6); multiple other historical records are within 5 miles of the Project site, all prior to 1992 (CDFW 2024). The Project site also falls within the EACCS Conservation Zone 10 for San Joaquin kit fox or "San Joaquin kit fox East." EACCS indicates this area likely supports connectivity through the Altamont Hills for SJKF but connectivity across I-580 has been compromised by infrastructure development (ICF 2010).

The habitat on the Project site is moderate-quality annual grassland for San Joaquin kit fox. Focused burrow surveys were conducted on May 16 and August 2, 2023, and January 18, 2024, and additional burrow assessment was conducted during protocol-level burrowing owl surveys on April 12, May 3, May 24, and June 17, 2024, to identify a variety of animal burrows within the updated Project site boundaries, including for San Joaquin kit fox. Several large burrow tailings were observed on the eastern side of the Project site along Patterson Pass Road, evidence of highly suitable soils for burrowing. No San Joaquin kit foxes were observed during the field surveys.

3.3.3 Potential for Take of the San Joaquin Kit Fox

The Project site occurs within the range of the species and may directly and indirectly impact potential dispersal and migration habitat for San Joaquin kit fox. The Project will have temporary and permanent impacts to potential dispersal and migration habitat; however, these impacts are considered minimal as the Project site is within the northern limits of their dispersal or migration boundary. There are no

permanent or temporary impacts to potential breeding or denning habitat within the Project site. The AMMs in Chapter 5 are intended to reduce the likelihood of direct take during Project activities.

3.4 Western Burrowing Owl

3.4.1 Distribution, Biology, and Habitat Requirements

The western burrowing owl is a State candidate species. The western burrowing owl is a small ground-dwelling owl that prefers open, arid, and relatively flat to rolling terrain characterized by low growing vegetation and the presence of burrows (Haug et al. 1993; Klute et al. 2003). Common habitat types include grasslands, deserts, prairies, shrub steppes, ephemeral washes, open agricultural areas, and sometimes in human altered environments such as vacant lots, golf courses, community parks, and airports (Haug et al. 1993; Rosenberg and Haley 2004). western burrowing owls can tolerate a certain amount of non-threatening human activity, noise, and disturbance as long as essential habitat requirements are met (Coulombe 1971; Voous 1988; Johnsgard 1998). Essential habitat requirements include short vegetation for foraging opportunities and suitable burrows for nesting, roosting, and predator avoidance.

Western burrowing owl inhabits arid lands throughout much of the western United States and southern interior of western Canada (Haug et al. 1993). In California, western burrowing owl distribution is widely scattered throughout much of the lowlands where suitable habitat persists (Shuford and Gardali 2008). Western burrowing owls in California are predominately nonmigratory year-round residents (Klute et al. 2003). Resident owls breed in California, generally between February 1 and August 31, with peak breeding activity from April through July (CDFW 2012; Haug et al. 1993). After breeding, resident western burrowing owls may move from their breeding areas to wander within the region during the winter months, particularly in central and southern California (Coulombe 1971; Martin 1973; Botelho 1996). Western burrowing owls exhibit strong site fidelity and adults often return to the same burrow or a nearby area each year for breeding.

Western burrowing owls may utilize different areas throughout the year for breeding, foraging, overwintering, dispersal, or transient/migration stops, and therefore may only occupy areas for a short period of the year. Western burrowing owls require open areas with low and sparse growing vegetation for foraging opportunities and unobstructed visibility for predator avoidance (Klute et al. 2003). Western burrowing owls are most active in foraging bouts during night, dawn, and dusk, but may be active throughout the day. As an opportunistic foraging generalist, a western burrowing owls diet primarily comprises large insects and small rodents but can include a wide variety of prey.

Western burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox (*Vulpes* sp.), desert tortoise (*Gopherus agassizii*), and other wildlife. They generally depend on other species to dig suitable burrows for use but may also use anthropogenic surrogate burrows such as rubble piles or drainage pipes when natural burrows are limited (Ronan 2002). If formerly occupied burrows are badly damaged or collapsed, western burrowing owls cannot repair them and must seek alternate sites.

Nesting western burrowing owls select nest burrows with shorter vegetation, greater burrow density, and greater percentage of bare ground than generally available (Plumpton and Lutz 1993). western burrowing owls have a strong affinity for previously occupied nesting and wintering sites and will often return to previously occupied burrows, particularly if they had successful reproduction in previous years (Gervais et al. 2008). Although western burrowing owls nest within one burrow, they usually occupy a “nest site” composed of both the nesting cavity burrow and nearby satellite burrows where nesting activities are not occurring. In addition, western burrowing owls may change burrows several times during the breeding season, starting when nestlings are about three weeks old (Haug et al. 1993).

Historically, the western burrowing owl was widespread and described as common or abundant in California. Western burrowing owls occurred throughout most of California’s counties where suitable

low growing vegetation habitat existed except for coastal counties north of Marin County and in mountainous areas (Shuford and Gardali 2008). The highest densities of western burrowing owl were historically reported in interior valleys and coastal lowlands (Grinnell and Miller 1944).

The most current research indicates that the western burrowing owl range in California has not drastically changed from its historical range, but the species has disappeared or greatly declined as a breeding bird in many areas that were previously occupied. Western burrowing owls have been extirpated as a breeding species from at least 19 of the 51 California counties that it previously occurred in and is nearing extirpation in an additional 10 counties (DeSante et al. 1996, 2007; Wilkerson and Siegel 2010). This approximately equates to a 16 percent decrease in the former California breeding range and is nearing extirpation in an additional 13 percent of the former breeding range as a result of numerous anthropogenic sources. The most important of these are direct mortality and permanent habitat loss caused by urbanization, and reduction or elimination of their primary burrow excavators, ground squirrels, from grazing and agricultural lands.

3.4.2 Occurrence of the Western Burrowing Owl in the Project Area

There are three documented occurrences adjacent or overlapping with the PSA, from 1982, 2002, and 2006 (Occ. Nos. 48, 468, and 1229). Multiple other documented occurrences are within 5 miles of the PSA, most recently from 2015 (CDFW 2024).

The habitat on the Project site is moderate-quality annual grassland for western burrowing owl. Focused burrow surveys were conducted on May 16 and August 2, 2023, and January 18, 2024, and additional burrow assessment was conducted during protocol-level burrowing owl surveys on April 12, May 3, May 24, and June 17, 2024, to identify a variety of animal burrows within the updated Project site boundaries, including for western burrowing owl. Additional protocol-level burrowing owl surveys were conducted on December 12, 2024, January 4, 11, and 31, 2025 to determine winter usage at the Project site. Several large burrow tailings were observed on the eastern side of the Project site along Patterson Pass Road, evidence of highly suitable soils for burrowing. No western burrowing owls or their sign were observed during any of the field surveys.

3.4.3 Potential for Take of the Western Burrowing Owl

The Project site occurs within the range of the species and may directly and indirectly impact potential foraging and nesting habitat for western burrowing owl; however, no owls have been observed within the Project site following multiple rounds of surveys in 2023, 2024 and 2025. The Project will have temporary and permanent impacts to potential foraging and nesting habitat. The AMMs in Chapter 5 are intended to reduce the likelihood of direct take during Project activities.

Chapter 4. Project Impact on Continued Existence of the Covered Species

4.1 Jeopardy Analysis for California Tiger Salamander

The *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (Ambystoma californiense)* (USFWS 2017) and the *5-Year Review, California Tiger Salamander, Central California Distinct Population Segment (Ambystoma californiense)* (USFWS 2023b) states that virtually nothing is known concerning the historical abundance of the Central California tiger salamander. The available data suggest that most extant populations consist of relatively small numbers of breeding adults, in the range of a few to a few dozen pairs, and that populations that number above 100 breeding individuals are rare. California tiger salamanders also exhibit high year-to-year variation in survey counts. Studies show high variability in numbers of breeding adults observed, as well as numbers of larvae produced in a given year; and large annual variation in breeding activity by Central California tiger salamanders has been reported in Alameda County. Also, in some cases, the CNDDB lists California tiger salamander as "presumed extant," but that information may now be incorrect because the California tiger salamander and/or their breeding habitat at that location may have been extirpated by development.

The USFWS determined that there was a 20.7% loss of known Central California tiger salamander occurrences as of 2002 because of habitat loss and degradation (USFWS 2017).

4.1.1 Potential Project Impacts

Project activities will result in 60.7 acres of permanent impacts and 6.7 acres of temporary impacts to California tiger salamander upland and dispersal habitat associated with the grassland vegetation community. There is no suitable aquatic habitat present within the Project site and the nearest stock ponds that provide suitable aquatic breeding habitat are approximately 0.3 miles from the Project study area. Therefore, the Project will not jeopardize the continued existence of the species.

4.1.2 Cumulative Impacts

Implementation of AMMs mentioned in Chapter 5 would ensure that potential adverse effects to California tiger salamander are minimized. Potential Project effects to this species would be direct temporary and permanent effects associated with dispersal and upland habitat only. Because the Project does not have any temporary or permanent effects to breeding habitat for this species, along with the implementation of AMMs, the Project is not expected to have a measurable effect on the local and regional population of these species and is therefore not cumulatively considerable.

4.2 Jeopardy Analysis for Crotch's Bumble Bee

The petition to list Crotch's bumble bee as endangered under CESA (The Xerces Society et al. 2018) states that this species was historically common in the southern two-thirds of California, but is now absent from most of its range, specifically in the center of its range including the Central Valley. In the Central Valley, agriculture and rapid urbanization have been the main threat to this species nesting and foraging habitat. It is estimated that this species has gone through an average decline of 67%, including relative abundance and persistence in their current range (The Xerces Society et al. 2018). Tracking extant populations of Crotch's bumble bee is limited due to the species still being surveyed in its historical range throughout the state and additional studies on the species and their habitat are still recommended to help with this effort.

4.2.1 Potential Project Impacts

Project activities will result in 60.7 acres of permanent impacts and 6.7 acres of temporary impacts to Crotch's bumble bee nesting and foraging habitat associated with the grassland vegetation community. Although suitable nesting habitat is present, no bumble bee species were observed during the 2023 and 2024 field surveys. Therefore, the Project will not jeopardize the continued existence of the species.

4.2.2 Cumulative Impacts

Implementation of AMMs mentioned in Chapter 5 would ensure that potential adverse effects to Crotch's bumble bee are minimized. Potential Project effects to this species would be direct temporary and permanent effects associated with nesting and foraging habitat. Although suitable nesting habitat will be impacted, there is only 1 historical CNDDB record within a 9-quadrangle search of the Project site and no bumble bees were observed during focused surveys. With the implementation of AMMs, the Project is not expected to have a measurable effect on the local and regional population of these species and is therefore not cumulatively considerable.

4.3 Jeopardy Analysis for San Joaquin Kit Fox

The *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS 1998) and the *5-Year Review, San Joaquin kit fox (Vulpes macrotis mutica)* (USFWS 2020) states that San Joaquin kit foxes can exhibit significant population size variability. Most of the populations in natural habitats fluctuate regularly depending on environmental conditions, including extremes of rainfall that have effects on prey species.

San Joaquin kit fox populations have decreased due to natural habitat conversion to agriculture and urban development, creating fragmented habitat throughout its range. This species requires habitat corridors of appropriate size so this species can maintain its genetic and ecological diversity and distribution of resilient populations across its range.

4.3.1 Potential Project Impacts

Project activities will result in 60.7 acres of permanent impacts and 6.7 acres of temporary impacts to San Joaquin kit fox dispersal and migration habitat associated with the grassland vegetation community. There is no suitable breeding or denning habitat present within the Project site. Therefore, the Project will not jeopardize the continued existence of the species.

4.3.2 Cumulative Impacts

Implementation of AMMs mentioned in Chapter 5 would ensure that potential adverse effects to San Joaquin kit fox are minimized. Because the Project impacts to this species' habitat are not anticipated to have a significant impact on the species or jeopardize its continued existence, it is not expected to have a measurable effect on the local and regional population of this species and is therefore not cumulatively considerable.

4.4 Jeopardy Analysis for Western Burrowing Owl

The petition to list western burrowing owl as threatened or endangered under CESA (CDFW 2024) states that the California counties where burrowing owls are thought to have been extirpated, including portions of the northern Central Valley, all of the coastal Bay Area, most of the central and southern coast, as well as some areas in the interior of the Bay Area. The petition states areas of extirpation comprise roughly 16% of the burrowing owls' former range. The petition states burrowing owls are likely to be very close to being extirpated from another 13% of their range, including in portions of the Central Valley, the remaining areas in the interior Bay Area, and the central and southwestern coasts.

4.4.1 Potential Project Impacts

Project activities will result in 60.7 acres of permanent impacts and 6.7 acres of temporary impacts to potential western burrowing owl foraging and nesting habitat associated with the grassland vegetation community. Although suitable nesting habitat is present, no western burrowing owls were observed during the 2023, 2024 and 2025 field surveys. Therefore, the Project will not jeopardize the continued existence of the species.

4.4.2 Cumulative Impacts

Implementation of AMMs mentioned in Chapter 5 would ensure that potential adverse effects to western burrowing owl are minimized. Because the Project impacts to this species' habitat are not anticipated to have a significant impact on the species or jeopardize its continued existence, it is not expected to have a measurable effect on the local and regional population of this species and is therefore not cumulatively considerable.

Chapter 5. Minimization and Mitigation Measures

The Project applicant has worked closely with wildlife biologists, in consultation with resource agencies, through the design process to minimize impacts on California tiger salamander, Crotch's bumble bee, San Joaquin kit fox, and western burrowing owl. The Project site is within the EACCS; therefore, avoidance, minimization, and mitigation measures described below for each species are directly from the EACCS and the Programmatic Biological Opinion for the EACCS (USFWS 2012).

5.1 General Avoidance and Minimization Measures for Construction and Decommissioning

Implementation of applicable general avoidance and minimization measures will reduce potential adverse effects to EACCS special-status wildlife during construction of the Project. These measures are listed below.

GEN - 01 Employees and contractors performing construction activities will receive environmental sensitivity training. Training will include review of environmental laws and Avoidance and Minimization Measures (AMMs) that must be followed by all personnel to reduce or avoid effects on covered species during construction activities.

GEN - 02 Environmental tailboard trainings will take place on an as needed basis in the field. The environmental tailboard trainings will include a brief review of the biology of the covered species and guidelines that must be followed by all personnel to reduce or avoid negative effects to these species during construction activities. Directors, managers, superintendents, and the crew foremen and forewomen will be responsible for ensuring that crewmembers comply with the guidelines.

GEN - 03 Contracts with contractors, construction management firms, and subcontractors will obligate all contractors to comply with these requirements, AMMs.

GEN - 04 The following will not be allowed at or near work sites for covered activities: trash piles, firearms, open fires (such as barbecues), hunting, and pets (except for safety in remote locations).

GEN - 05 Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.

GEN - 06 Off-road vehicle travel will be minimized.

GEN - 07 Vehicles will not exceed a speed limit of 15 mph on unpaved roads within natural land cover types, or during off road travel.

GEN - 08 Vehicles or equipment will not be refueled within 100 feet of a wetland, stream, or other waterway unless a bermed and lined refueling area is constructed.

GEN - 09 Vehicles shall be washed only at designated areas. No washing of vehicles shall occur at job sites.

GEN - 10 To discourage the introduction and establishment of invasive plant species, seed mixtures/straw used within natural vegetation will be either rice straw or weed free straw.

GEN - 11 Pipes, culverts, and similar materials greater than four inches in diameter, will be stored so as to prevent covered wildlife species from using these as temporary refuges, and these materials will be inspected each morning for the presence of animals prior to being moved.

GEN - 12 Erosion control measures will be implemented to reduce sedimentation in wetland habitat occupied by covered animal and plant species when activities are the source of potential erosion problems. Plastic monofilament netting (erosion control matting) or similar material containing netting shall not be used at the Project. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

GEN - 13 Stockpiling of material will occur such that direct effects to covered species are avoided. Stockpiling of material in riparian areas will occur outside of the top of bank, and preferably outside of the outer riparian dripline and will not exceed 30 days.

GEN - 14 Grading will be restricted to the minimum area necessary.

GEN - 15 Prior to ground disturbing activities in sensitive habitats, Project construction boundaries and access areas will be flagged and temporarily fenced during construction to reduce the potential for vehicles and equipment to stray into adjacent habitats.

GEN - 16 Significant earth moving-activities will not be conducted in riparian areas within 24 hours of predicted major storms or within 24 hours after major storms (defined as 1-inch of rain or more).

GEN - 17 Trenches will be backfilled as soon as possible. Open trenches will be searched each day prior to construction to ensure no covered species are trapped. Earthen escape ramps will be installed at intervals prescribed by a qualified biologist (if necessary).

5.2 California Tiger Salamander Avoidance and Minimization Measures

Implementation of applicable amphibian avoidance and minimization measures will reduce potential adverse effects to EACCS-covered amphibians that utilize the site as upland refuge and overland migration habitat during construction of the Project. In addition to the general measures listed above, the following species AMMs will be implemented during construction:

AMPH-2. Habitat: Riparian habitat and grasslands within 2-miles of aquatic habitat

- If aquatic habitat is present, a qualified biologist will stake and flag an exclusion zone prior to activities. The exclusion zone will be fenced with orange construction zone and erosion control fencing (to be installed by construction crew). The exclusion zone will encompass the maximum practicable distance from the work site and at least 500 feet from the aquatic feature wet or dry (EACCS AMPH-1).
- A qualified biologist will conduct preconstruction surveys prior to activities define a time for the surveys (before groundbreaking). If individuals are found, work will not begin until they are moved out of the construction zone to a USFWS/CDFW approved relocation site.
- A Service-approved biologist should be present for initial ground disturbing activities.
- Barrier fencing will be constructed around the worksite to prevent amphibians from entering the work area. Barrier fencing will be removed within 72 hours of completion of work.
- No monofilament plastic will be used for erosion control.
- Construction personnel will inspect open trenches in the morning and evening for trapped amphibians.

- A qualified biologist possessing a valid ESA Section 10(a)(1)(A) permit or USFWS approved under an active biological opinion, will be contracted to trap and to move amphibians to nearby suitable habitat if amphibians are found inside fenced area.
- Work will be avoided within suitable habitat from October 15 (or the first measurable fall rain of 1" or greater) to May 1.

5.2.1 Compensatory Mitigation

With the implementation of the above avoidance and minimization measures, impacts to California tiger salamander will be minimized. To compensate for direct impacts California tiger salamander, the Applicant will purchase and ensure long-term conservation of a turnkey mitigation property within the same Conservation Zone as the Project site (Conservation Zone 10) as described in Appendix C. Prior to the purchase of this mitigation property, the Applicant would obtain approval from CEC staff, in coordination with CDFW, to ensure the mitigation lands are appropriate to compensate for the impacts of the Project. The EACCS standardized mitigation ratios for California tiger salamander are 3:1 (three acres preserved for each acre removed).

Therefore, Permanent impacts will be mitigated at a minimum of 3:1 for California tiger salamander (See Table 7 in Section 5.7). Final mitigation ratios will be based on consultation with CDFW.

5.3 Crotch's Bumble Bee Avoidance and Minimization Measures

Pre-construction bumble-bee surveys and avoidance buffers conducted per the recommendations outlined in CDFW's Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species (CDFW 2023) will avoid potential impacts to these species by preventing direct harm. The following measures are recommended to avoid, minimize, or mitigate impacts to Crotch's bumble bee:

- The pre-construction survey will be performed by a biologist with expertise in surveying for bumble bees and include at least three (3) survey passes that are not on sequential days or in the same week, preferably spaced two to four weeks apart. The timing of these surveys shall coincide with the Colony Active Period (April 1 through August 31 for Crotch bumble bee). Surveys shall occur at least 1 hour after sunrise and 2 hours before sunset. Surveys will not be conducted during wet conditions (e.g., foggy, raining, or drizzling) and surveyors will wait at least 1 hour following rain. Optimal surveys are when there are sunny to partly sunny skies that are greater than 60° Fahrenheit. Surveys may be conducted earlier if other bees or butterflies are flying. Surveys shall not be conducted when it is windy (i.e., sustained winds greater than 8 mph). Within non-developed habitats, the biologist shall look for nest resources suitable for bumble bee use. Ensuring that all nest resources receive 100% visual coverage, the biologist shall watch the nest resources for up to five minutes, looking for exiting or entering worker bumble bees. Worker bees should arrive and exit an active nest site with frequency, such that their presence would be apparent after five minutes of observation. If a bumble bee worker is detected, then a representative shall be identified to species. Biologists should be able view several burrows at one time to sufficiently determine if bees are entering/exiting them depending on their proximity to one another. It is up to the discretion of the biologist regarding the actual survey viewshed limits from the chosen vantage point which would provide 100% visual coverage; this could include a 30- to 50-foot-wide area. If a nest is suspected, the surveyor can block the entrance of the possible nest with a sterile vial or jar until nest activity is confirmed (no longer than 30 minutes).

- If nest resources occupied by Crotch bumble bee are detected within the construction area, no construction activities shall occur within 100 feet of the construction zone, or as determined by a qualified biologist through evaluation of topographic features or distribution of floral resources. The nest resources will be avoided for the duration of the Crotch bumble bee nesting period (February 1 through October 31). Outside of the nesting season, it is assumed

that no live individuals would be present within the nest as the daughter queens (gynes) usually leave by September, and all other individuals (original queen, workers, males) die. The gyne is highly mobile and can independently disperse to outside of the construction footprint to proposed open space or other suitable areas beyond that have suitable hibernacula resources. Because construction will have occurred in the area outside of the occupied nesting resources, no suitable habitat will be present in the impact area, and it is assumed that new queens will disperse to habitat outside of the construction area.

- If the nest resources cannot be avoided, as outlined in this measure, the project applicant will consult with CDFW regarding the need to obtain an Incidental Take Permit.

- In the event an Incidental Take Permit is needed, mitigation for direct impacts to Crotch's bumble bee will be fulfilled through compensatory mitigation at a minimum 1:1 nesting habitat replacement of equal or better functions and values to those impacted by the Project, or as otherwise determined through the Incidental Take Permit process. Mitigation will be accomplished either through off-site conservation or through a CDFW-approved mitigation bank. If mitigation is not purchased through a mitigation bank, and lands are conserved separately, a cost estimate will be prepared to estimate the initial start-up costs and ongoing annual costs of management activities for the management of the conservation easement area(s) in perpetuity. The funding source will be in the form of an endowment to help the qualified natural lands management entity that is ultimately selected to hold the conservation easement(s). The endowment amount will be established following the completion of a Project-specific Property Analysis Record to calculate the costs of in-perpetuity land management. The Property Analysis Record will take into account all management activities required in the Incidental Take Permit to fulfill the requirements of the conservation easement(s), which are currently in review and development.

5.3.1 Compensatory Mitigation

With the implementation of the above avoidance and minimization measures, compensatory mitigation proposed is associated with the preservation of nesting and foraging habitat for this species. To compensate for direct impacts on nesting and foraging habitat for Crotch's bumble bee, the Applicant will purchase a turnkey mitigation property within the same Conservation Zone as the Project site (Conservation Zone 10) as described in Appendix C. Prior to the purchase of this mitigation property, the Applicant would obtain approval from CEC staff, in coordination with CDFW, to ensure the mitigation lands are appropriate to compensate for the impacts of the Project. Since this species is not included in the EACCS, the standard mitigation ratio for other species in the plan (3:1) will be applied to this species. Final mitigation ratios will be based on consultation with CDFW.

5.4 San Joaquin Kit Fox Avoidance and Minimization Measures

Implementation of applicable mammal avoidance and minimization measures will avoid potential adverse effects to EACCS-covered mammals that may utilize the project site during construction of the Project In addition to the general measures listed above, the following species avoidance and minimization measures will be implemented during construction:

- If potential dens are present, their disturbance and destruction will be avoided.

- If potential dens are located within the proposed work area and cannot be avoided during construction, qualified biologist will determine if the dens are occupied or were recently occupied using methodology coordinated with the USFWS and CDFW. If unoccupied, the qualified biologist will collapse these dens by hand in accordance with USFWS procedures (USFWS 2011).

- Exclusion zones will be implemented following USFWS procedures (USFWS 1999) or the latest USFWS procedures available at the time. The radius of these zones will follow current

standards or will be as follows: Potential Den 50 feet; Known Den 100 feet; Natal or Pupping Den – to be determined on a case by case basis in coordination with USFWS and CDFW.

- Pipes will be capped, and trenches will contain exit ramps to avoid direct mortality while construction area is active.

5.4.1 Compensatory Mitigation

With the implementation of the above avoidance and minimization measures, compensatory mitigation proposed is associated with the preservation of dispersal and migration habitat for this species. To compensate for direct impacts on dispersal and migration habitat for San Joaquin kit fox, the Applicant will purchase a turnkey mitigation property within the same Conservation Zone as the Project site (Conservation Zone 10) as described in Appendix C. Prior to the purchase of this mitigation property, the Applicant would obtain approval from CEC staff, in coordination with CDFW, to ensure the mitigation lands are appropriate to compensate for the impacts of the Project. The EACCS standardized mitigation ratios for San Joaquin kit fox are 3:1 (three acres preserved for each acre removed) (ICF 2010). Final mitigation ratios will be based on consultation with CDFW.

5.5 Western Burrowing Owl Avoidance and Minimization Measures

Implementation of applicable bird avoidance and minimization measures will avoid potential adverse effects to EACCS-covered birds that may utilize the project site during construction of the Project In addition to the general measures listed above, the following species avoidance and minimization measures will be implemented during construction:

- If an active nest is identified near a proposed work area work will be conducted outside of the nesting season (March 15 to September 1).

- If an active nest is identified near a proposed work area and work cannot be conducted outside of the nesting season, a no‐activity zone will be established by a qualified biologist. The no‐activity zone will be large enough to avoid nest abandonment and will at a minimum be 250‐feet radius from the nest.

- If burrowing owls are present at the site during the non‐breeding period, a qualified biologist will establish a no‐activity zone of at least 150 feet.

- If an effective no‐activity zone cannot be established in either case, an experienced burrowing owl biologist will develop a site‐specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls.

5.5.1 Compensatory Mitigation

With the implementation of the above avoidance and minimization measures, compensatory mitigation proposed is associated with the preservation of nesting and foraging habitat for this species. To compensate for direct impacts on potential nesting and foraging habitat for western burrowing owl, the Applicant will purchase a turnkey mitigation property within the same Conservation Zone as the Project site (Conservation Zone 10) as described in Appendix C. Prior to the purchase of this mitigation property, the Applicant would obtain approval from CEC staff, in coordination with CDFW, to ensure the mitigation lands are appropriate to compensate for the impacts of the Project. The EACCS standard mitigation ratio for this species in the plan (3:1) will be applied. Final mitigation ratios will be based on consultation with CDFW.

5.6 Funding

To compensate for direct impacts on habitat for California tiger salamander, Crotch's bumble bee, San Joaquin kit fox and western burrowing owl, the Applicant will purchase a turnkey mitigation property within the same Conservation Zone as the Project site (Conservation Zone 10) as described in Appendix C. Prior to the purchase of this mitigation property, the Applicant would obtain approval from CEC staff, in coordination with CDFW, to ensure the mitigation lands are appropriate to compensate for the impacts of the Project. The Applicant does not plan to provide alternate financial assurances to cover the cost of mitigation. Table 7 provides the proposed mitigation ratios and acreages for each species. EACCS Mitigation Scoring sheets are provided in Appendix D.

Table 7. Proposed Compensatory Mitigation for Listed Species

Species	Permanent Impacts		
	Impact (acres)	Ratio	Mitigation (acres)
California tiger salamander	60.7	3:1	182.1
Crotch's bumble bee	60.7	3:1	182.1
San Joaquin kit fox	60.7	3:1	182.1
Western burrowing owl	60.7	3:1	182.1

Chapter 6. Certification

I certify that the information submitted in this application is complete and accurate to the best of my knowledge and belief. I understand that any false statement herein may subject me to suspension or revocation of this permit and to civil and criminal penalties under the laws of the State of California.

Signature _____ Date _____

Patrick Leitch, Chief Operating Officer
Levy Alameda, LLC
155 Wellington Street West, Suite 2930
Toronto, Ontario M5V 3H1, Canada
Email: pleitch@capstoneinfra.com

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APPENDIX A – Figures

● Project Location

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Stantec

Notes
1. Coordinate System: NAD 1983 UTM Zone 10N
2. Data Sources: California State Parks, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Esri, NASA, NGA, USGS, San Joaquin County GIS/Planning, California State Parks, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS, Esri, USGS

Project Location
Midway
Alameda County, CA

Prepared by KDLP on 2024-06-12
IR by SE on 2024-06-12

Client/Project
185706735

Potentia-Viridi Battery Energy Storage System
Biological Assessment

Figure No.
Figure 1

Title
Project Location

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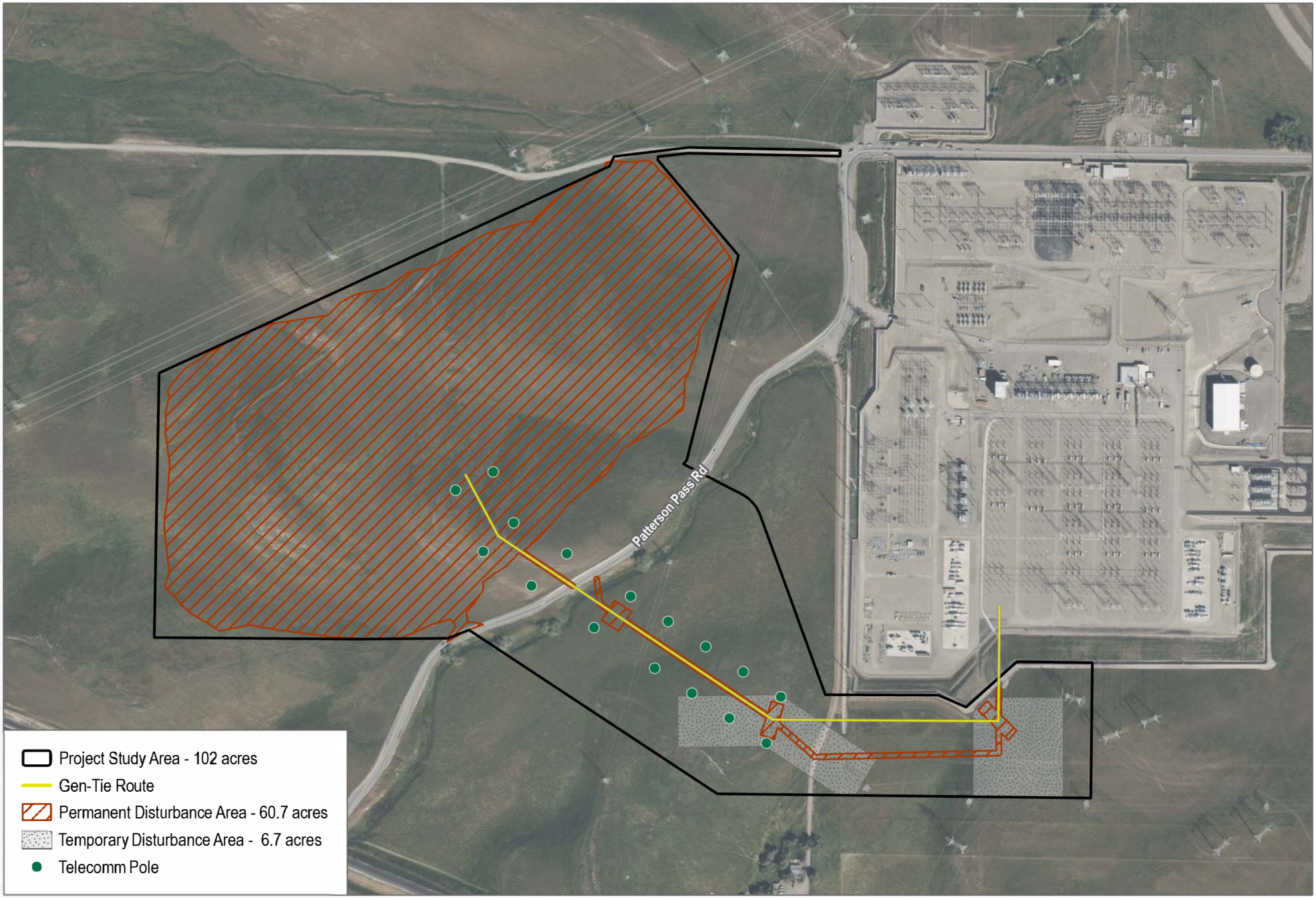

SOURCE: Bing Maps 2023

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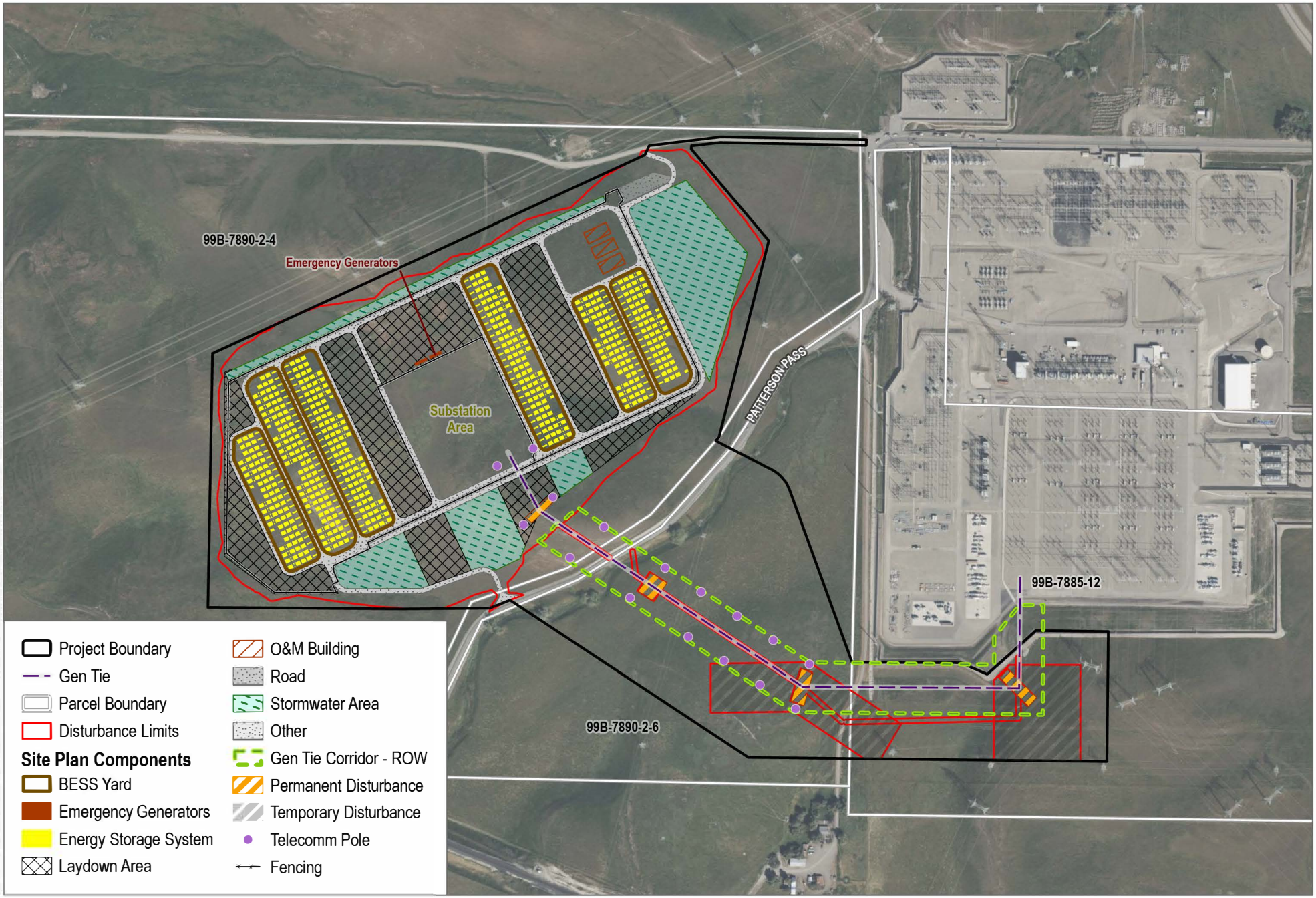
FIGURE 2-3

Project Site Aerial

Potentia-Viridi BESS Project



SOURCE: Bing Maps 2023, County of Alameda 2022

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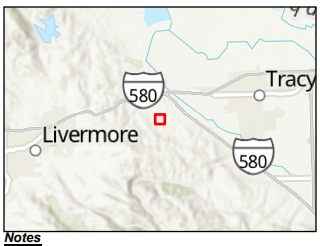
FIGURE 2-X

Project Components

Potentia-Viridi BESS Project



Project Site

Delineated Feature

EPH-01

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Project Location
Midway
Alameda County, CA

Prepared by KDLP on 2024-06-12
IR by SE on 2024-06-12

Client/Project
185706735

Potentia-Viridi Battery Energy Storage System
Biological Assessment

Figure No.
Figure 4

Title
Potential Waters of the United States within the Project Site

Notes

1. Coordinate System: NAD 1983 UTM Zone 10N

2. Data Sources: Esri Community Maps Contributors, San Joaquin County GIS/Planning, San Joaquin County Public Works, California State Parks, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Esri, CGIAR, USGS, Maxar, San Joaquin County GIS/Planning, California State Parks, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS,

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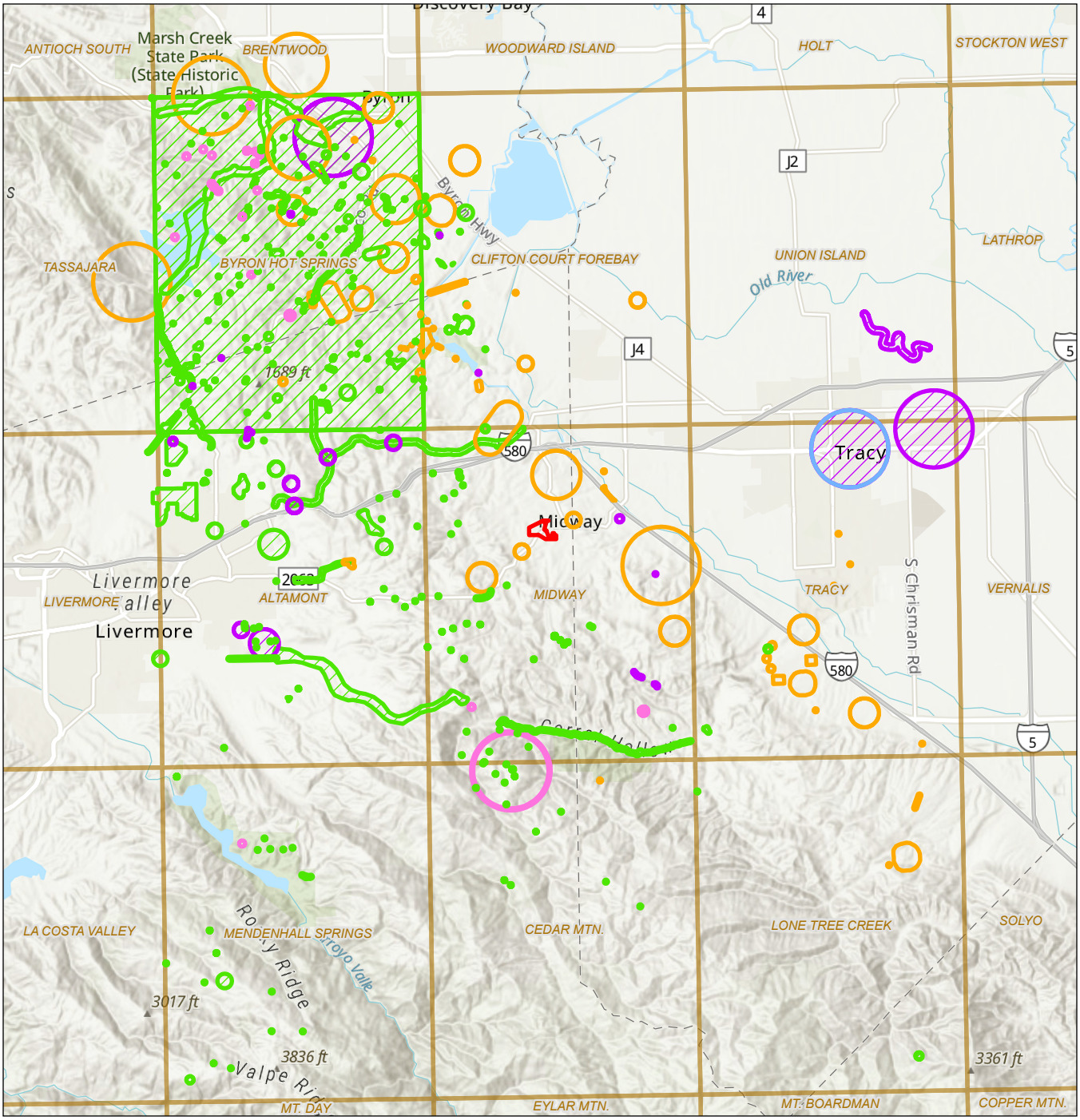

Notes

1. Coordinate System: NAD 1983 UTM Zone 10N
2. Data Sources: California State Parks, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Esri, NASA, NGA, USGS, San Joaquin County GIS/Planning, California State Parks, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS, Esri, USGS

Project Site

USGS 7.5' Quadrangle

CNDDB Occurrences

- California tiger salamander - central California DPS *(Ambystoma californiense pop. 1)*
- San Joaquin kit fox *(Vulpes macrotis mutica)*
- Crotch's bumble bee *(Bombus cortchii)*
- golden eagle *(Aquila chrysaetos)*
- tricolored blackbird *(Agelaius tricolor)*

0 1.5 3 Miles

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Stantec

Project Location
Midway
Alameda County, CA

Prepared by KDLP on 2024-07-03
IR by SE on 2024-07-03

Client/Project
185706735

Potentia-Viridi Battery Energy Storage System
Biological Assessment

Figure No.
Figure 5

Title
California Natural Diversity Database (CNDDB) Occurrences

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APPENDIX B – Biological Resources Technical Report

FINAL

Biological Technical Report

Potentia-Viridi Battery Energy Storage System Project

JANUARY 2025

Prepared for:

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Table of Contents

SECTION **PAGE NO.**

TABLES

APPENDICES

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AMM	avoidance and minimization measure
BA	biological assessment
BESS	Battery Energy Storage System
BGEPA	Bald and Golden Eagle Protection Act
BO	biological opinion
BTR	Biological Technical Report
CDFW	California Department of Fish and Wildlife
CEHC	California Essential Habitat Connectivity
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRLF	California red-legged frog
CRPR	California Rare Plant Rank
CWA	Clean Water Act
CZ	Conservation Zone
DCH	Designated Critical Habitat
DPS	distinct population segment
EACCS	East Alameda County Conservation Strategy
ECAP	East County Area Plan
ECOS	Environmental Conservation Online System
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
ESA	Environmentally sensitive area
FESA	Federal Endangered Species Act
FGC	California Fish and Game Code
HCP	habitat conservation plan
IPaC	Information for Planning and Consultation
ITP	Incidental Take Permit
JD	Jurisdictional Determination
LSAA	Lake and Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act
MMRP	Mitigation Monitoring and Reporting Program
NOAA	National Oceanic and Atmospheric Administration
NWI	National Wetlands Inventory
NWP	Nationwide Permit
OHWM	ordinary high water mark
PBO	Programmatic Biological Opinion

Acronym/Abbreviation	Definition
PCE	primary constituent elements
PFMC	Pacific Fishery Management Council
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SP	Standard Permit
SSC	Species of Special Concern
SWANCC	Solid Waste Agency of Northern Cook County
SWHA	Swainson's hawk
SWRCB	State Water Resources Control Board
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WEAP	Worker Environmental Awareness Program

Executive Summary

This Biological Technical Report (BTR) was prepared for Levy Alameda LLC for the proposed Potentia-Viridi Battery Energy Storage System (BESS) Project (Project). This BTR describes the existing conditions, regulatory setting, existing biological resources within the Project Study Area (PSA), and preliminary assessment of Project impacts.

The PSA is in eastern Alameda County, California. The PSA consists of the BESS facility and a generation tie (gen-tie) alignment to the southeast connecting the facility to the adjacent Pacific Gas & Electric (PG&E) Tesla Substation. The PSA is currently undeveloped. The PG&E Tesla substation is directly east; along the western Project boundary there are transmission lines running northeast to southwest; Patterson Pass Road follows the eastern boundary; there is a railroad line to the south and a gravel access road to the north. The gen-tie alignment connecting the BESS facility to the PG&E substation crosses Patterson Run (a seasonal stream channel). The lands comprising the PSA have been used for cattle grazing in the past, however, the only lands within the PSA currently being grazed are those along the gen-tie alignment between Patterson Pass Road and the western boundary of the PG&E Tesla Substation property. The nearest city is Tracy, approximately 2.5 miles to the east.

Federal, state, and local regulations or policies applicable to the Project include the following:

- Federal
  - Clean Water Act, Sections 404 and 401
  - Federal Endangered Species Act (FESA)
  - Migratory Bird Treaty Act (MBTA)
  - Bald and Golden Eagle Protection Act (BGEPA)
- State
  - Porter-Cologne Water Quality Control Act
  - California Endangered Species Act (CESA)
  - California Fish and Game Code (FGC)
  - California Environmental Quality Act (CEQA)
- Local
  - East Alameda County Conservation Strategy (EACCS)
  - Alameda County General Plan
- Alameda County Code of Ordinances

As part of the BTR, Dudek biologists conducted an updated desktop literature review and database search to identify potentially present special-status biological resources within the PSA and to supplement the Biological Constraints Analysis (Dudek 2023a) and update the September 2023 Biological Technical Report (Dudek 2023b). Dudek qualified biologists also conducted a series of biological field surveys in 2023 and 2024 to evaluate the PSA for special-status species and habitat. Surveys were conducted on March 31, May 16, and August 2 of 2023, January 18, April 12, May 24, and June 17, 2024. These surveys included reconnaissance-level biological field surveys, focused rare plant surveys, burrow mapping, protocol-level burrowing owl surveys, bumble bee habitat mapping, a California red-legged frog habitat assessment, California tiger salamander habitat assessment, and an aquatic resources delineation. The purpose of these surveys was to identify and characterize resources within the

PSA, with particular focus on the potential for occurrence of special-status plant and wildlife species and other sensitive resources.

There was only one vegetation community mapped on the PSA: wild oats and annual brome grassland. This vegetation community is characterized by an herbaceous layer dominated by non-native grass species including wild oats (*Avena* spp.), bromes (*Bromus* spp.), and barleys (*Hordeum* spp.). This habitat type covered the full extent of the PSA.

A formal aquatic resource delineation was conducted on January 18, 2024. No aquatic resources were present on the BESS facility portion of the PSA; however, the gen-tie alignment will cross over a seasonal stream (EPH-01, Patterson Run). Patterson Run is a potential Water of the United States, and the Project proponent has applied to the United States Army Corps of Engineers (USACE) for a Nationwide Permit under Section 404 of the Clean Water Act to cover minor construction-related impacts to Patterson Run.

A total of 18 special-status and rare plants identified from the literature review were determined to have potential to occur within the PSA. Three individuals of big tarplant (*Blepharizonia plumosa*) were observed within PSA at the southwest corner of the PG&E substation. No other special-status plants were observed during the surveys.

A total of 20 special-status wildlife species identified from the literature review were determined to have potential to occur within the PSA. A total of 6 special-status wildlife species are known to occur within the PSA, were observed or detected during field surveys, or have a moderate to high potential to occur on the PSA and could therefore be impacted by eventual Project implementation. Tricolored blackbird was observed foraging on the site and five other special-status wildlife species have a moderate or high potential to occur on the PSA, including California tiger salamander, California red-legged frog, golden eagle, northern harrier, burrowing owl, and white-tailed kite. Although Swainson's hawk have low potential to nest at the project site or vicinity, they were included in this analysis at the request of CEC and CDFW. No other special-status wildlife species were observed during the surveys. Suitable breeding habitat was identified for California tiger salamander and California red-legged frog within dispersal distance of the PSA, and Designated Critical Habitat for California red-legged frog overlaps with the PSA. Nesting birds are also expected to utilize habitat present within the PSA.

The Project and associated PSA fall within the boundaries of the EACCS, specifically within Conservation Zone (CZ) 10. The EACCS provides a framework for natural resource conservation and to streamline the environmental permitting process within the eastern portion of the county. The EACCS defines standardized mitigation ratios for each of the focal species to offset project impacts, based upon an evaluation of habitat quality within the PSA. Mitigation ratios for each covered species within the EACCS that have been identified during field surveys, or that have been assumed to be present, are then adjusted from the base 3:1 ratio based on habitat quality and species-specific calculators included in Appendix E of the EACCS. Total mitigation acreages for each species determined to be present through field surveys, or assumed to be present, may vary depending on the location(s) of compensatory mitigation land selected, habitat quality of mitigation land relative to habitat quality impacted by the project, and the total acres of habitat impacted by the Project. Final compensatory mitigation acreage would be based on habitat impact acreages calculated from final engineering designs approved for construction of the Project and the adjusted mitigation ratios for species requiring compensatory mitigation.

The Project will obtain applicable permits and other approvals from the California Energy Commission (CEC), USACE, United States Fish and Wildlife Service (USFWS), and Central Valley Regional Water Quality Control Board (CVRWQCB) and will minimize and mitigate impacts on natural resources to comply with the regulatory standards

of these agencies. These are the same regulatory standards applied by USFWS and the other environmental agencies in their review and approval of the EACCS. The Project will incorporate avoidance and minimization measures (AMMs) in compliance with EACCS guidelines. Development of the Project would not conflict with implementation of the EACCS. Further, the Project would provide compensatory mitigation for impacts to aquatic resources and EACCS covered species, determined, or assumed to be present within the PSA, through the acquisition of credits from existing mitigation banks or through establishing conservation easements on suitable lands.

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1 Introduction

Dudek is pleased to present Levy Alameda LLC with this Biological Technical Report (BTR) for the proposed Potentia-Viridi Battery Energy Storage System (BESS) Project (Project). This BTR describes the existing conditions, regulatory setting, and existing biological resources within the Project Study Area (PSA) and provides a preliminary analysis of Project impacts. As part of the BTR, Dudek biologists conducted an updated desktop literature review and database search specific to biological resources to supplement the Biological Constraints Analysis (Dudek 2023a) and update the September 2023 Biological Technical Report (Dudek 2023b). Dudek also performed additional biological field surveys during the 2023 and 2024 field seasons to supplement the prior reconnaissance-level biological field survey, including focused surveys for rare plants and burrows, focused habitat assessments for Crotch's bumble bee, and protocol-level surveys for burrowing owl. In addition, a focused habitat assessment for California red-legged frog was conducted for suitable and accessible aquatic features within 1 mile of the PSA, and a formal aquatic resources delineation was conducted to identify and map aquatic resources within the PSA. The purpose of these surveys was to identify and characterize resources within the PSA, with particular focus on the potential for occurrence of special-status plant and wildlife species and other sensitive resources. The *Project site* refers to the area that would be physically affected by construction activities associated with the Project (including temporary disturbance) and the Project layout. The PSA encompasses to the Project site as described above, but also includes a buffer around the generation tie (gen-tie) alignment, buffered areas around the Project site to capture resources within the limits of potential impact or required to be surveyed by species-specific survey protocols, and ponds located to the west of the Project site.

This BTR includes (1) a description of existing conditions on the site, (2) regulatory overview, (3) methods for biological studies, and (4) a description of any sensitive habitats or resources observed on the site. Details pertaining to the PSA are provided below:

- **County:** Alameda
- **Public Land Survey System:** Section 31; Township 2S; Range 4E
- **U.S. Geological Survey (USGS) 7.5-Minute Quadrangle**: Midway
- **Latitude, Longitude (decimal degrees):** 37.710926°, -121.575397°(centroid)
- **APN:** 99b-7890-2-4 (BESS facility, 60.7 acres plus buffer); 99B-7890-2-6, 99B-7885-12 (gen-tie alignment, 20.44 acres including buffer)
- **Elevation Range (feet):** 383 to 523 feet above mean sea level (amsl)
- **PSA:** 88.2 acres

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2 Project Setting

2.1 Project Description

The Potentia-Viridi BESS Project proposes the development of an up to 3,200 MWh of battery energy storage system and associated infrastructure across approximately 88 acres (approximately 60-acre BESS facility lease area and survey buffer + approximately 6-are gen-tie corridor which includes approximately 20-acre associated survey buffer) (Appendix A: Figure 1, Project Location). The BESS facility would interconnect to the electrical grid via a new 500 kV gen-tie constructed from the project substation to the Point of Interconnection (POI) at the existing PG&E Tesla Substation. Construction and commission of the Project is expected to occur over approximately 24 months.

2.2 Regional Land Use Setting

The PSA is currently undeveloped, and the regional land use has remained largely unchanged since the 1980s based on aerial imagery (Google Earth Pro 2023). Relative to the proposed BESS facility lease area, the PG&E Tesla substation is about 0.25 miles east; high voltage transmission lines parallel the BESS facility lease area along the northwestern, northern, northeastern, and eastern boundaries; Patterson Pass Road roughly parallels the eastern boundary; the Western Pacific Railroad is about 0.1 miles southeast; and there is an existing gravel access road adjacent to the northern boundary. The gen-tie alignment connecting the BESS facility to the PG&E substation crosses Patterson Pass Road, Patterson Run (a seasonal stream channel), and generally proceeds southeast to the Point of Change of Ownership transmission structure, before turning east across the PG&E Tesla Substation property and then north into the substation boundary and POI. The BESS facility site and surrounding land have been used for cattle grazing in the past. However, the BESS facility lease area and PG&E Tesla Substation property have not been grazed recently, whereas the property crossed by the gen-tie between the BESS facility lease area and PG&E Tesla Substation Property is currently used as cattle pasture. The nearest city is Tracy, approximately 2.5 miles to the east.

2.3 Climate and Rainfall

The PSA is within a Mediterranean climate where annual temperatures range from 38.3°F to 92.6°F (WRCC 2023). According to the Tracy Pumping Plant (049001) Weather Station Gauge, yearly precipitation averages 12.03 inches, with the highest average rainfall recorded in January (2.54 inches) (WRCC 2023). The past winter season had higher than average rainfall.

2.4 Soil and Terrain

The PSA is relatively flat, with an approximate elevation of 383 to 523 feet amsl. According to the US Department of Agriculture (USDA) Natural Resources Conservation Service, three soil types are present: Linne clay loam, 3% to 15% slopes (65.65 acres); Linne clay loam, 15% to 30% slopes, MLRA 15 (2.80 acres); and Rincon clay loam, 0% to 3% slopes (19.75 acres)(USDA 2024). The Linne series consists of moderately deep, well drained soils that formed in material from soft shale and sandstone. The Rincon series consists of deep, well drained soils that formed in alluvium from sedimentary rock. None of the three soil types mapped on site are included on the USDA list of hydric soils (USDA 2023a) commonly associated with wetlands or other waters.

2.5 Hydrology and Watershed

The PSA occurs within the North Diablo Range of the Alameda Creek Watershed (USGS 2023). According to the USFWS National Wetlands Inventory (NWI), there are several freshwater ponds, freshwater wetlands, and riverine aquatic features in the vicinity of the Project (USFWS 2023a; Appendix A: Figure 2, Biological Setting). The NWI is based on coarse aerial mapping and does not involve ground-truthing. The national hydrography dataset shows Patterson Run and one other drainage crossing the PSA from south to north. Patterson Run is a seasonal stream system that runs parallel to Patterson Pass Road, adjacent to the PSA. Patterson Run is classified in the NWI as a freshwater emergent wetland (USFWS 2023a). The second drainage is classified by the NWI as freshwater emergent wetland (USFWS 223a), however, there is no physical evidence of this drainage within the PSA either on aerial imagery or when surveyed on the ground.

3 Regulatory Setting

3.1 Federal

3.1.1 Clean Water Act, Section 404

Pursuant to Section 404 of the Clean Water Act, the USACE regulates the discharge of dredged and/or fill material into "Waters of the U.S." Activities in wetlands or waters for which a USACE permit may be required include, but are not limited, the placement of fill material due to development, land clearing involving relocation of soil, road construction, erosion control, mining, stockpiling excavation spoils, and utility line or pipeline construction. Activities that generally do not involve a regulated discharge (if performed specifically in a manner to avoid an impact) can include, to an extent, certain drainage channel maintenance activities involving the use of hand tools only or by positioning construction equipment outside of USACE jurisdiction and excavating without stockpiling in jurisdictional areas. Any person or public agency proposing to discharge dredged or fill material into Waters of the U.S., including jurisdictional wetlands, must obtain a Section 404 permit from USACE.

3.1.2 Clean Water Act, Section 401

Section 401 of the CWA provides states and authorized tribes with an important tool to help protect the water quality of federally regulated waters within their borders (i.e., waters of the state), in collaboration with federal agencies. EPA's regulations at 40 CFR 121 address CWA Section 401 certification. Under Section 401 of the CWA, a federal agency may not issue a permit or license to conduct any activity that may result in any discharge into water of the United States unless a CWA Section 401 water quality certification is issued, or certification is waived. States and authorized tribes where the discharge would originate are responsible for issuing water quality certifications. In cases where a state or tribe does not have authority, EPA is responsible for issuing certification. In making decisions to grant, grant with conditions, or deny certification requests, certifying authorities consider whether the federally licensed or permitted activity will comply with applicable water quality standards, effluent limitations, new source performance standards, toxic pollutants restrictions, and other appropriate water quality requirements of state or tribal law. A federal agency may not issue a license or permit for an activity that may result in a discharge into waters of the United States without a water quality certification or waiver (EPA 2023a). On June 9, 2022, proposed rule changes to CWA Section 401 were published (87 FR 35318 et seq.) and were finalized in November of 2023 (EPA 2023b). The changes include pre-filing meetings and statutory timeframes.

Implementation in California

The California State Water Resources Control Board (SWRCB) has authority over waters of the state, including wetlands, through Section 401 of the CWA, the Porter–Cologne Water Quality Control Act (Porter–Cologne Act), California Code of Regulations Section 3831(k), and the California Wetlands Conservation Policy. The CWA requires that an applicant for a Section 404 permit (to discharge dredge or fill material into waters of the United States) first obtain certification from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by SWRCB to the nine regional boards. The Central Valley Regional Water Quality Control Board has

authority for Section 401 compliance in the Project region. A request for Water Quality Certification is submitted to the RWQCB while an application is filed with USACE (EPA 2023a).

3.1.3 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973, as amended (16 USC 1531 et seq.), serves as the enacting legislation to list, conserve, and protect threatened and endangered species, and the ecosystems on which they depend, from extinction. In addition, for those wildlife species listed as federally endangered, FESA provides for the ability to designate critical habitat, defined as that habitat considered "essential to the conservation of the species" and that "may require special management considerations or protection."

Under FESA Section 7, if a project that would potentially result in adverse impacts to threatened or endangered species includes any action that is authorized, funded, or carried out by a federal agency, that agency must consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that any such action is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat (DCH) for that species. FESA Section 9(a)(1)(B) prohibits the taking, possession, sale, or transport of any endangered fish or wildlife species. "Take" is defined to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC 1532[19]). With respect to any endangered species of plant, Sections 9(a)(2)(A) and 9(a)(2)(B) prohibit the possession, sale, and import or export, of any such species, and prohibits any action that would "remove and reduce to possession any such species from areas under federal jurisdiction; maliciously damage or destroy any such species on any such area; or remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law." Pursuant to FESA Section 10(a)(1)(B), USFWS may issue a permit for the take of threatened or endangered species if such taking is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity" (USFWS 2023b).

Designated Critical Habitat

The FESA also enables USFWS to designate critical habitat, which is defined specific geographic areas, whether occupied by listed species or not, that contain "physical or biological features essential to the conservation of the species" and that "may require special management considerations or protection" (50 CFR 424.12). Designated critical habitat units, published in the Federal Register by USFWS, are often large and may contain areas that do not provide habitat for the species: only areas within the critical habitat units that support the species' *primary constituent elements* (PCEs) are subject to ESA consultation and analysis of critical habitat effects. PCE was a term introduced in the critical habitat designation regulations to describe aspects of ''physical or biological features.'' On May 12, 2014, the Services proposed to revise these regulations to remove the use of the term ''primary constituent elements'' and replace it with the statutory term ''physical or biological features'' (79 FR 27066). However, the shift in terminology does not change the approach used in conducting a ''destruction or adverse modification'' analysis, which is the same regardless of whether the original designation identified PCE, physical or biological features, or both (81 FR 7220, 2/11/16).

3.1.4 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50, Section 10.13 of the CFR. The MBTA is an international treaty for the conservation and

management of bird species that migrate through more than one country and is enforced in the United States by USFWS. Hunting of specific migratory game birds is permitted under the regulations listed in Title 50, Section 20 of the CFR. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors) (USFWS 2023c).

3.1.5 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668 et seq.) provides for the protection of both bald and golden eagles. Specifically, BGEPA prohibits take of eagles, which is defined as any action that would "pursue, destroy, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" bald and golden eagles, including parts, nests, or eggs. The term "disturb" is further defined by regulation as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, injury to an eagle, a decrease in productivity, or nest abandonment" (50 CFR 22.3). Under BGEPA, it is also illegal to "sell, purchase, barter, trade, import, or export, or offer for sale, purchase, barter, or trade, at any time or in any manner, any bald eagle or any golden eagle, or the parts, nests, or eggs" of these birds. Pursuant to 50 CFR 22.26, and as of the latest amendment to BGEPA in December 2016, a permit may be obtained that authorizes take of bald eagles and golden eagles where the take is "compatible with the preservation of the bald eagle and the golden eagle; is necessary to protect an interest in a particular locality; is associated with, but not the purpose of, the activity; and cannot practicably be avoided" (USFWS 2023d).

3.2 State

3.2.1 Porter-Cologne Water Quality Control Act

As detailed above in Section 3.1.2, Clean Water Act, Section 401, the Porter–Cologne Act, CFGC Sections 1601-1607, delegates responsibility to SWRCB for water rights and water quality protection and directs the nine statewide RWQCBs to develop and enforce water quality standards within their jurisdiction. The Porter–Cologne Act requires any entity discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state to file a "report of waste discharge" with the appropriate RWQCB. The appropriate RWQCB then must issue a permit, referred to as a Waste Discharge Requirement. Waste Discharge Requirements implement water quality control plans and take into consideration the beneficial uses to be protected, the water quality objectives required for that purpose, other waste discharges, and the need to prevent nuisances (SWRCB 2023).

SWRCB defines a water of the state as "any surface water or groundwater, including saline waters, within the boundaries of the state" (California Water Code Section 13050[e]). As of April 2019, SWRCB has defined "wetland" to include the following (SWRCB 2023):

1. Natural wetlands,
2. Wetlands created by modification of a surface water of the state,
3. Artificial wetlands that meet any of the following criteria:
    a) Approved by an agency as compensatory mitigation for impacts to other Waters of the State, except where the approving agency explicitly identifies the mitigation as being of limited duration;
    b) Specifically identified in a Water Quality Control Plan as a wetland or other water of the state;

c) Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or

d) Greater than or equal to one acre in size unless the artificial wetland was constructed and is currently used and maintained, primarily for one or more of the following purposes: industrial or municipal wastewater treatment or disposal; settling of sediment; detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial permitting program; treatment of surface waters; agricultural crop irrigation or stock watering; fire suppression; industrial processing or cooling water; active surface mining – even if the site is managed for interim wetlands functions and values; log storage; treatment, storage, or distribution of recycled water; maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or fields flooded for rice growing.

All waters of the United States are waters of the state. Wetlands, such as isolated seasonal wetlands, that are not generally considered waters of the United States are considered waters of the state if, "under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation" (SWRCB 2023).

3.2.2 California Endangered Species Act

Under the California Endangered Species Act (CESA), the California Department of Fish and Wildlife (CDFW) has the responsibility of maintaining a list of threatened and endangered species. CESA prohibits the take of state-listed threatened or endangered animals and plants unless otherwise permitted pursuant to CESA. "Take" under CESA is defined as any of the following: "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (CFGC Section 86). Species determined by the state to be candidates for listing as threatened or endangered are treated as if listed as threatened or endangered and are, therefore, protected from take. Pursuant to CESA, a state agency reviewing a project within its jurisdiction must determine whether any state-listed endangered or threatened species, or candidate species, could be potentially impacted by that project (CDFW 2023a).

3.2.3 California Fish and Game Code

Divisions of the California Fish and Game Code (CFGC) establish the basis of fish, wildlife, and native plant protections and management in the state.

3.2.3.1 California Fish and Game Code, Section 1940

Section 1940 of the CFGC requires CDFW to develop and maintain a vegetation mapping standard for the state. More than half of the vegetation communities in the state have been mapped through the Vegetation Classification and Mapping Program

Natural vegetation communities are evaluated by CDFW and are assigned global (G), and state (S) ranks based on rarity of and threats to these vegetation communities in California. Sensitive natural communities are defined by CDFW as vegetation alliances with state ranks of S1–S3 (S1: critically imperiled, S2: imperiled, S3: vulnerable), as

identified in the 2010 List of Vegetation Alliances and Associations and subsequent updates. Natural communities with ranks of S1–S3 are considered sensitive natural communities to be addressed in the environmental review processes of CEQA and its equivalents. Additionally, all vegetation associations within the alliances with ranks of S1–S3 are considered sensitive habitats. CEQA requires that impacts to sensitive natural communities be evaluated and mitigated to the extent feasible.

Sensitive natural communities are communities that have a limited distribution and are often vulnerable to the environmental effects of projects. These communities may or may not contain special-status species or their habitats. For purposes of this assessment, sensitive natural communities are considered to include vegetation communities listed in CDFW's California Natural Diversity Database (CNDDB) and communities listed in the California Natural Community List with a rarity rank of S1- S3 (CDFW 2023c).

3.2.3.2 Lake and Streambed Alteration Program

Under Sections 1600–1616 of the CFGC, CDFW regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFW's jurisdiction are defined in the code as the "bed, channel or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit." In practice, CDFW usually marks its jurisdictional limit at the top of the stream or bank, or at the outer edge of the riparian vegetation, whichever is wider (CDFW 2023b).

3.2.3.3 Native Plant Protection Act

The Native Plant Protection Act was enacted in 1977 and is administered by CDFW, per CFGC Section 1900 et seq. The Native Plant Protection Act prohibits take of endangered, threatened, or rare plant species native to California, apart from special criteria identified in the CFGC. A "native plant" means a plant growing in a wild uncultivated state that is normally found native to the plant life of the state. A "rare" species can be defined as species that are broadly distributed but never abundant where found, narrowly distributed, or clumped yet abundant where found, and/or narrowly distributed or clumped and not abundant where found. If potential impacts are identified for a project activity, then consultation with CDFW, permitting, and/or other mitigation may be required (CLI 2023).

3.2.3.4 Nesting Migratory Birds and Raptors

Section 3503 of the CFGC states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 protects all birds of prey (raptors) and their eggs and nests. Section 3511 states that fully protected birds or parts thereof may not be taken or possessed at any time. Section 3513 states that it is unlawful to take or possess any migratory non-game bird as designated in the MBTA.

3.2.3.5 Non-game Mammals

CFGC Section 4150 states a mammal occurring naturally in California that is not a game mammal, fully protected mammal, or fur-bearing mammal is a non-game mammal. A non-game mammal may not be taken or possessed under this code. All bat species occurring naturally in California are considered non-game mammals and are therefore prohibited from take as stated in CFGC Section 4150.

3.2.3.6 Fully Protected Species

Sections 3511, 4700, 5050, and 5515 of the CFGC outline protection for fully protected species of mammals, birds, reptiles, amphibians, and fish. Species that are fully protected by these sections may not be taken or possessed at any time. CDFW cannot issue permits or licenses that authorize the "take" of any fully protected species, except under certain circumstances, such as scientific research and live capture and relocation of such species pursuant to a permit for the protection of livestock. On July 10, 2023, Senate Bill 147 (SB147) was signed into law and amends the Fish and Game Code to allow a 10-year permitting mechanism for a defined set of projects within the renewable energy, transportation, and water infrastructure sectors. Furthermore, it is the responsibility of CDFW to maintain viable populations of all native species. Toward that end, CDFW has designated certain vertebrate species as Species of Special Concern, because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.

3.2.4 California Environmental Quality Act

CEQA, PRC Section 21000 et seq., requires public agencies undertaking discretionary actions to approve a project to first determine whether a project may have a significant effect on the environment, and then to prepare an environmental impact report if there is substantial evidence that the project may have a significant effect on the environment. Where an environmental impact report has been prepared, CEQA further requires public agencies to adopt findings with respect to each significant effect that "changes or alterations have been required in, or incorporated, into the project which mitigate or avoid the significant effects on the environment; that those changes are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency; or that specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or alternatives identified in the environmental impact report" (PRC Section 21081[a]).

The California Natural Resources Agency has adopted regulations (i.e., guidelines) to implement CEQA. Pursuant to CEQA Guidelines Section 15380, protection is provided for federal and/or state-listed species, as well as species not listed federally or by the state that may be considered rare, threatened, or endangered. Species that meet these criteria can include candidate species, species proposed for listing, and Species of Special Concern (SSC). Plants listed in the California Native Plant Society (CNPS) Rare Plant Program are considered to meet CEQA's Section 15380 criteria as well. Section 15380 also addresses a potential situation in which a public agency is to review a project that may have a significant effect on, for example a candidate species, which has not yet been listed by USFWS or CDFW. Therefore, CEQA enables an agency to protect a species from significant project impacts until the respective government agencies have had an opportunity to list the species as protected, if warranted. Impacts to these species would therefore be considered significant, requiring mitigation (CDFW 2023c).

3.2.5 California Energy Commission – Assembly Bill 205

Assembly Bill (AB) 205 is an emergency regulation expanding the CEC's siting authority for renewable energy projects constructed on or before June 30, 2029. AB 205 was signed into law on June 30, 2022 and allows renewable and energy storage projects to apply for direct state permits through the CEC. CEC certification opt-in statute (specifically 25545.1(b)(1)) says "the issuance of a certificate by the commission for a site and related facility pursuant to this chapter shall be in lieu of any permit, certificate, or similar document required by any state, local, or regional agency [except California Coastal Commission, San Francisco Bay Conservation and Development

Commission, and State/Regional Water Quality Control Board] … for the use of the site and related facilities, and shall supersede any applicable statute, ordinance, or regulation of any state, local, or regional agency.…"

The application for certification process is in lieu of CDFW 2081 ITP or CFGC Section 1600 et seq. LSAA. However, applications for both of these permits will be submitted to the CEC for informational purposes. The CEC Certification will include conditions and mitigation that would otherwise be requirements in these CDFW permits.

3.3 County of Alameda

3.3.1 East Alameda County Conservation Strategy

The County of Alameda (County), along with other local land use jurisdictions and resource agencies, developed the East Alameda County Conservation Strategy (EACCS) to provide a framework for natural resource conservation and to streamline the environmental permitting process within the eastern portion of the county (ICF 2010). The EACCS is not a formal Habitat Conservation Plan (HCP) in that it does not require local agencies to conserve species and habitat prior to approving projects that impact listed species and/or their habitat, nor does it have a corresponding programmatic incidental take permit from USFWS. Instead, it is intended to streamline state and local permitting by providing guidance on avoidance, minimization, and mitigation for project-level impacts on selected focal special-status species and sensitive habitats. USFWS and CDFW participated in the development of the Conservation Strategy with the intent that it would become the blueprint for all mitigation and conservation in the region. Both agencies still refer to the EACCS when reviewing project-level impacts on focal species and their habitat.

The EACCS includes standardized mitigation ratios for each of the focal species that can be used by local jurisdictions and resource agencies as guidance to determine appropriate mitigation to offset project impacts on focal species habitat. These are based on an evaluation of the habitat quality on a PSA scored using Focal Species-Impact/Mitigation Score Sheets[1] for each of the focal species assumed present or potentially present. Mitigation ratios are then calculated based on application of the same scoring sheet to the proposed mitigation site. Project-specific mitigation ratios may vary depending on the quality and location of the habitat being lost and the quality and location of proposed mitigation.

The EACCS includes avoidance and minimization measures (AMMs) for all focal species covered by the EACCS. These include general AMMs applicable to all focal species, as well as species- or taxon-specific AMMs. The standardized mitigation ratios discussed above are only valid if a project application is in compliance with all applicable AMMs. The general AMMs and project applicable specific AMMs are detailed below.

General

GEN - 01 Employees and contractors performing construction activities will receive environmental sensitivity training. Training will include review of environmental laws and Avoidance and Minimization Measures (AMMs) that must be followed by all personnel to reduce or avoid effects on covered species during construction activities.

GEN - 02 Environmental tailboard trainings will take place on an as - needed basis in the field. The environmental tailboard trainings will include a brief review of the biology of the covered species and guidelines that must be followed by all personnel to reduce or avoid negative effects to these species during construction activities.

[1] Available at http://www.eastalco-conservation.org/documents/eaccs_appe_oct2010.pdf.

Directors, Managers, Superintendents, and the crew foremen and forewomen will be responsible for ensuring that crewmembers comply with the guidelines.

GEN - 03 Contracts with contractors, construction management firms, and subcontractors will obligate all contractors to comply with these requirements, AMMs.

GEN - 04 The following will not be allowed at or near work sites for covered activities: trash dumping, firearms, open fires (such as barbecues) not required by the activity, hunting, and pets (except for safety in remote locations).

GEN - 05 Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.

GEN - 06 Off - road vehicle travel will be minimized.

GEN - 07 Vehicles will not exceed a speed limit of 15 mph on unpaved roads within natural land - cover types, or during off - road travel.

GEN - 08 Vehicles or equipment will not be refueled within 100 feet of a wetland, stream, or other waterway unless a bermed and lined refueling area is constructed.

GEN - 09 Vehicles shall be washed only at approved areas. No washing of vehicles shall occur at job sites.

GEN - 10 To discourage the introduction and establishment of invasive plant species, seed mixtures/straw used within natural vegetation will be either rice straw or weed - free straw.

GEN - 11 Pipes, culverts, and similar materials greater than four inches in diameter, will be stored so as to prevent covered wildlife species from using these as temporary refuges, and these materials will be inspected each morning for the presence of animals prior to being moved.

GEN - 12 Erosion control measures will be implemented to reduce sedimentation in wetland habitat occupied by covered animal and plant species when activities are the source of potential erosion problems. Plastic mono - filament netting (erosion control matting) or similar material containing netting shall not be used at the project. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

GEN - 13 Stockpiling of material will occur such that direct effects to covered species are avoided. Stockpiling of material in riparian areas will occur outside of the top of bank, and preferably outside of the outer riparian dripline and will not exceed 30 days.

GEN - 14 Grading will be restricted to the minimum area necessary.

GEN - 15 Prior to ground disturbing activities in sensitive habitats, project construction boundaries and access areas will be flagged and temporarily fenced during construction to reduce the potential for vehicles and equipment to stray into adjacent habitats.

GEN - 16 Significant earth moving - activities will not be conducted in riparian areas within 24 hours of predicted storms or after major storms (defined as 1 - inch of rain or more).

GEN - 17 Trenches will be backfilled as soon as possible. Open trenches will be searched each day prior to construction to ensure no covered species are trapped. Earthen escape ramps will be installed at intervals prescribed by a qualified biologist.

Amphibians: California tiger salamander, CRLF

AMPH-1. *Habitat: Streams, wetlands, ponds, vernal pools.*

- If aquatic habitat is present, a qualified biologist will stake and flag an exclusion zone prior to activities. The exclusion zone will be fenced with orange construction zone and erosion control fencing (to be installed by construction crew). The exclusion zone will encompass the maximum practicable distance from the work site and at least 500 feet from the aquatic feature wet or dry.

AMPH-2. *Habitat: Riparian habitat and grasslands within 2-miles of aquatic habitat.*

- A qualified biologist will conduct preconstruction surveys prior to activities define a time for the surveys (before groundbreaking). If individuals are found, work will not begin until they are moved out of the construction zone to a USFWS/CDFG approved relocation site.
- A Service - approved biologist should be present for initial ground disturbing activities.
- If the work site is within the typical dispersal distance (contact USFWS/CDFG for latest research on this distance for species of interest) of potential breeding habitat, barrier fencing will be constructed around the worksite to prevent amphibians from entering the work area. Barrier fencing will be removed within 72 hours of completion of work.
- No monofilament plastic will be used for erosion control.
- Construction personnel will inspect open trenches in the morning and evening for trapped amphibians.
- A qualified biologist possessing a valid ESA Section 10(a)(1)(A) permit or Service approved under an active biological opinion, will be contracted to trap and to move amphibians to nearby suitable habitat if amphibians are found inside fenced area.
- Work will be avoided within suitable habitat from October 15 (or the first measurable fall rain of 1" or greater, to May 1.

Golden Eagle

BIRD-1. *Habitat: Cliff and large trees surrounded by open grassland.*

- If an active nest is identified near a proposed work area work will be conducted outside of the nesting season (February 1 to September 1).
- If an active nest is identified near a proposed work area and work cannot be conducted outside of the nesting season, a no - activity zone will be established by a qualified biologist. The no - activity zone will be large enough to avoid nest abandonment and will at a minimum be 250 - feet radius from the nest.
- If an effective no - activity zone cannot be established in either case, an experienced golden eagle biologist will develop a site - specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the eagles, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the eagles.

Burrowing Owl

BIRD-2. *Habitat: Grasslands or ruderal areas with burrows.*

- If an active nest is identified near a proposed work area work will be conducted outside of the nesting season (March 15 to September 1).
- If an active nest is identified near a proposed work area and work cannot be conducted outside of the nesting season, a no - activity zone will be established by a qualified biologist. The no - activity zone will be large enough to avoid nest abandonment and will at a minimum be 250 - feet radius from the nest.
- If burrowing owls are present at the site during the non - breeding period, a qualified biologist will establish a no - activity zone of at least 150 feet.
- If an effective no - activity zone cannot be established in either case, an experienced burrowing owl biologist will develop a site - specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls.

Tricolored Blackbird

BIRD-3. *Habitat: Wetlands, ponds with emergent vegetation.*

- If an active nest colony is identified near a proposed work area work will be conducted outside of the nesting season (March 15 to September 1).

Mammals: San Joaquin Kit Fox, American Badger

MAMM-1. *Habitat: Grassland, generally with ground squirrel burrows.*

- If potential dens are present, their disturbance and destruction will be avoided.
- If potential dens are located within the proposed work area and cannot be avoided during construction, qualified biologist will determine if the dens are occupied or were recently occupied using methodology coordinated with the USFWS and CDFG. If unoccupied, the qualified biologist will collapse these dens by hand in accordance with USFWS procedures (USFWS 2011).
- Exclusion zones will be implemented following USFWS procedures (U.S. Fish and Wildlife Service 1999) or the latest USFWS procedures available at the time. The radius of these zones will follow current standards or will be as follows: Potential Den—50 feet; Known Den—100 feet; Natal or Pupping Den—to be determined on a case - by - case basis in coordination with USFWS and CDFG.
- Pipes will be capped, and trenches will contain exit ramps to avoid direct mortality while construction areas is active.

3.3.2 Alameda County General Plan

The County maintains a General Plan, which provides guidelines for development within the County. The PSA is located within the East County Area Plan (ECAP) (Alameda County 1994). General Plan policies that are relevant to the Project are outlined below.

Policy 123: Where site-specific impacts on biological resources resulting from a proposed land use outside the Urban Growth Boundary are identified, the County shall encourage that mitigation is complementary to the goals and objectives of the ECAP. To that end, the County shall recommend that mitigation efforts occur in areas designated as "Resource Management" or on lands adjacent to or otherwise contiguous with these lands to establish a continuous open space system in East County and to provide for long term protection of biological resources.

Policy 125: The County shall encourage preservation of areas known to support special status species.

Policy 126: The County shall encourage no net loss of riparian and seasonal wetlands.

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4 Methods

4.1 Key Definitions

Special-Status Species

For the purposes of this analysis, special plant species are defined as plants that are legally protected or that are otherwise considered sensitive by federal, state, or local resource conservation agencies. These species fall into one or more of the following categories:

- Listed by the federal government under the FESA of 1973 or the State of California under the CESA of 1970 as endangered, threatened, or rare.
- A candidate for federal or state listing as endangered or threatened.
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation.
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California; and
- Taxa strongly associated with a habitat that is declining in California at a significant rate (e.g., wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats).

Taxa considered to be "rare, threatened, or endangered in California" as defined by CDFW are assigned a California Rare Plant Rank (CRPR). The CDFW system includes six rarity and endangerment ranks for categorizing plant species of concern, as follows:

- **CRPR 1A:** Plants presumed to be extinct in California.
- **CRPR 1B:** Plants that are rare, threatened, or endangered in California and elsewhere.
- **CRPR 2A:** Plants presumed to be extinct in California, but more common elsewhere.
- **CRPR 2B:** Plants that are rare, threatened, or endangered in California, but more common elsewhere.
- **CRPR 3:** Plants about which more information is needed (a review list).
- **CRPR 4:** Plants of limited distribution (a watch list).

Plants ranked as CRPR 1A, 1B, 2A, or 2B may qualify as endangered, rare, or threatened species within the definition of CEQA Guidelines Section 15380. CDFW recommends that potential impacts to CRPR 1 and 2 species be evaluated in CEQA review documents. In general, CRPR 3 and 4 species do not meet the definition of endangered, rare, or threatened pursuant to CEQA Guidelines Section 15380, but these species may be evaluated on a case-by-case basis (CDFW 2018).

Special-status wildlife species include species that meet any of the following criteria (some species may meet several criteria):

- Listed, proposed for listing, or candidates for listing as threatened or endangered under FESA.
- Listed or candidates for listing as threatened or endangered under CESA.

- Designated as Species of Special Concern by the CDFW.
- Designated as a fully protected species by the California Fish and Game Code.
- Meet the definition of rare, threatened, or endangered as described in the CEQA Guidelines, Section 15380.

Sensitive Natural Communities

Natural vegetation communities are evaluated by CDFW and are assigned global (G), and state (S) ranks based on rarity of and threats to these vegetation communities in California. Sensitive natural communities are defined by CDFW as vegetation alliances with state ranks of S1–S3 (S1: critically imperiled, S2: imperiled, S3: vulnerable), as identified in the 2010 List of Vegetation Alliances and Associations and subsequent updates. Natural communities with ranks of S1–S3 are considered sensitive natural communities to be addressed in the environmental review processes of CEQA and its equivalents. Additionally, all vegetation associations within the alliances with ranks of S1–S3 are considered sensitive habitats. CEQA requires that impacts to sensitive natural communities be evaluated and mitigated to the extent feasible.

Sensitive natural communities are communities that have a limited distribution and are often vulnerable to the environmental effects of projects. These communities may or may not contain special-status species or their habitats. For purposes of this assessment, sensitive natural communities are considered to include vegetation communities listed in CDFW's California Natural Diversity Database (CNDDB) and communities listed in the California Natural Community List with a rarity rank of S1- S3 (CDFW 2023d).

4.2 Database and Literature Review

Dudek conducted an initial database and literature review as part of the Biological Constraints Analysis drafted in April 2023 (Dudek 2023a). An updated database and literature review was conducted as part of the Biological Technical Report drafted in September 2023 (Dudek 2023b). To reflect recent changes in the Project site boundaries and new gen-tie alignment, updated database and literature reviews for the revised PSA were conducted in January 2024. Special-status biological resources present or potentially present within the PSA were identified through an extensive updated literature search using the following sources: USFWS Information for Planning and Consultation (IPaC) online tool (USFWS 2024), CDFW California Natural Diversity Database (CNDDB) (CDFW 2024), and California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Vascular Plants (CNPS 2024). The Soil Survey Geographic Database for California (USDA 2024) was also reviewed to identify soil associations potentially supporting special-status plants (e.g., alkaline soils). Native plant community classifications used in this report follow a Manual of California Vegetation Online (CNPS 2023a) and California Natural Community List (CDFW 2023d). The search area for the IPaC query was based on the site boundary. The CNDDB and CNPS databases were queried for the nine U.S. Geological Survey (USGS) 7.5-minute quadrangles containing and immediately surrounding the site (Byron Hot Springs, Clifton Court Forebay, Union Island, Altamont, Midway, Tracy, Mendenhall Springs, Cedar Mountain, Lone Tree Creek). Database search results are presented in Appendix B, Database Search Results. Following the updated database review, Dudek biologists determined the potential for special-status plant and wildlife species to occur on site. Determinations were based on a review of habitat types, soils, and elevation preferences, as well as the known geographic range and nearest occurrence records of each species.

4.3 Field Surveys

Dudek qualified biologists conducted biological field surveys in 2023 and 2024 to evaluate the PSA for special-status species and habitat. These included reconnaissance surveys and focused surveys for rare plants, burrows, Crotch's bumble bee (*Bombus crotchii*) habitat, protocol-level burrowing owl surveys, and California tiger salamander (CTS) and California red-legged frog (*Rana draytonii*; CRLF) habitat assessments. Additionally, a formal aquatic resource delineation was conducted concurrently with the reconnaissance and focused surveys in 2024. The field surveys are summarized in Table 1 and discussed further below. Resumes for staff are included as Appendix C.

Table 1. Field Survey Summary

Date	Survey Type(s)	Biologists	Time	Survey Conditions
03/31/2023	Reconnaissance (original Project site boundary only, excludes gen-tie)	Emily Scricca Erin Fisher-Colton	9:30 a.m.–11:30 a.m.	58°F–61°F, 75%–90% cloud cover, 1–4 mph wind
05/16/2023	▪ Protocol-Level Botanical ▪ Focused Burrow Surveys ▪ Focused Crotch's Bumble Bee Habitat Assessment	Kelsey Higney Lorna Haworth	8:41 a.m.–11:15 a.m.	80°F–85°F, 0% cloud cover, 0–6 mph wind
08/02/2023	▪ Reconnaissance (gen-tie alignment only) ▪ Protocol-Level Botanical ▪ Focused Burrow Surveys ▪ Focused Crotch's Bumble Bee Habitat Assessment ▪ Protocol-level California Red-Legged Frog (CRLF) Habitat Assessment	Kelsey Higney Erin Fisher-Colton	9:23 a.m.–4:54 p.m.	71°F–80°F, 0% cloud cover, 5–20 mph wind
01/18/2024	▪ Reconnaissance (adjusted gen-tie alignment only) ▪ Protocol-Level Botanical (adjusted gen-tie alignment only) ▪ Focused Burrow Surveys (adjusted gen-tie alignment only) ▪ Focused Crotch's Bumble Bee Habitat Assessment (adjusted gen-tie alignment only) ▪ Aquatic Resources Delineation	Mikaela Bissell Erin Fisher-Colton	9:16 a.m.-2:30 p.m.	50°F–58°F, 80%-100% cloud cover, 1-4 mph wind
04/12/2024	▪ Protocol-level Burrowing Owl Survey – Pass 1 ▪ Follow-up burrow assessment for San Joaquin Kit Fox and American Badger ▪ Protocol-level rare plant survey	Mikaela Bissell Tara Johnson-Kelly	8:30 a.m. – 2:00 p.m.	55°F–60°F, 0%-10% cloud cover, 10-14 mph wind

Table 1. Field Survey Summary

Date	Survey Type(s)	Biologists	Time	Survey Conditions
05/03/2024	▪ Protocol-level Burrowing Owl survey – Pass 2	Kelsey Higney Tara Johnson-Kelly	7:00 a.m. – 12:00 p.m.	56°F–71°F, 0% cloud cover, 10-15 mph wind
05/24/2024	▪ Protocol-level Burrowing Owls Survey – Pass 3	Tara Johnson-Kelly Paul Keating	7:00 a.m. – 12:00 p.m.	57°F–64°F, 0%-10% cloud cover, 10 mph wind
06/17/2024	▪ Protocol-level Burrowing Owl Survey – Pass 4 ▪ Protocol-level rare plant survey	Paul Keating	3:00 p.m. – 7:00 p.m.	82°F–78°F, 0% cloud cover, 15-20 mph wind

All plant species encountered during the field surveys were identified to lowest possible taxonomic rank and recorded. Latin and common names for plant species with a California Rare Plant Rank (CRPR) follow the CNPS Online Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2024). For plant species without a CRPR, Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2023), and common names follow the U.S. Department of Agriculture Natural Resources Conservation Service Plants Database (USDA 2023b). Wildlife species detected during field surveys by sight, calls, tracks, scat, or another sign were recorded. Binoculars (8-times magnification) were used to identify observed wildlife. A list of observed plant and wildlife species is presented in Appendix D, Plant and Wildlife Species Compendium, and representative site photographs are presented in Appendix E, Photo Record.

4.3.1 Reconnaissance Surveys

A reconnaissance-level field survey was conducted on March 31, 2023, to identify vegetation communities and assess the original BESS Project site boundary and vicinity for suitable habitat for special-status plant and wildlife species. This survey was conducted on foot and by vehicle to provide complete visual coverage of the original Project site. No protocol-level surveys were conducted at this time.

A follow-up reconnaissance-level field survey was conducted for the updated PSA which included the BESS Project site and buffered gen-tie alignment of the Project area on August 2, 2023, in conjunction with the surveys for rare plants, burrows, and Crotch's bumble bee habitat. This survey was conducted on foot to identify vegetation communities in the updated PSA boundaries. During the August reconnaissance survey, a reconnaissance-level wetland assessment was done for the site. The focus was to determine if there were any potential jurisdictional waters on the site that would require further protocol jurisdictional delineations.

A second follow-up reconnaissance-level field survey was conducted for the adjusted buffered gen-tie alignment on January 18, 2024. This survey was conducted on foot to identify vegetation communities along the adjusted gen-tie alignment and included surveys for rare plants, burrows, and Crotch's bumble bee habitat within the adjusted buffered gen-tie alignment.

4.3.2 Protocol-Level Botanical Surveys

Protocol-level rare plant surveys were conducted on May 16, 2023, August 2, 2023, and January 18, April 12, and June 17, 2024, to identify special-status rare plant species within the updated PSA boundaries. Dudek qualified biologists surveyed the entire PSA on foot in approximately 20-meter parallel transects to provide complete visual coverage within the updated PSA boundaries and gen-tie alignment. Rare plants surveys were conducted in accordance with the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 2000), the Protocol for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018), and the CNPS Botanical Survey Guidelines (CNPS 2001). Rare plants occurrences were mapped using ArcGIS Field Maps (Esri).

4.3.3 Focused Burrow Surveys

Focused burrow surveys were conducted on May 16, 2023, August 2, 2023, and January 18, 2024, to identify a variety of animal burrows within the updated PSA boundaries. Additional surveys to assess burrow suitability for San Joaquin kit fox and American badger were conducted on April 12, 2024. The subsequent assessment for San Joaquin kit fox and American badger followed recommendations outlined in the *San Joaquin Kit Fox Survey Protocol for the Northern Range* (USFWS 1999). Dudek qualified biologists surveyed the entire PSA on foot in approximately 20-meter parallel transects to provide complete visual coverage within the updated PSA boundaries and gen-tie alignment. Burrows of all sizes were mapped using ArcGIS Field Maps (Esri).

4.3.4 Protocol-level Burrowing Owl Surveys

Surveys for western burrowing owl were conducted by Dudek qualified biologists on April 12, May 3, May 24, and June 17, 2024. Surveys followed recommended protocol outlined in Appendix D of the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). Surveys utilized data collected during the focused burrow surveys (Section 4.3.3) to walk transect no more than 20 meters apart within the PSA. Biologists documented any sight or sign of western burrowing owl during the survey.

4.3.5 Focused Crotch's Bumble Bee Habitat Assessment

Focused Crotch's bumble bee habitat assessments were conducted on May 16, 2023, August 2, 2023, and January 18, 2024, to identify foraging and nesting habitat for Crotch's bumble bees within the updated PSA boundaries. Dudek qualified biologists surveyed the entire PSA on foot in approximately 20-meter parallel transects to provide complete visual coverage within the updated PSA boundaries and gen-tie alignment. Bumble bee habitat was identified following CDFW Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species (CDFW 2023e), which includes plant species that provide floral (nectar) resources and nesting substrates such as bare ground, rodent burrows, thatched grass, or rock piles. Potential bumble bee floral resources and nesting substrates were mapped using ArcGIS Field Maps (Esri).

4.3.6 Protocol-Level California Red-Legged Frog Habitat Assessment

A protocol-level habitat assessment for CRLF was conducted on August 2, 2023, for suitable aquatic habitats identified within, and in the vicinity of, the PSA to identify potential aquatic breeding sites within dispersal distance of the PSA. Not all aquatic habitats within 1 mile were able to be surveyed due to access restrictions. Habitat assessments were conducted in accordance with the USFWS *Revised Guidance on Site Assessments and Field surveys for the California Red-legged Frog* (USFWS 2005). Aquatic features were coarsely mapped along top of bank using ArcGIS Field Maps (Esri).

4.3.7 Protocol-Level California Tiger Salamander Habitat Assessment

Concurrently with the CRLF habitat assessment (4.3.6), a protocol-level habitat assessment for California tiger salamander was conducted on August 2, 2023, for suitable aquatic habitats identified within, and in the vicinity of, the PSA to identify potential aquatic breeding sites within dispersal distance of the PSA. Not all aquatic habitats within 1.24 miles were able to be surveyed due to access restrictions. Habitat assessments were conducted in accordance with the USFWS *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander* (USFWS 2003). Aquatic features were coarsely mapped along top of bank using ArcGIS Field Maps (Esri).

4.3.8 Aquatic Resources Delineation

A preliminary wetland assessment was conducted during the reconnaissance survey on August 2, 2023, to generally identify and coarsely map aquatic resources that may require further protocol jurisdictional delineations. Dudek then conducted a complete aquatic resources delineation concurrent with the reconnaissance-level biological field survey on January 18, 2024, to identify and map the extent of aquatic resources within the entire PSA that are potentially subject to regulation under federal CWA Sections 401 and 404, CFGC Section 1602, or under the Porter-Cologne Act. The results of the aquatic resources delineation have been incorporated into this report. Representative photographs were collected for each of the aquatic resources (Appendix E) and wetland delineation datasheets were completed (Appendix I).

5 Results

5.1 Vegetation Communities

Only one vegetation community was mapped in the PSA: wild oats and annual brome grassland (*Avena* spp. – *Bromus* spp. Herbaceous Semi-Natural Alliance; CNPS 2023a; Figure 2). This community, often referred to as California annual grassland, is characterized by an herbaceous layer dominated by non-native grass species including wild oats (*Avena* spp.), bromes (*Bromus* spp.), and barleys (*Hordeum* spp.). The herbaceous layer is less than 1.2 meters in height and cover is open to continuous (CNPS 2023a). Annual grassland covers the entire PSA outside of the aquatic features (88.24 acres).

5.2 Aquatic Resources

A formal aquatic delineation was conducted on January 18, 2024. There is one seasonal channel (EPH-01; 0.37 acre, 846.07 linear feet), Patterson Run, within the PSA where the along the gen-tie alignment, which parallels Patterson Pass Road (Figure 3). This seasonal channel flows southwest to northeast. The channel had moderate flow during the March 2023 and February 2024 surveys and was dry during the May and August 2023 surveys. One swale-like area was surveyed along the gen-tie alignment at the southwest corner of the PG&E substation. This feature exhibited cracked clay and sandy wash type soils during the August 2023 survey, with patchy grassland habitat along the margins and herbaceous plants such as dove weed (*Croton setiger*), curly dock (*Rumex crispus*), and big tarplant (*Blepharizonia plumosa*). However, the survey determined that this feature did not contain hydric soils, vegetation, or hydrology and, thus, is not a jurisdictional aquatic resource.

5.3 Observed Plant and Wildlife Species

A total of 42 plant species, consisting of 19 (45%) native species and 23 (55%) non-native species, were observed within or in the immediate vicinity of the PSA during the rare plant surveys and reconnaissance-level biological field surveys (Appendix D). A total of 20 native and 1 non-native wildlife species were recorded within or in the immediate vicinity of the PSA during the biological field surveys (Appendix D). Big tarplant was observed during the rare plant survey on August 2, 2023 (Refer to Section 5.4.1 for further information). No other special-status plant species were observed during the 2023 or 2024 surveys, and the surveys were coincident with the timing when many special-status plant species are detectable. A detailed account of special-status wildlife on site is provided in Section 5.4.2 below. Tricolored blackbird was observed foraging within the PSA during the January 18, 2024 site survey. No other special-status wildlife species or their sign were observed during the biological field surveys.

5.4 Special-Status Species

5.4.1 Special-Status Plants

Based on the updated literature review and database searches, a total of 42 special-status plants have been recorded within 5 miles of the PSA and/or within the 9 quadrangles in the vicinity of the PSA (Appendix A: Figure 4, Special-Status Species Occurrences; Appendix F, Special-Status Species' Potential to Occur within the PSA) (CDFW

2024; CNPS 2024). Of these species, 24 were removed from further consideration due to lack of suitable habitat within or adjacent to the PSA, no known occurrences within 5 miles of the PSA, and/or because the PSA is outside of the species' known geographic or elevation range. An additional 7 species were determined to have a low potential to occur based on the lack of suitable microhabitat (e.g., mesic areas, serpentine soils) and recent occurrences in the site vicinity, including heartscale (*Atriplex cordulata* var. *cordulata*), lesser saltscale (*Atriplex minuscula*), big-scale balsamroot (*Balsamorhiza macrolepis*), Mt. Diablo fairy-lantern (*Calochortus pulchellus*), palmate-bracted bird's-beak (*Chloropyron palmatum*), California alkali grass (*Puccinellia simplex*), and saline clover (*Trifolium hydrophilum*). None of these species are further addressed in this report.

Eleven special-status plants have a moderate or high potential to occur or were directly observed: big tarplant (*Blepharizonia plumosa*), brittlescale (*Atriplex depressa*), Lemmon's jewelflower (*Caulanthus lemmonii*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), recurved larkspur (*Delphinium recurvatum*), spiny-sepaled button-celery (*Eryngium spinosepalum*), diamond-petaled California poppy (*Eschscholzia rhombipetala*), San Joaquin spearscale (*Extriplex joaquinana*), showy golden madia (*Madia radiata*), shining navarretia (*Navarretia nigelliformis* ssp. *radians*), and caper-fruited tropidocarpum (*Tropidocarpum capparideum*) (Table 2 and Appendix D. All the special-status plant species are found in valley and foothill grassland, often with alkaline and/or clay soils.

Table 2. Special-Status Plant Species with Moderate or High Potential to Occur

Species Name	Common Name	Status (Federal/State/CRPR/EACCS)[1]	Potential to Occur[2]
Atriplex depressa	brittlescale	None/None/1B.2/No	Moderate
Blepharizonia plumosa	big tarplant	None/None/1B.1/C	Known
Caulanthus lemmonii	Lemmon's jewelflower	None/None/1B.2/No	Moderate
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	None/None/1B.1/C	Moderate
Delphinium recurvatum	recurved larkspur	None/None/1B.2/C	Moderate
Eryngium spinosepalum	spiny-sepaled button-celery	None/None/1B.2/No	Moderate
Eschscholzia rhombipetala	diamond-petaled California poppy	None/None/1B.1/No	Moderate
Extriplex joaquinana	San Joaquin spearscale	None/None/1B.2/C	Moderate
Madia radiata	showy golden madia	None/None/1B.1/No	Moderate
Navarretia nigelliformis ssp. *radians*	shining navarretia	None/None/1B.2/No	Moderate
Tropidocarpum capparideum	caper-fruited tropidocarpum	None/None/1B.1/No	High

Notes: Additional information on determining potential to occur is in Appendix F, Special-Status Species Potential to Occur within the Project study area.

[1] **Status:**

None= Not listed/no conservation status.

CRPR =California Rare Plant Rank. Plants ranked as CRPR 1A, 1B, 2A, or 2B may qualify as endangered, rare, or threatened species within the definition of CEQA Guidelines Section 15380.

California Rare Plant Rank (CRPR) Status

1B: plants rare, threatened, or endangered in California and elsewhere.

Threat Rank

0.1: Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat).

0.2: Moderately threatened in California (20%–80% occurrences threatened/moderate degree and immediacy of threat).

C= 'Covered' under the East Alameda County Conservation Strategy (EACCS)

[2] **Potential to Occur:**

Known to Occur= Known occurrences recorded within the PSA.

High Potential to Occur: The species has not been documented in the PSA but is known to occur in the vicinity and species habitat is present.
Moderate Potential to Occur: The species has not been documented in the vicinity, but the PSA is within the known range of the species, and habitat for the species is present.

Protocol-Level Botanical Survey Results

Land surrounding the PSA is predominantly private property. As such, reference populations for focal plant species with moderate to high potential to occur were not available or were greater than 10 miles from the PSA. In addition to CNDDB records, Dudek biologists reviewed available herbarium records and research-grade observations documented in iNaturalist (Consortium of California Herbaria 2023 and iNaturalist 2023, respectively). Based on the review of available information, all focal plant species would have been evident and identifiable during the survey windows. Early-blooming species such as diamond-petalled California poppy and caper-fruited tropidocarpum were verified to be evident and identifiable in April based on regional collections (California Consortium of Herbaria, 2023). Protocol-level botanical surveys were conducted in May and August 2023, and in April and June 2024. The surveys coincided with the period when all special-status species would be evident and identifiable.

Three individuals of big tarplant were observed during protocol-level botanical surveys conducted on August 2, 2023 (Figure 5).

Big tarplant is an annual herb that endemic to California, with limited distribution throughout the state. This species has a CRPR rank of 1B.1 (rare, threatened or endangered in California and elsewhere), and is a covered species under the EACCS. This species prefers habitats in valley grassland vegetation communities, as well as in foothill woodlands and chaparral (Calflora 2023). Threats to this species include urbanization, disking, residential development, and encroachment by non-native plant species (CNPS 2023b).

Only one plant was flowering, therefore allowing a qualified Dudek botanist (Laura Burris) to definitively key the plant to species based on descriptions, measurements, and photos taken in the field. All three individuals are located near the southwest corner of the PG&E substation in an area of sparse grassland that shows evidence of drainage patterns from the surrounding hills, including cracked soils, reduced grass cover and increased scrub species cover, and increased bare ground.

5.4.2 Special-Status Wildlife

Based on the updated literature review and database searches, a total of 41 special-status wildlife species have been recorded within 5 miles of the Project site and/or within the 9 quadrangles in the vicinity of the PSA (Figure 4; Appendix F) (CDFW 2024; USFWS 2024). Of these species, 21 were removed from further consideration due to lack of suitable habitat within or adjacent to the PSA, no known occurrences within 5 miles of the PSA, and/or because the PSA is outside of the species' known geographic or elevation range. An additional 11 species were determined to have a low potential to occur based on the lack of suitable microhabitat (e.g., vernal pools, aquatic habitat, host plants), including Crotch's bumble bee (*Bombus* crotchii), western spadefoot (*Spea hammondii*), California glossy snake (*Arizona elegans occidentalis*), western pond turtle (*Emys marmorata*), San Joaquin whipsnake (*Masticophis flagellum ruddocki*), Blainville's horned lizard (*Phrynosoma blainvillii*), grasshopper sparrow (*Ammodramus savannarum*), short-eared owl (*Asio flammeus*), Swainson's hawk (*Buteo swainsoni*), loggerhead shrike (*Lanius ludovicianus*), and pallid bat (*Antrozous pallidus*). None of these species are further addressed in this report.

Nine special-status wildlife species were determined to have a moderate or high potential to occur within the PSA: California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), tricolored blackbird (*Agelaius tricolor*), golden eagle (*Aquila chrysaetos*), burrowing owl (*Athene cunicularia*), northern harrier (*Circus hudsonius*), white-tailed kite (*Elanus leucurus*), American badger (*Taxidea taxus*), and San Joaquin kit fox (*Vulpes macrotis mutica*). These special-status wildlife species are known to occur in open grassland habitats and are discussed in further detail below.

5.4.2.1 Crotch's Bumble Bee (*Bombus crotchii*)

Crotch's bumble bee is a state candidate for listing as endangered under CESA and is not covered under the EACCS. The species has low potential to occur within the PSA. The CBB occurs almost exclusively in California, currently primarily in the Central Valley, but has been described as having historically occupied grasslands and shrublands in southern to central California. Bumble bees are known to be generalist pollinators but have preferences based on flower color including purple, blue, and yellow. Specifically, this species is found in grasslands with food plant genera that include *Antirrhinum*, *Phacelia*, *Clarkia*, *Dendromecon*, *Eschscholzia*, and *Eriogonum,* among others (USFS 2012). The queen flight season for this species is February to March, and the colony active period (highest detection probability) is April to August (CDFW 2023e). Additionally, suitable habitat may contain any of the following: 1) areas of grasslands and upland scrub that contain requisite habitat elements, such as small mammal burrows and forage plants; 2) potential nest habitat (late February through late October) containing underground abandoned small mammal burrows, perennial bunch grasses and/or thatched annual grasses, brush piles, old bird nests, dead trees or hollow logs; 3) overwintering sites (November through early February) utilized by mated queens in self-excavated hibernacula potentially in soft, disturbed soil, sandy, well-drained, or loose soils, under leaf litter or other debris with ground cover requisites such as barren areas, tree litter, bare-patches within short grass in areas lacking dense vegetation. There are no CNDDB records within 5 miles of the PSA (CDFW 2024). One occurrence is documented within a nine-quad search (Occurrence number 19). This occurrence of was documented in 1959 and the exact location of this occurrence was unknown and recorded to CNDDB to demonstrate the general vicinity (CDFW, 2024).

Crotch's Bumble Bee Focused Habitat Assessment Survey Results

Focused Crotch's bumble bee habitat assessments were conducted on May 16 and August 2, 2023, and January 18, 2024. Scattered floral resources were observed including lupines (*Lupinus* spp.), Mexican whorled milkweed (*Asclepias fascicularis*), and exserted Indian paintbrush (*Castilleja exserta*), along with potential nesting substrates such as bare cracked soil, small rocky areas, and small rodent burrows. Both *Lupinus* sp. and *Asclepias* sp. are example food plants utilized by this species (Williams et al. 2014). No bumble bee species were seen during the field surveys, however, presence is assumed due to suitable foraging floral resource presence.

5.4.2.2 California Tiger Salamander (*Ambystoma californiense*)

The central California distinct population segment (DPS) of California tiger salamander is a federally and state threatened species and is covered under the EACCS. This species has moderate potential to occur within the PSA. This species is found in annual grassland, valley-foothill hardwood, and valley-foothill riparian habitats and breeds in vernal pools, ephemeral pools, stock ponds, and (infrequently) along streams and human-made water bodies if predatory fishes are absent. The nearest documented occurrence is approximately 1.6 miles southwest of the PSA from 2012 (Occ. No. 1003), but there are numerous other records within 5 miles of the PSA (CDFW 2024). The habitat on the PSA is suitable upland refuge and dispersal habitat for this species, consisting of grassland with

small mammal burrows. Two nearby stock ponds provide suitable aquatic breeding habitat approximately 0.3 miles from the PSA (Figure 6). No California tiger salamanders were observed during the field surveys, but this species is extremely difficult to detect without focused surveys in accordance with USFWS and CDFW-sanctioned protocols (USFWS and CDFG 2003).

A protocol-level habitat assessment for California tiger salamander was conducted on August 2, 2023, for suitable aquatic habitats identified within, and in the vicinity of, the PSA to identify potential aquatic breeding sites within dispersal distance of the PSA. Three aquatic features were assessed for habitat suitability for CTS: Patterson Run, a seasonal stream paralleling Patterson Pass Road, and two stock ponds approximately 0.3 miles northwest (Pond 1) and west (Pond 2) of the PSA (Figure 6). Of these aquatic features, Ponds 1 and 2 were determined to provide high-quality breeding habitat for California tiger salamander. Neither of these features would be impacted by the proposed project. Patterson Run lacked large pools suitable for breeding. No CTS were observed during the field surveys or habitat assessment. Grasslands surrounding the aquatic features, including within the PSA, contain suitable upland refuge and overland migration habitat.

5.4.2.3 California Red-Legged Frog (*Rana draytonii*)

California red-legged frog (CRLF) is a federally threatened species and a California Species of Special Concern and is covered under the EACCS. The PSA is also located within critical habitat for California red-legged frog (refer to Section 5.6.1; 75FR12816 12959). The species has a moderate potential to occur within the PSA. This species is found in lowland streams, wetlands, riparian woodlands, and livestock ponds with dense, shrubby, or emergent vegetation and deep, still, or slow-moving water. They will use adjacent upland habitats for refuge during dry seasons. The nearest documented occurrences are approximately 1.5 miles east, south, and west of the PSA (Occ. Nos. 822 from 2001, 1079 from 2008, 1759 from 2012, and 44 from 1993); there are numerous other records within 5 miles of the PSA (CDFW 2024). The habitat on the PSA is suitable upland refuge and dispersal habitat for this species, consisting of abundant grassland with small mammal burrows.

A protocol-level habitat assessment for CRLF was conducted on August 2, 2023, for suitable aquatic habitats identified within, and in the vicinity of, the PSA to identify potential aquatic breeding sites within dispersal distance of the PSA. Three aquatic features were assessed for habitat suitability for CRLF: Patterson Run, a seasonal stream paralleling Patterson Pass Road, and two stock ponds approximately 0.3 miles northwest (Pond 1) and west (Pond 2) of the PSA (Figure 6; Appendix G, CRLF Habitat Assessment Datasheets). Of these aquatic features, only Pond 2 was determined to provide high-quality breeding habitat for CRLF, consisting of a large, deep stock pond with perennial water and a large quantity of emergent vegetation (bulrush [*Schoenoplectus* sp.] along with alkali bulrush [*Bolboschoenus maritimus*]) and surrounded by grazed grassland. Patterson Run lacked large pools suitable for breeding but could provide non-breeding aquatic habitat when water is present or dispersal habitat .Pond 1 lacked suitable emergent or margin vegetation and would not provide breeding habitat. No CRLF were observed during the field surveys or habitat assessment.

5.4.2.4 Tricolored Blackbird (*Agelaius tricolor*)

Tricolored blackbird (nesting colony) is state threatened and a California Species of Special Concern that is covered under the EACCS and is known to forage within the PSA. This species was observed during the field survey on January 18, 2024, foraging in the grassland within the gen-tie buffer area. Tricolored blackbird nests colonially near freshwater, often in emergent wetlands of cattail or tule, but will also nest in dense, thorny vegetation such as Himalayan blackberry (*Rubus armenicus*) or thistles (*Cirsium* spp., *Silybum* spp., etc.). A desktop level habitat

assessment was conducted for suitable breeding habitat potential within 0.5 miles of the PSA, and aquatic habitat within 0.5 miles was visited in the field concurrently with the CTS habitat assessment. Per the CDFW CNDDB database, there has not been any documented occurrences of this species within 0.5 miles. The National Wetland Inventory (NWI) has mapped data of the following three features that have been evaluated for tricolored blackbird breeding habitat suitability:

- **PUBHh** – Approximately 0.40 miles west of the PSA there is a 0.21-acre feature mapped by NWI categorized as a freshwater pond PUBHh [(P) Palustrine; (UB) unconsolidated bottom; (H) permanently flooded; (h) diked/impounded] (NWI, 2024). On March 31, 2023, Dudek biologist Emily Scricca conducted an evaluation of this aquatic feature. Representative photos were captured of this feature and display a lack of suitable foliage required for this species to nest (Appendix E).

- **PUBHh** – Approximately 0.46 miles northwest of the PSA there is a 0.24-acre feature mapped by NWI categorized as a freshwater pond PUBHh. On March 31, 2023, Dudek biologist Emily Scricca conducted an evaluation of this aquatic feature, and this feature presented similar lacking suitable nesting species required for this species to nest. Representative photos were captured of this feature (Appendix E).

- **PEM1A –** Approximately 0.25 miles northwest of the PSA there is a 5.00- acre feature mapped by NWI categorized as a freshwater emergent wetland PEM1A [(P) palustrine; (EM) emergent; (1) persistent; (A) temporary flooded] (NWI, 2024). On January 18, 2024, Dudek biologist Erin Colton-Fisher conducted an evaluation of this aquatic feature for habitat suitability for tricolored blackbird. Representative photos were captured of this feature display a lack of standing water and suitable nesting foliage required for this species (Appendix E).

Tricolored blackbird forage in grasslands, woodlands, and in agricultural areas. The nearest documented occurrence is 1.8 miles east of the PSA, a historical record from 1998 (Occ. No. 418), and six occurrences are recorded within 5 miles of the PSA as recently as 2015 (CDFW 2024). The six documented occurrences of tricolored blackbird within a five-mile radius from the PSA are detailed below:

- **Occurrence number 989:** This occurrence of tricolored blackbird was northwest of the PSA within a five-mile radius and documented in 1993. The observation notes for this occurrence detail that a breeding colony was observed in tall green mustard. No nearby aquatic features are visible through satellite imagery on Google Earth and CNDDB notes document that this occurrence was an approximate location. The following year, 1994, no tricolored blackbirds were observed at this location. Coordinates: (37.7218, -121.6874).

- **Occurrence number 842:** This occurrence of tricolored blackbird was northwest of the PSA within a five-radius and documented in 2005. The observation notes for this occurrence detail that the habitat was comprised of milk thistle, mustard, and poison hemlock in a wet meadow. Records indicate that groups of 25-30 nesting birds were observed on June 04, 2005. The wet meadow was eventually drained in 2008 and no observations were documented from 2008 through 2014. Coordinates: (37.7398, -121.6714)

- **Occurrence number 436:** This occurrence of tricolored blackbird was southeast of the PSA within a five-mile radius and documented in 2015. The observation notes for this occurrence detail that the habitat consisted of grasslands with freshwater emergent wetlands and seeps. The vegetation that was dominate in the freshwater emergent wetlands entail dense cattails and nettles. This differs from the PSA due to the

freshwater emergent wetlands within 0.5 miles lacking dense suitable nesting vegetation. Per this occurrence record, tricolored blackbird was documented in this area as an explosive test site from 100's nesting in 1993 to observing 800 birds in 2015. Coordinates: (37.65680, -121.52776)

- **Occurrence number 418:** This occurrence of tricolored blackbird is the closest occurrence of this species in proximity to the PSA within a five-mile radius and was documented in 1998. The observation notes for this occurrence detail that the habitat consisted of patches of milk thistle with cattle presence, however, no suitable habitat was present in 2011. In 1998, approximately 1,500 individual tricolored blackbirds were observed coming and going with food and/or fecal sacs being carried by adults. A secondary site visit on April 17, 2011, revealed that 0 individual tricolored blackbirds were observed within the area documented in 1998. Coordinates: (37.71521, -121.53471)

- **Occurrence number 235:** This occurrence of tricolored blackbird was southeast of the PSA within a five-mile radius and documented in 1992. The observation notes of this occurrence detail that the habitat consisted of an artificially impounded pond grown over with a heavy stand of cattails (*Typha* sp). This observation habitat differs from the PSA due to lacking heavy stands of nesting vegetation. The observation notes also detail that 3 individual male tricolored blackbirds were within a group of nesting redwinged blackbirds and that nesting habitat was assumed. Coordinates: (37.69438, -121.51829)

- **Occurrence number 190:** This occurrence of tricolored blackbird was southeast of the PSA within a five-mile radius and documented in 1992. The observation notes of this occurrence detail that the habitat was within non-native annual grassland. The colony that was observed was split into two parts. The first colony was in a patch of Italian thistle near a creek. The second colony was in a patch of mustard approximately 0.2 miles away from the first colony. Approximately 45 individual tricolored blackbirds were observed nesting between the two locations on May 01, 1992. Folow up site visits occurred on the following dates: April 16, 2011; April 17, 2011; and April 20, 2014. Of the site visits, no individuals were observed spread between the two previous colony sites. Coordinates: 37.74481, -121.64051

Although this species was observed foraging on the PSA, it is unlikely to form a nesting colony as there is no suitable nesting habitat present within the PSA. Further, data on tricolored nesting on lands surrounding the PSA provided by Westervelt Ecological Services (2024) shows that tricolored blackbird are not utilizing the aquatic habitat nearest to the PSA. Aquatic habitat within 0.5 mile of the PSA does not include stands of emergent vegetation or dense riparian vegetation that provide suitable nesting substrates preferred by this species (Shuford et al, 2008) (refer to photographs in Appendix E). Additionally, although this species may also utilize upland vegetation for nesting (Cook and Toft 2005), they prefer dense stands of vegetation that offer protection from predators. The grasslands within the PSA are dominated by bromes and wild oat, and do not contain appropriate stands of vegetation for nesting colonies. Other than one observation of this species utilizing the PSA for winter foraging, this species has not been observed within the PSA during regular surveys associated with burrowing owl, which occurred every three weeks during the bird nesting season. Thus, although this species may utilize the PSA for foraging, it does not breed within the PSA.

5.4.2.5 Golden Eagle (*Aquila chrysaetos*)

Golden eagle is federally protected by the Bald and Golden Eagle Protection Act and is a California fully protected species that is covered under the EACCS with moderate potential to occur within the PSA. The golden eagle was formerly considered common within suitable habitats in California (Grinnell and Miller 1944) and is now considered

an uncommon resident throughout California (Garrett and Dunn 1981). This species requires rolling foothills, mountain terrain, and wide arid plateaus deeply cut by streams and canyons, open mountain slopes and cliffs, and rock outcrops (Zeiner et al. 1990). In central California, the golden eagle nests primarily in open grasslands and oak savannah and, to a lesser degree, in oak woodlands and open shrublands (Hunt et al. 1995, 1999). The PSA has a vegetation community of wild oats and annual brome along with an ephemeral drainage located in the southeast. The project site lacks mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes and cliffs, and rock outcrops. The only trees onsite that may provide potential nesting locations for golden eagle are concentrated in the southeastern portion of the PSA along Patterson Run. However, these trees are relatively short in stature, located within a low-lying area associated with the channel of Patterson Run, and do not contain raptor nests. An assessment of potentially suitable golden eagle nesting habitat was conducted within 2 miles of the PSA, where access and land ownership allowed. Potentially suitable nesting habitat within 2 miles of the PSA includes trees associated with residences, transmission towers, and vegetation associated with Patterson run south of the PSA. While some stick nests were observed within transmission towers, they were most likely associated with ravens (*Corvus corax*). Additionally, most of the potentially suitable nesting habitat is blocked from visual range of the PSA by terrain. No golden eagles were observed during the nest habitat assessment.

The nearest documented occurrence is approximately 4.9 miles south of the PSA from 2014, a record of a nest in a tower (Occ. No. 323; CDFW 2024). There are a total of 14 documented occurrences of golden eagle occurring in a USGS nine quad search surrounding the PSA (CDFW 2024). Of the 14 documented occurrences of golden eagle occurring, 5 occurrences have been documented within a 10-mile radius of the project site.

- **Occurrence No. 71** located approximately 8.25 miles northwest from the project site – nest was found on north-facing slope on a 40 ft valley oak located mid-slope in a canyon with mixed riparian habitat and was documented to occur in 2000.

- **Occurrence No. 324.** Located approximately 6 miles south from the project site. Comments recorded in CNDDB state that there "may" have been a nest located within power poles and comments state a need for field work. Occurrence was documented in 1998.

- **Occurrence No. 323.** located approximately 4.9 miles southeast of the project site - record of a nest in a tower, described in above text. Occurrence was documented in 2014. (Figure 4, Special-Status Species Occurrences).

- **Occurrence. No 124** located approximately 5.04 miles southeast of the project site and nesting substrate was located on a power pole. Occurrence was last seen in 1996, and the surrounding topography shows steep bluffs from aerial imagery, which is lacking on the project site.

- **Occurrence No. 147** located approximately 9.75 miles northwest of the project site and nest was located within blue oak savannah and annual grazed grassland within a protected watershed. Comments state that coordinates provided to CDFW are erroneous and do not represent nest site. This occurrence offers potential to occur outside a 10-mile radius from the project site due to that reasoning. Observance of occurrence was documented in 2006.

The remaining 9 occurrences documented of golden eagle within the USGS 9 quad search are concentrated to occur near Los Vaqueros Reservoir approximately 11 miles northwest of the PSA. The Los Vaqueros Reservoir provides high quality suitable nesting habitat for this species due to having a steep bluff terrain, various nesting

locations, and a reservoir resource to support this species. The grassland foraging habitat on the PSA is of moderate quality, with low-quality nesting habitat provided by transmission towers surrounding the site and the trees associated with Patterson Run. No eagles or potential nests were observed during the field surveys.

5.4.2.6 Burrowing Owl (*Athene cunicularia*)

Burrowing owl is a candidate for listing as a protected species under the CESA, and is also covered under the EACCS with moderate potential to occur on the PSA. This species nests and forages in grassland, open scrub, and agricultural lands that contain ground squirrel burrows or burrow surrogates (e.g., concrete debris piles, culverts, riprap) for nesting and shelter. There are three documented occurrences adjacent or overlapping with the PSA, from 1982, 2002, and 2006 (Occ. Nos. 48, 468, and 1229). Multiple other documented occurrences are within 5 miles of the PSA, most recently from 2015 (CDFW 2024).

Focused Burrow Survey Results

Focused burrow surveys were conducted on May 16 and August 2, 2023, and January 18, 2024, to identify a variety of animal burrows within the updated PSA boundaries, including for burrowing owl. There is abundant grassland habitat within the PSA, but it is currently of moderate suitability for burrowing owls because it lacks extensive ground squirrel burrows and the vegetation is generally tall and dense (burrowing owls prefer areas with short, sparse vegetation). Burrows present on the site were generally small and not suitable for burrowing owls. Higher-quality habitat with low, grazed vegetation and ground squirrel colonies were observed throughout the surrounding landscape. No burrowing owls were observed during the field surveys.

Protocol-level Burrowing Owl Survey Results

Protocol-level burrowing owl surveys were conducted on April 12, May 3, May 24, and June 17, 2024. Results of the focused burrow survey were used to identify areas of potential breeding habitat (burrows). No burrowing owls or their sign were observed during the field surveys. In general, CDFW considers sites occupied if BUOW and/or their sign (e.g. burrows with whitewash, feathers, pellets, prey debris) have been observed on the site in the last 3 years, therefore, based on the lack of documented occurrences and survey results, this species is not present within the PSA.

5.4.2.7 Northern Harrier (*Circus hudsonius*)

Northern harrier is a California Species of Special Concern that is not covered under the EACCS with a moderate potential to occur within the PSA. This species nests in open wetlands (such as wet meadows, old fields, and marshes) and in dry grassland and grain fields, and forages in open habitats including grassland, scrub, rangelands, and emergent wetlands. The nearest documented occurrence is approximately 2.2 miles northeast of the PSA from 2001 (Occ. No. 49; CDFW 2024). There is moderate-quality grassland habitat on the PSA of sufficient height and density for nesting. No northern harriers were observed during the field surveys.

5.4.2.8 White-Tailed Kite (*Elanus leucurus*)

White-tailed kite is a California fully protected species that is not covered under the EACCS with a low potential to occur within the PSA. This species nests in woodland, riparian, and individual trees near open land, and forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savannah, and disturbed lands.

The nearest documented occurrence is approximately 3.7 miles south of the PSA, a historical record from 1996 (Occ. No. 152; CDFW 2024). There is moderate-quality grassland habitat present within the PSA, with a few scattered cottonwood trees (*Populus* sp.) associated with Patterson Run suitable for nesting. No raptor nests were noted within the trees associated with Patterson Run during any of the site surveys. No white-tailed kites were observed during the field surveys.

5.4.2.9 Swainson's hawk (*Buteo swainsonii*)

Swainson's hawk is a California state threatened species that is not covered under the EACCS with a low potential for nesting and foraging within the PSA. Swainson's hawks are primarily a grassland bird, but they are also found in sparse shrubland and small, open woodlands (Bechard et al. 2010). In Central California, Swainson's hawks are primarily associated with grain and hay croplands that mimic native grasslands with respect to prey density and availability (Esetep 1989, Babcock 1995). Within a USGS nine quad search, a total of 85 occurrences of Swainson's hawk have been reported. Within a 10-mile radius of the PSA, a total of 59 occurrences of Swainson's hawk have been reported (CDFW 2024). Most of the documented observations within 5 miles are located approximately 4 miles or greater north and east of the PSA, primarily east of the Diablo Range (CDFW 2024). Four occurrences of this species are documented within 5 miles, but none are closer than 3.8 miles to the PSA. The occurrence located approximately 3.8 miles northeast of the PSA is a historic record documented in 1994 (CDFW 2024). Additionally, information provided by CDFW (2024) coincides with ebird records and shows this species overflying the PSA and sometimes displaying courtship behavior.

An assessment of potentially suitable nesting habitat within 0.5 mile of the PSA was conducted in December 2024. Potential nesting habitat within 0.5 mile of the PSA includes trees associated with residences, transmission towers, and riparian vegetation associated with Patterson Run south of the PSA. No raptor stick nests were noted in any of this habitat during the nest habitat assessment. Although the PSA presents grassland foraging habitat for this species, suitable nesting habitat within 0.5 mile of the PSA is limited and includes trees associated with homes and development. Trees onsite are short in stature and do not provide high quality nesting substrates for raptors. No Swainson's hawks or raptor stick nests were observed during field surveys.

5.4.2.10 American Badger (*Taxidea taxus*)

American badger is a California Species of Special Concern and is covered under the EACCS, with moderate potential to forage within the PSA. This species occurs on dry, open, treeless areas such as grasslands, coastal scrub, agriculture, and pastures, especially with friable soils for burrowing. The nearest documented occurrences are approximately 0.2 miles north (Occ. No. 520 from 2014) and south (Occ. No. 250, unknown date prior to 2004) of the PSA, with multiple other records within 5 miles of the PSA, the most recent from 2015 (CDFW 2024). Although there is abundant moderate-quality grassland for foraging, no suitable den habitat was documented within the PSA during the focused burrow surveys, as described below.

Focused Burrow Survey Results

Focused burrow surveys were conducted on May 16 and August 2, 2023, January 18, 2024, and additional burrow assessment was conducted during protocol-level burrowing owl surveys on April 12, May 3, May 24, and June 17, 2024, to identify a variety of animal burrows within the updated PSA boundaries, including for American badger. Several large burrow tailings were observed on the eastern side of the PSA along Patterson Pass Road, evidence of highly suitable soils for burrowing and hunting. Burrows were also investigated for sign of American badger

occupancy, including prey remains, scat, tracks, and claw/scratch marks. The burrows were not greater than 4 inches in diameter and are associated with active ground squirrel colonies and are not suitable denning structures for American badgers. No American badgers or their sign were observed during the field surveys.

5.4.2.11 San Joaquin Kit Fox (*Vulpes macrotis mutica*)

San Joaquin kit fox is a federally endangered and state threatened species and is covered under the EACCS, with low potential to occur on the PSA. This species occurs on grassland and scrublands, oak woodland, alkali sink scrubland, vernal pools, and alkali meadows. The PSA is in the northern range of this species, in the S1 (Alameda, Contra Costa, and San Joaquin Counties) San Joaquin kit fox satellite population recovery area (USFWS 2010), where there have been no confirmed observations since 2002 (USFWS 2020). Extensive surveys using scent dogs between 2001 and 2003 did not detect any San Joaquin kit foxes in surveyed portions of Alameda County (Smith et al. 2006).

The nearest documented occurrence is approximately 0.3 miles southwest of the PSA, a historical record from 1984 (Occ. No. 6); multiple other historical records are within 5 miles of the PSA, all prior to 1992 (CDFW 2024). Although there is abundant moderate-quality grassland present on the site, none of the burrows onsite are suitable for this species (see burrow survey results, below), and it is highly unlikely this species utilizes the PSA for denning habitat.

Focused Burrow Survey Results

Focused burrow surveys were conducted on May 16 and August 2, 2023, January 18, 2024, and additional burrow assessment was conducted during protocol-level burrowing owl surveys on April 12, May 3, May 24, and June 17, 2024, to identify a variety of animal burrows within the updated PSA boundaries, including for San Joaquin kit fox. Several large burrow tailings were observed on the eastern side of the PSA along Patterson Pass Road, evidence of highly suitable soils for burrowing. Burrows were also investigated for sign of San Joaquin kit fox occupancy, including prey remains, scat, tracks, and claw/scratch marks. The burrows onsite were not greater than 4 inches in diameter and are associated with active ground squirrel colonies and are not suitable denning structures for San Joaquin kit fox. No San Joaquin kit fox or their sign were observed during the field surveys.

5.5 Nesting Birds

The PSA provides habitat for nesting birds protected by the federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC). Red-tailed hawk (*Buteo jamaicensis*), common raven (*Corvus corax*), and American kestrel (*Falco sparverius*), and other bird species were observed foraging on site and the vicinity. While no nests were observed during the surveys, there are suitable trees along Patterson Pass Road, transmission towers for large raptors and ravens, and grassland for ground-nesting species such as western meadowlark (*Sturnella neglecta*).

5.6 Other Sensitive Resources

5.6.1 Designated Critical Habitat

Designated Critical Habitat (DCH) is designated by USFWS when a species is federally listed and represents areas of the species' range (or potential range) that contain essential features for the species' conservation (USFWS

2017). There is DCH for multiple species within 5 miles of the PSA; however, only DCH for CRLF overlaps with the Study Area (Appendix A: Figure 5, Critical Habitat and Essential Fish Habitat).

California Red-Legged Frog

There is DCH for CRLF overlapping the PSA and extending to the north and southwest (USFWS 2023e), in areas of undeveloped or rural agricultural lands. Critical habitat for CRLF consists of four primary constituent elements (PCEs), which support different components of the species' life history, as last updated by USFWS in 2010 (75 FR 12816-12959):

1. Aquatic Breeding Habitat: Standing bodies of fresh water including natural and manmade (e.g., stock) ponds, slow-moving streams, pools within streams, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in most years.
2. Aquatic Non-Breeding Habitat: Freshwater aquatic habitats that may not hold water long enough for the species to complete its aquatic life cycle, but which provide for shelter, foraging, predator avoidance, and aquatic dispersal of juvenile and adult CRLF. These may include breeding habitat as described above, as well as plunge pools within intermittent creeks, seeps, quiet water refugia within streams, and flowing springs.
3. Upland Habitat: Upland areas adjacent to or surrounding breeding and non-breeding aquatic and riparian habitat up to 1 mi (1.6 km), depending on surrounding landscape and dispersal barriers. Upland habitat may include grassland, woodland, forest, wetland, or riparian areas that provide shelter, forage, and predator avoidance with structural features such as boulders, rocks and organic debris (e.g., downed trees, logs), small mammal burrows, or moist leaf litter.
4. Dispersal Habitat: Accessible upland or riparian habitat within and between occupied locations within a minimum of 1 mi (1.6 km) of each other and that support movement between such sites. Dispersal habitat includes various natural or moderately altered habitats (such as agricultural fields) that do not contain dispersal barriers. Dispersal habitat does not include moderate- to high-density urban or industrial developments, nor does it include large (>50 ac) lakes or reservoirs.

PCEs 3 and 4 (upland and dispersal habitat) are present on the PSA, and PCEs 1 and 2 (aquatic breeding and non-breeding habitat) are present within dispersal distance (1 mile) of the PSA.

5.6.2 Essential Fish Habitat

Essential Fish Habitat (EFH) on the west coast is managed by the National Oceanic and Atmospheric Administration (NOAA) and the Pacific Fishery Management Council (PFMC) under the Magnuson-Stevens Act of 1976 to protect habitat for federally managed fish species across life stages (NOAA 2021). EFH is broadly mapped as the geographic area wherein a fish species may occur at any time in its life and is designated at the watershed level of the USGS 4th field hydrologic unit to account for variability in freshwater habitats over time (PFMC 2014, 2022). Thus, mapped EFH may encompass terrestrial habitats that do not currently provide appropriate conditions for target fish species but are within the same watershed as the species' known distribution and may become suitable habitat as environmental conditions change (e.g., droughts, floods, etc.).

The PSA overlaps with designated freshwater EFH for Pacific coast salmon. Specifically, the Pacific Salmon Fishery Management Plan (PFMC 2014, 2022) identifies freshwater EFH for Chinook salmon (*Oncorhynchus tshawytscha*) in the San Joaquin Delta hydrologic unit (HUC-8 18040003), which includes the PSA within the Old River watershed. Freshwater EFH for Chinook salmon consists of four major activities: (1) spawning and incubation; (2) juvenile rearing; (3) juvenile migration corridors; and (4) adult migration corridors and adult holding habitat (PFMC 2014, 2022). Chinook salmon EFH includes all freshwater habitat currently or historically occupied in Washington, Oregon, Idaho, and California (PFMC 2014, 2022). There are currently no aquatic habitats with flowing water suitable for salmonids within the PSA.

5.6.3 Sensitive Natural Communities

Sensitive natural communities are communities that have a limited distribution and are often vulnerable to the environmental effects of projects. These communities may or may not contain special-status species or their habitats. For purposes of this assessment, sensitive natural communities include vegetation communities listed in CDFW's California Natural Diversity Database (CNDDB; CDFW 2024) and communities listed in the California Natural Community List (CDFW 2023d) with a rarity rank of S1, S2, or S3 (S1: critically imperiled; S2: imperiled; S3: vulnerable). Additionally, all vegetation associations within the alliances with ranks of S1–S3 are considered sensitive habitats. CEQA requires that impacts to sensitive natural communities be evaluated and mitigated to the extent feasible. There are no sensitive natural communities within the PSA.

5.6.4 Wildlife Corridors and Habitat Linkages

Wildlife movement corridors have been recognized by federal and state agencies as important habitats worthy of conservation. Wildlife corridors provide migration channels seasonally (i.e., between winter and summer habitats), and provide non-migrant wildlife the opportunity to move within their home range for food, cover, reproduction, and refuge. Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation. Habitat linkages provide a potential route for gene flow and long-term dispersal of plants and animals and may also serve as primary habitat for smaller animals, such as reptiles and amphibians. Habitat linkages may be continuous habitat or discrete habitat islands that function as steppingstones for dispersal.

The PSA does not overlap with any California Essential Habitat Connectivity Areas (CDFW 2014). but is considered part of the large contiguous Natural Landscape Block that extends from Alameda County south through the Diablo Range and Southern Coastal Ranges, terminating north of the Transverse Ranges (CDFW 2017). Given that the existing vegetation is surrounded on three sides by similar annual grassland habitat and is close to the existing PG&E substation, the PSA likely provides movement habitat for local wildlife but is not recognized as an important regional wildlife corridor by any state agency or jurisdiction and is of limited linkage value on a landscape scale. Furthermore, although local wildlife may utilize the PSA as movement habitat, regional connectivity is highly limited by Patterson Pass Road, an unnamed gravel road directly to the north of the PSA, Interstates (I) 580 and I-5 to the north and east, respectively, and the railroad south of the PSA. Thus, the project would not impose significant barrier to wildlife movement.

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6 Summary of Findings

6.1 Biological Impact Overview

The Project could have a substantial adverse effect, either directly or through habitat modifications, on species identified as candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS. Incorporation of mitigation measures ensures that these impacts will be less than significant.

A total of 1 special-status plant species and 6 special-status wildlife species are known to occur within the PSA, were observed or detected during field surveys, or have a moderate to high potential to occur on the PSA and could therefore be impacted by eventual Project implementation. Big tarplant was observed on the site. Tricolored blackbird was observed foraging on the site and five other special-status wildlife species have a moderate or high potential to occur on the PSA, including California tiger salamander, California red-legged frog, golden eagle, northern harrier, burrowing owl, and white-tailed kite. Special-status plant and wildlife resources may be subject to agency jurisdiction pursuant to regulations under FESA, CESA, California FGC, CEQA guidelines, the Alameda County General Plan, and the EACCS. Species-specific AMMs will be provided for all special-status species to reduce potential impacts to less than significant under CEQA.

The Project would not have a substantial adverse effect on any sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS.

No CDFW sensitive natural communities were identified within the PSA, and no impacts are anticipated.

Designated Critical Habitat for California red-legged frog overlaps with the PSA. Removal of upland refuge and dispersal habitat associated with construction of the BESS site will be mitigated through purchase of appropriate credits at an agency-approved mitigation bank.

The PSA overlaps with designated freshwater EFH for Pacific coast salmon. Specifically, the Pacific Salmon Fishery Management Plan (PFMC 2014, 2022) identifies freshwater EFH for Chinook salmon (*Oncorhynchus tshawytscha*) in the San Joaquin Delta hydrologic unit (HUC-8 18040003), which includes the PSA within the Old River watershed. There are currently no aquatic habitats with flowing water suitable for salmonids within the PSA and no impacts are anticipated.

The Project could 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. Incorporation of mitigation measures ensures that these impacts will be less than significant.

A USACE-level jurisdictional delineation of aquatic resources was conducted in January 2024. There are no aquatic resources present on the BESS facility portion of the PSA. The gen-tie alignment crosses one seasonal channel (EPH-01, Patterson Run), which parallels Patterson Pass Road and flows southwest to northeast on a seasonal basis. AMMs, including obtaining a CWA Section 404 Nationwide Permit from the USACE and CWA Section 401 Water Quality Certification from the CVRWQCB, are recommended to reduce potential impacts to less than significant under CEQA.

The Project would not 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.

Undeveloped grasslands on the PSA may provide nursery and dispersal habitat for wildlife species. According to the California Essential Habitat Connectivity Project, the PSA does not overlap with any California Essential Habitat Connectivity Areas (CDFW 2014) but is considered part of a Natural Landscape Block (CDFW 2017). Given that the existing vegetation is surrounded on three sides by similar open, undeveloped annual grassland habitat and is close to the existing PG&E substation, the PSA likely provides habitat value but is of limited linkage value in the landscape. The PSA plan and recommended avoidance and minimization measures to protect special-status species ensure this impact is less than significant.

The Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

There are no tree preservation policies or ordinances in Alameda County. The Alameda County General Plan and Code of Ordinances have policies for protecting riparian, wetland, and watercourse habitats. The PSA plan and recommended avoidance and minimization measures to protect aquatic resources ensure this impact is less than significant.

The Project would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Incorporation of mitigation measures ensures that the Project will not conflict with the EACCS.

The EACCS provides a framework for natural resource conservation and to streamline the environmental permitting process within the eastern portion of the county. The PSA is in Conservation Zone (CZ) 10 of the EACCS. This CZ emphasizes conservation priorities that may conflict with the Project implementation, such as protection of all big tarplant occurrences, protection of critical habitat for California red-legged frog (including annual grasslands near ponds), and protection and restoration of Patterson Run. The impacts to the EACCS CZ-10 from Project development are a very small percentage of the inventory of those lands in CZ-10.

The Project will obtain applicable permits and other approvals from USFWS, USACE, CDFW, and RWQCB, and will minimize and mitigate impacts on natural resources to comply with the regulatory standards of these agencies. These are the same regulatory standards applied by USFWS and the other environmental agencies in their review and approval of the EACCS. The Project will adhere to AMMs that comply or exceed EACCS guidelines, so development of this PSA will not conflict with implementation of the EACCS, and Project effects on EACCS Covered Species, if present, would be avoided and minimized. Further, the Project will provide compensatory mitigation for impacts to aquatic resources and specific EACCS covered species through the acquisition of credits from existing mitigation banks and other compensatory mitigation.

The EACCS defines standardized mitigation ratios for each of the focal species to be utilized by local jurisdictions and resource agencies to determine the level of mitigation necessary to offset project impacts. These are based upon an evaluation of the habitat quality on the PSA scored using species-specific “habitat units.” Mitigation ratios are then calculated based on the acreage of habitat affected, the location of the site, and the species-specific mitigation ratio table (Appendix H). Total mitigation acreages may vary depending on the location of selected mitigation areas the total habitat acreage affected by the Project.

6.2 Regulations and Permitting Overview

Federal: USACE, USFWS

- Under FESA, USFWS regulates species listed as threatened or endangered, including DCH. Since the Project "may affect" several federally listed species and their habitat, formal consultation with USFWS should be initiated to identify the appropriate FESA permitting pathway.
  - Section 7 consultation would occur if a federal CWA Section 404 were required (see next bullet). Section 7 of the FESA requires all federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat critical to such species' survival. To ensure that its actions do not result in jeopardy to listed species or in the adverse modification of critical habitat, each federal agency must consult with USFWS and/or NMFS regarding actions that may affect listed species, including issuance of CWA Section 404 permits by USACE. Consultation begins when the federal agency submits a written request for initiation to USFWS or NMFS, along with the agency's biological assessment (BA) of its proposed action, and when USFWS or NMFS accepts that biological assessment as complete. If USFWS or NMFS concludes that the action is not likely to adversely affect a listed species, the action may be conducted without further review under FESA. Otherwise, USFWS or NMFS must prepare a written biological opinion (BO) describing how the agency's action will affect the listed species and its critical habitat.
  - Section 10 consultation would occur if there were no federal land, funding, or authorization (e.g., CWA permit issuance) required. Private landowners, corporations, state agencies, local agencies, and other nonfederal entities must obtain a Section 10(a)(1)(B) incidental take permit for take of federally listed fish and wildlife species "that is incidental to, but not the purpose of, otherwise lawful activities." Section 10(a)(1)(B) incidental take permits are issued upon completion of an approved habitat conservation plan (HCP).
- USFWS regulates the take of golden eagle under BGEPA. If a golden eagle nest became established on or within 0.5 miles of the PSA and there was reasonable likelihood that the Project would result in take (including disturbance resulting in nest abandonment), the applicant would need to obtain an eagle incidental take permit.
- Federal waters of the United States are regulated through Section 404 of the CWA and fall under the authority of USACE. For impacts to waters of the United States, permitting would be achieved through a technical study and a USACE verified Aquatic Resources Delineation, and either through a Nationwide Permit (NWP) (i.e., for impacts less than or equal to 0.5 acres, 300 linear feet), or through a Standard Permit (SP) such as an individual permit.

State: CDFW, CEQA, RWQCB

- Under the CESA, CDFW regulates species listed as threatened or endangered. Note that unlike the FESA, CESA does not include indirect impacts (e.g., habitat degradation, harassment, harm) in its definition of "take." In addition, compliance with the CFGC Section 1900 as it relates to the NPPA, Section 3503 regulating "take" of nesting migratory birds and raptors as designated by the MBTA, and Section 4150 regulating the "take" of non-game mammals, including bat species, apply to state-listed and other species. Additionally, CFGC Section 1940 requires sensitive habitat and sensitive natural communities that have

the potential to impacted by a project, to be addressed through the CEQA process (see below). If the Project potentially impacts a listed special-status species and/or suitable habitat of that species that may potentially occur and/or are known to occur in the PSA, then CESA permitting may be achieved through a technical study and the preparation this BRA, CFGC Section 2081 Incidental Take Permit (ITP), and/or through CFGC Section 1602 Lake and Streambed Alteration Agreement (LSAA).

- Pursuant to CEQA Guidelines Section 15380, protection is provided for federal and/or state-listed species, as well as species not listed federally or by the state that may be considered rare, threatened, or endangered. Under the CEQA guidelines, protection is also provided to aquatic resources and surface waters. Species that meet these criteria can include "candidate species," species "proposed for listing," and "SSC." Plants listed in the CNPS Rare Plant Program are considered to meet CEQA's Section 15380 criteria as well. CEQA requires that impacts to sensitive natural communities be evaluated and mitigated to the extent feasible. CEQA must be completed prior to the issuance of any federal or state permits.
- SWRCB has authority over waters of the state, including wetlands, through Section 401 of the CWA, as well as the Porter–Cologne Act, California Code of Regulations Section 3831(k), and California Wetlands Conservation Policy. In California CWA Section 404 and Porter–Cologne Act compliance are achieved through an Aquatic Resources Delineation (preferably USACE verified), and Section 404 permitting with the RWQCB and obtaining WQC and/or a WDR for impacts to waters of the state. Note that aquatic resources may meet criteria for both waters of the United States and waters of the state.

Local: Alameda County

- The EACCS provides a framework for natural resource conservation and helps streamline the environmental permitting process within the eastern portion of Alameda County. The EACCS defines standardized mitigation ratios for each of the focal species to be utilized by local jurisdictions and resource agencies to determine the level of mitigation necessary to offset project impacts. These are based upon an evaluation of the habitat quality on the PSA scored using species-specific "habitat units." Mitigation ratios are then calculated based on the acreage of habitat affected, the location of the site, and the species-specific mitigation ratio table. The EACCS also provides approved mitigation measures for focal species covered under the plan, along with general biological AMMs applicable to all projects. Although not an HCP per se, the EACCS was developed with the intention of streamlining the FESA regulatory process and could therefore facilitate the formal consultation process with USFWS described above, especially if Section 10 is identified as the only permitting mechanism.
- The General Plan includes limited policies to help preserve and restore biological resources and aquatic resources throughout Alameda County. The PSA is not overlaid with any special designations according to the General Plan and is designated "Large Parcel Agriculture," so most of the policies related to preservation and restoration of habitat do not directly apply. The limited policies that do apply focus on protection and mitigation of watercourses and riparian areas. General Plan compliance as it relates to these resources is expected to be achieved through the CEQA process.

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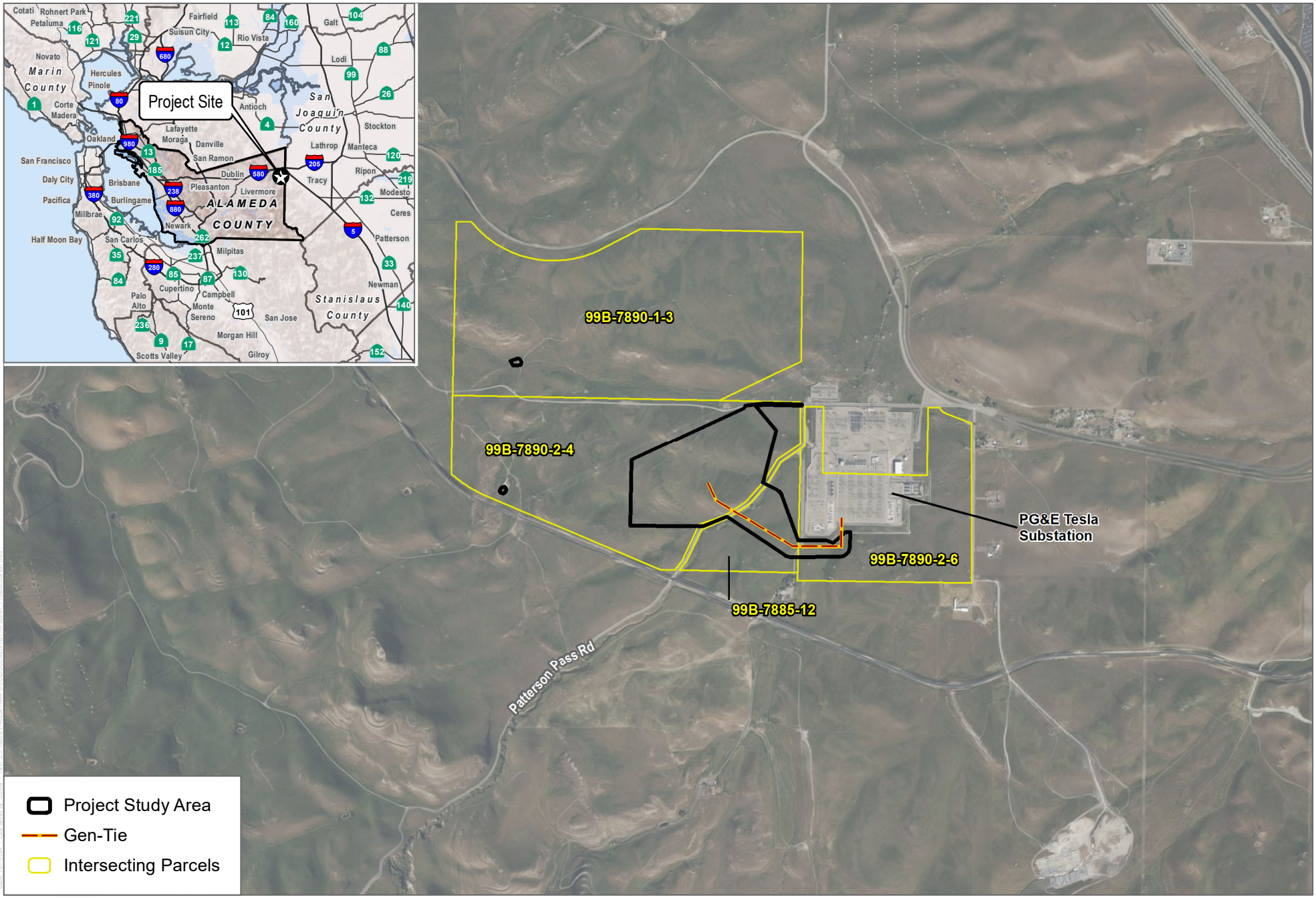
Appendix A
Figures 1–6



SOURCE: Bing Maps 2024, Open Street Map 2019

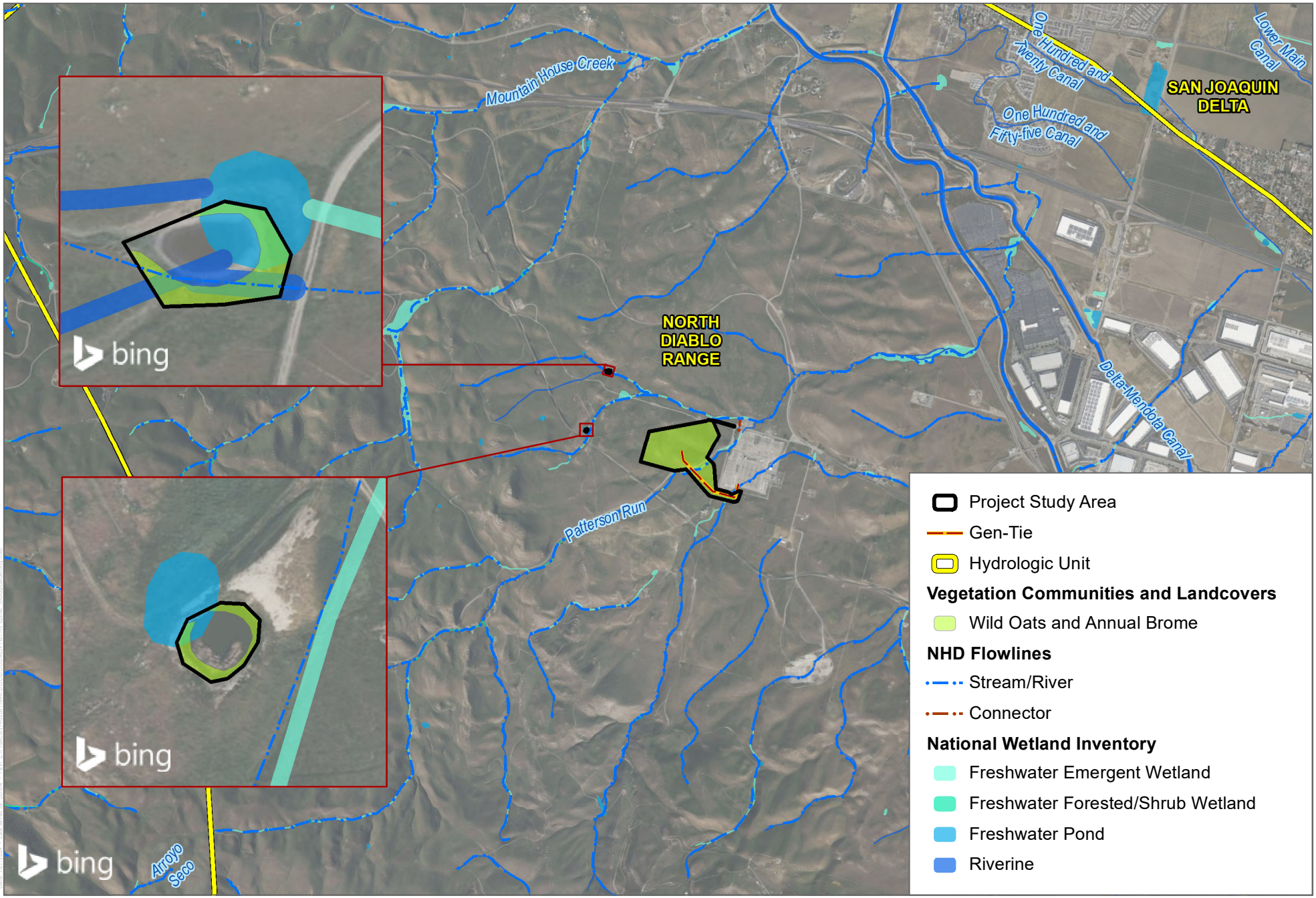
DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Biological Technical Report for the Potentia-Viridi Battery Energy Storage System Project, Alameda County, CA



SOURCE: Bing Maps 2024, Open Street Map 2019, USFWS 2019, USGS 2019

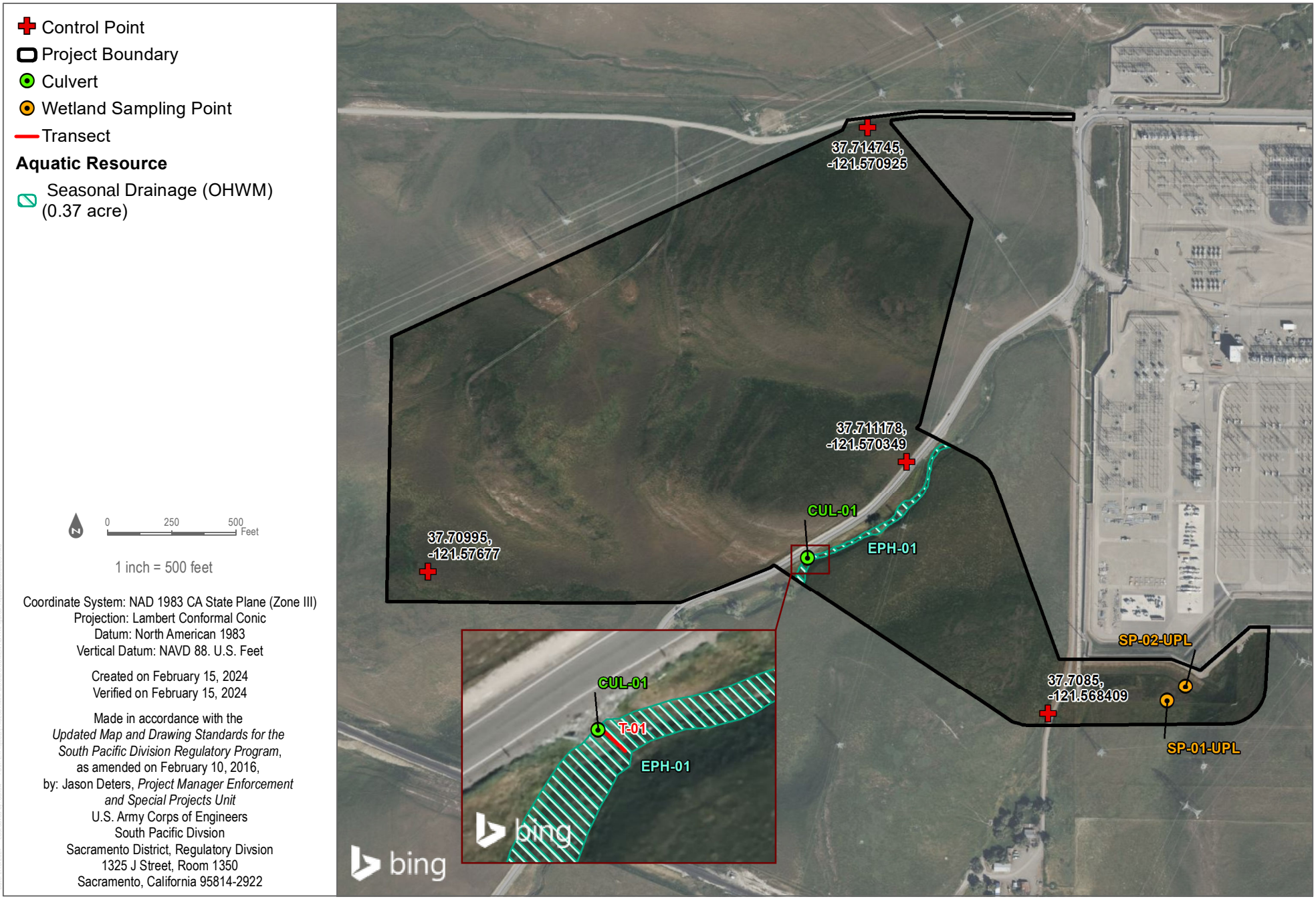
DUDEK

0 0.5 1 Miles

FIGURE 2

Biological Setting

Biological Technical Report for the Potentia-Viridi Battery Energy Storage System Project, Alameda County, CA

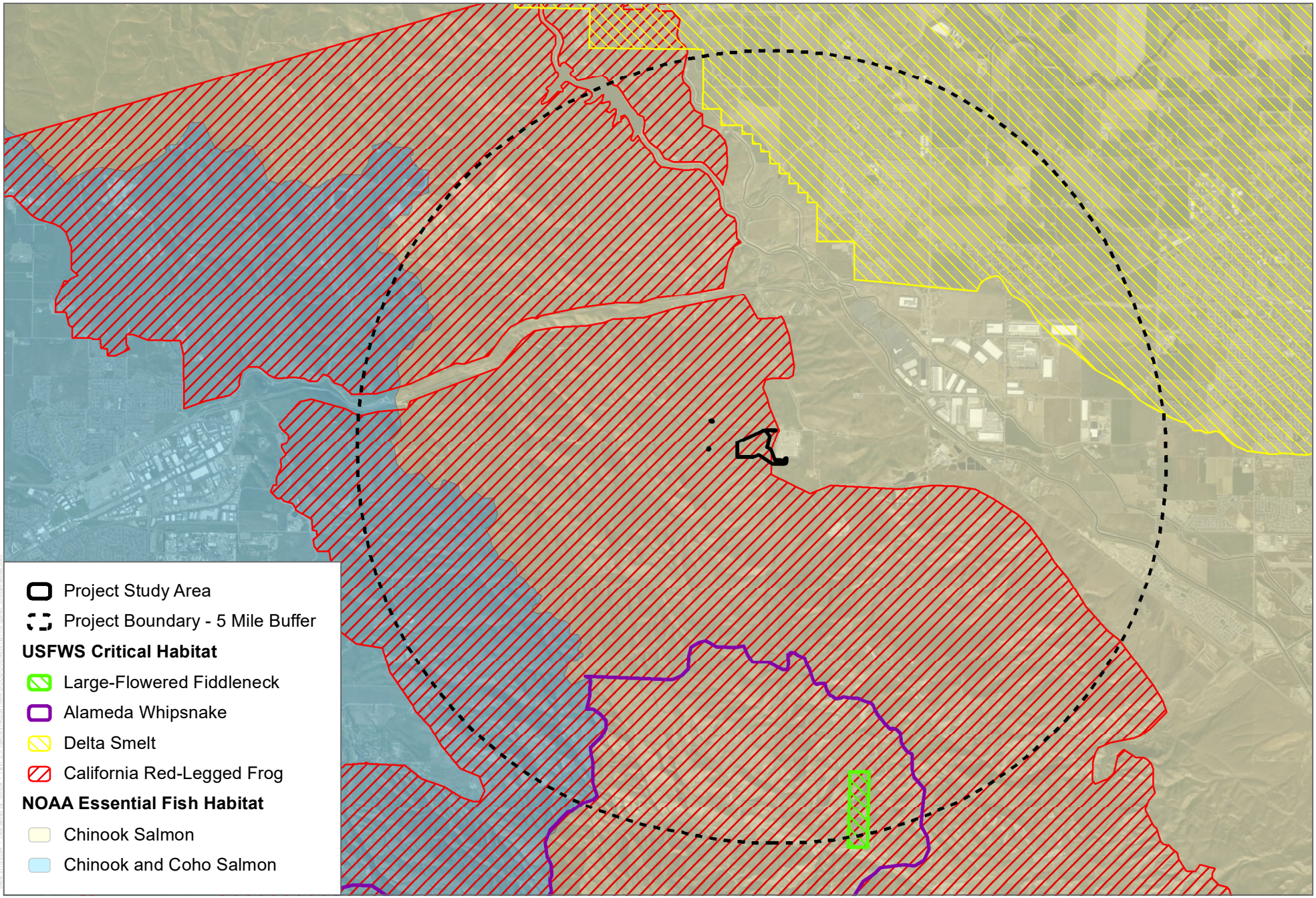


SOURCE: Bing Maps (accessed 2024); Open Streets Map 2019

FIGURE 3

Aquatic Resources Delineation

DUDEK



SOURCE: Bing Maps 2022, USFWS 2022, NOAA 2021

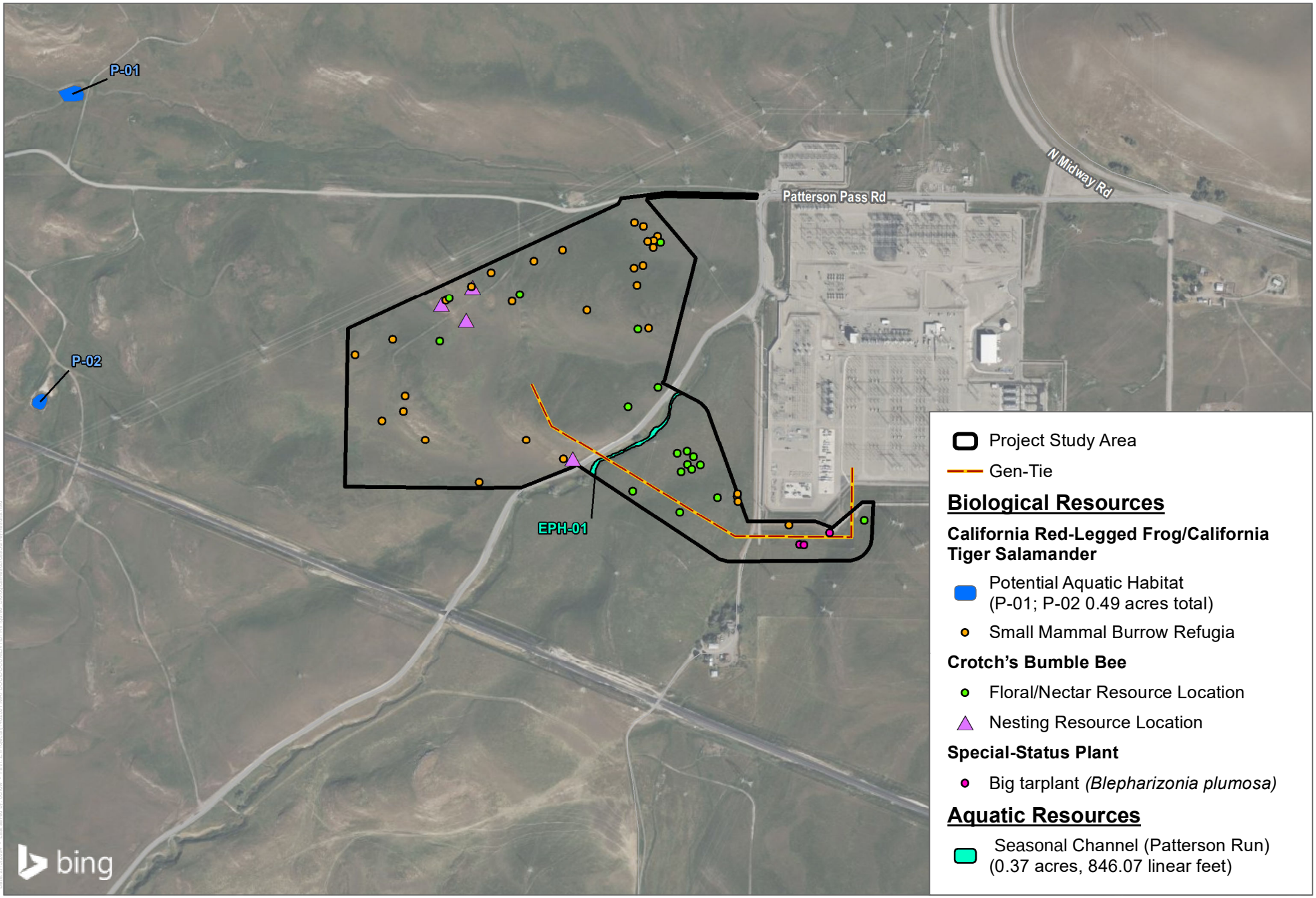
DUDEK

0 0.75 1.5 Miles

FIGURE 5

Critical Habitat and Essential Fish Habitat

Biological Technical Report for the Potentia-Viridi Battery Energy Storage System Project, Alameda County, CA



SOURCE: Bing Maps 2022, Open Street Map 2019, USGS 2022

DUDEK

0 425 850 Feet

FIGURE 6

Biological Resources Survey Results

Biological Technical Report for the Potentia-Viridi Battery Energy Storage System Project, Alameda County, CA

Appendix B
Database Search Results

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Byron Hot Springs (3712176) OR Clifton Court Forebay (3712175) OR Union Island (3712174) OR Altamont (3712166) OR Midway (3712165) OR Tracy (3712164) OR Mendenhall Springs (3712156) OR Cedar Mtn. (3712155) OR Lone Tree Creek (3712154))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Acipenser medirostris pop. 1 green sturgeon - southern DPS	AFCAA01031	Threatened	None	G2T1	S1	
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S2	SSC
Allium sharsmithiae Sharsmith's onion	PMLIL02310	None	None	G2	S2	1B.3
Ambystoma californiense pop. 1 California tiger salamander - central California DPS	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Amsinckia grandiflora large-flowered fiddleneck	PDBOR01050	Endangered	Endangered	G1	S1	1B.1
Anniella pulchra Northern California legless lizard	ARACC01020	None	None	G3	S2S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arctostaphylos manzanita ssp. laevigata Contra Costa manzanita	PDERI04273	None	None	G5T2	S2	1B.2
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Asio flammeus short-eared owl	ABNSB13040	None	None	G5	S2	SSC
Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1	None	None	G2T1	S1	1B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S2	SSC
Atriplex cordulata var. cordulata heartscale	PDCHE040B0	None	None	G3T2	S2	1B.2
Atriplex depressa brittlescale	PDCHE042L0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Atriplex minuscula lesser saltscale	PDCHE042M0	None	None	G2	S2	1B.1
Balsamorhiza macrolepis big-scale balsamroot	PDAST11061	None	None	G2	S2	1B.2
Blepharizonia plumosa big tarplant	PDAST1C011	None	None	G1G2	S1S2	1B.1
Bombus crotchii Crotch bumble bee	IIHYM24480	None	Candidate Endangered	G2	S2	
Bombus occidentalis western bumble bee	IIHYM24252	None	Candidate Endangered	G3	S1	
Branchinecta longiantenna longhorn fairy shrimp	ICBRA03020	Endangered	None	G2	S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Branchinecta mesovallensis midvalley fairy shrimp	ICBRA03150	None	None	G2	S2S3	
Buteo regalis ferruginous hawk	ABNKC19120	None	None	G4	S3S4	WL
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S4	
Calochortus pulchellus Mt. Diablo fairy-lantern	PMLIL0D160	None	None	G2	S2	1B.2
Caulanthus lemmonii Lemmon's jewelflower	PDBRA0M0E0	None	None	G3	S3	1B.2
Centromadia parryi ssp. congdonii Congdon's tarplant	PDAST4R0P1	None	None	G3T2	S2	1B.1
Chlorogalum pomeridianum var. minus dwarf soaproot	PMLIL0G042	None	None	G5T3	S3	1B.2
Chloropyron molle ssp. hispidum hispid salty bird's-beak	PDSCR0J0D1	None	None	G2T1	S1	1B.1
Chloropyron palmatum palmate-bracted bird's-beak	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
Circus hudsonius northern harrier	ABNKC11011	None	None	G5	S3	SSC
Cirsium fontinale var. campylon Mt. Hamilton thistle	PDAST2E163	None	None	G2T2	S2	1B.2
Clarkia concinna ssp. automixa Santa Clara red ribbons	PDONA050A1	None	None	G5?T3	S3	4.3
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Deinandra bacigalupii Livermore tarplant	PDAST4R0V0	None	Endangered	G1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Delphinium californicum ssp. interius Hospital Canyon larkspur	PDRAN0B0A2	None	None	G3T3	S3	1B.2
Delphinium recurvatum recurved larkspur	PDRAN0B1J0	None	None	G2?	S2?	1B.2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	IICOL48011	Threatened	None	G3T3	S3	
Dipodomys heermanni berkeleyensis Berkeley kangaroo rat	AMAFD03061	None	None	G4T1	S2	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	Proposed Threatened	None	G3G4	S3	SSC
Eremophila alpestris actia California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Eryngium spinosepalum spiny-sepaled button-celery	PDAPI0Z0Y0	None	None	G2	S2	1B.2
Eschscholzia rhombipetala diamond-petaled California poppy	PDPAP0A0D0	None	None	G1	S1	1B.1
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC
Extriplex joaquinana San Joaquin spearscale	PDCHE041F3	None	None	G2	S2	1B.2
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL
Fritillaria agrestis stinkbells	PMLIL0V010	None	None	G3	S3	4.2
Fritillaria falcata talus fritillary	PMLIL0V070	None	None	G2	S2	1B.2
Gonidea angulata western ridged mussel	IMBIV19010	None	None	G3	S2	
Haliaeetus leucocephalus bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Helianthella castanea Diablo helianthella	PDAST4M020	None	None	G2	S2	1B.2
Hesperolinon breweri Brewer's western flax	PDLIN01030	None	None	G2	S2	1B.2
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Hoita strobilina Loma Prieta hoita	PDFAB5Z030	None	None	G2?	S2?	1B.1
Hygrotus curvipes curved-foot hygrotus diving beetle	IICOL38030	None	None	G2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Hypomesus transpacificus Delta smelt	AFCHB01040	Threatened	Endangered	G1	S1	
Lanius ludovicianus loggerhead shrike	ABPBR01030	None	None	G4	S4	SSC
Lasiurus cinereus hoary bat	AMACC05032	None	None	G3G4	S4	
Legenere limosa legenere	PDCAM0C010	None	None	G2	S2	1B.1
Leptosyne hamiltonii Mt. Hamilton coreopsis	PDAST2L0C0	None	None	G2	S2	1B.2
Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030	None	Rare	G2	S2	1B.1
Limosella australis Delta mudwort	PDSCR10030	None	None	G4G5	S2	2B.1
Linderiella occidentalis California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Madia radiata showy golden madia	PDAST650E0	None	None	G3	S3	1B.1
Malacothamnus hallii Hall's bush-mallow	PDMAL0Q0F0	None	None	G2	S2	1B.2
Masticophis flagellum ruddocki San Joaquin coachwhip	ARADB21021	None	None	G5T2T3	S3	SSC
Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
Melospiza melodia pop. 1 song sparrow ("Modesto" population)	ABPBXA3013	None	None	G5T3?Q	S3?	SSC
Navarretia nigelliformis ssp. radians shining navarretia	PDPLM0C0J2	None	None	G4T2	S2	1B.2
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	AFCHA0209K	Threatened	None	G5T2Q	S2	
Perognathus inornatus San Joaquin pocket mouse	AMAFD01060	None	None	G2G3	S2S3	
Phacelia phacelioides Mt. Diablo phacelia	PDHYD0C3Q0	None	None	G2	S2	1B.2
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G4	S4	SSC
Plagiobothrys glaber hairless popcornflower	PDBOR0V0B0	None	None	GX	SX	1A
Puccinellia simplex California alkali grass	PMPOA53110	None	None	G2	S2	1B.2
Rana boylii pop. 4 foothill yellow-legged frog - central coast DPS	AAABH01054	Threatened	Endangered	G3T2	S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Rana draytonii California red-legged frog	AAABH01022	Threatened	None	G2G3	S2S3	SSC
Ravenella exigua chaparral harebell	PDCAM020A0	None	None	G2	S2	1B.2
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Spea hammondii western spadefoot	AAABF02020	Proposed Threatened	None	G2G3	S3S4	SSC
Spergularia macrotheca var. longistyla long-styled sand-spurrey	PDCAR0W062	None	None	G5T2	S2	1B.2
Spirinchus thaleichthys longfin smelt	AFCHB03010	Candidate	Threatened	G5	S1	
Sylvilagus bachmani riparius riparian brush rabbit	AMAEB01021	Endangered	Endangered	G5T1	S2	
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thaleichthys pacificus eulachon	AFCHB04010	Threatened	None	G5	S1	
Trifolium hydrophilum saline clover	PDFAB400R5	None	None	G2	S2	1B.2
Tropidocarpum capparideum caper-fruited tropidocarpum	PDBRA2R010	None	None	G1	S1	1B.1
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S3	
Vulpes macrotis mutica San Joaquin kit fox	AMAJA03041	Endangered	Threatened	G4T2	S3	

Record Count: 93

CALIFORNIA NATIVE PLANT SOCIETY

CNPS Rare Plant Inventory

Search Results

61 matches found. Click on scientific name for details

Search Criteria: Quad is one of [**3712154:3712164:3712165:3712155:3712156:3712166:3712174:3712175:3712176**]

▲ 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
Acanthomintha lanceolata	Santa Clara thorn-mint	Lamiaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2	Yes	1974-01-01	 © 2005 Barry Breckling
Allium sharsmithiae	Sharsmith's onion	Alliaceae	perennial bulbiferous herb	Mar-May	None	None	G2	S2	1B.3	Yes	1980-01-01	 © 2017 John Doyen
Amsinckia grandiflora	large-flowered fiddleneck	Boraginaceae	annual herb	(Mar)Apr-May	FE	CE	G1	S1	1B.1	Yes	1974-01-01	 © 2015 Zoya Akulova
Androsace elongata ssp. *acuta*	California androsace	Primulaceae	annual herb	Mar-Jun	None	None	G5? T3T4	S3S4	4.2		1994-01-01	 © 2008 Aaron Schusteff
Arctostaphylos manzanita ssp. *laevigata*	Contra Costa manzanita	Ericaceae	perennial evergreen shrub	Jan-Mar(Apr)	None	None	G5T2	S2	1B.2	Yes	1984-01-01	 © 2019 Susan McDougall
Aspidotis carlotta-halliae	Carlotta Hall's lace fern	Pteridaceae	perennial rhizomatous herb	Jan-Dec	None	None	G3	S3	4.2	Yes	1994-01-01	No Photo Available
Astragalus tener var. *tener*	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	None	None	G2T1	S1	1B.2	Yes	1994-01-01	No Photo Available

Atriplex cordulata var. *cordulata*	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	Yes	1988-01-01	 © 1994 Robert E. Preston, Ph.D.
Atriplex coronata var. *coronata*	crownscale	Chenopodiaceae	annual herb	Mar-Oct	None	None	G4T3	S3	4.2	Yes	1994-01-01	 © 1994 Robert E. Preston, Ph.D.
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1994-01-01	 © 2009 Zoya Akulova
Atriplex minuscula	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	None	None	G2	S2	1B.1	Yes	1994-01-01	 © 2000 Robert E. Preston, Ph.D.
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	 ©1998 Dean Wm. Taylor
Blepharizonia plumosa	big tarplant	Asteraceae	annual herb	Jul-Oct	None	None	G1G2	S1S2	1B.1	Yes	1994-01-01	No Photo Available
Calochortus pulchellus	Mt. Diablo fairy-lantern	Liliaceae	perennial bulbiferous herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
Caulanthus lemmonii	Lemmon's jewelflower	Brassicaceae	annual herb	Feb-May	None	None	G3	S3	1B.2	Yes	2001-01-01	No Photo Available
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	Asteraceae	annual herb	May-Oct(Nov)	None	None	G3T2	S2	1B.1	Yes	1994-01-01	No Photo Available
Chlorogalum pomeridianum var. *minus*	dwarf soaproot	Agavaceae	perennial bulbiferous herb	May-Aug	None	None	G5T3	S3	1B.2	Yes	1994-01-01	 © 1997 Dean Wm Taylor

Chloropyron molle ssp. *hispidum*	hispid salty bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	Jun-Sep	None	None	G2T1	S1	1B.1	Yes	1974-01-01	No Photo Available
Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	FE	CE	G1	S1	1B.1	Yes	1974-01-01	No Photo Available
Cirsium fontinale var. *campylon*	Mt. Hamilton thistle	Asteraceae	perennial herb	(Feb)Apr-Oct	None	None	G2T2	S2	1B.2	Yes	1974-01-01	No Photo Available
Clarkia breweri	Brewer's clarkia	Onagraceae	annual herb	Apr-Jun	None	None	G4	S4	4.2	Yes	1974-01-01	No Photo Available
Clarkia concinna ssp. *automixa*	Santa Clara red ribbons	Onagraceae	annual herb	(Apr)May-Jun(Jul)	None	None	G5?T3	S3	4.3	Yes	1994-01-01	No Photo Available
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	None	None	G4	S4	4.2		1994-01-01	No Photo Available
Deinandra bacigalupii	Livermore tarplant	Asteraceae	annual herb	Jun-Oct	None	CE	G1	S1	1B.1	Yes	2001-01-01	No Photo Available
Delphinium californicum ssp. *interius*	Hospital Canyon larkspur	Ranunculaceae	perennial herb	Apr-Jun	None	None	G3T3	S3	1B.2	Yes	1984-01-01	No Photo Available
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	None	None	G2?	S2?	1B.2	Yes	1988-01-01	No Photo Available
Eriogonum umbellatum var. *bahiiforme*	bay buckwheat	Polygonaceae	perennial herb	Jul-Sep	None	None	G5T3	S3	4.2	Yes	2001-01-01	No Photo Available
Eriophyllum jepsonii	Jepson's woolly sunflower	Asteraceae	perennial herb	Apr-Jun	None	None	G3	S3	4.3	Yes	1974-01-01	No Photo Available
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	1980-01-01	No Photo Available
Eschscholzia rhombipetala	diamond-petaled California poppy	Papaveraceae	annual herb	Mar-Apr	None	None	G1	S1	1B.1	Yes	1980-01-01	No Photo Available
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G2	S2	1B.2	Yes	1988-01-01	No Photo Available
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	Yes	1980-01-01	 © 2016 Aaron Schusteff

Fritillaria falcata	talus fritillary	Liliaceae	perennial bulbiferous herb	Mar-May	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2013 Aaron Schusteff
Galium andrewsii ssp. *gatense*	phlox-leaf serpentine bedstraw	Rubiaceae	perennial herb	Apr-Jul	None	None	G5T3	S3	4.2	Yes	1994-01-01	 © 2021 Steve Matson
Helianthella castanea	Diablo helianthella	Asteraceae	perennial herb	Mar-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2013 Christopher Bronny
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	Yes	2001-01-01	 © 2017 John Doyen
Hesperolinon breweri	Brewer's western flax	Linaceae	annual herb	May-Jul	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2014 Neal Kramer
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	None	None	G5T3	S3	1B.2	Yes	1974-01-01	 © 2020 Steven Perry
Hoita strobilina	Loma Prieta hoita	Fabaceae	perennial herb	May-Jul(Aug-Oct)	None	None	G2?	S2?	1B.1	Yes	2001-01-01	 © 2004 Janell Hillman
Lasthenia ferrisiae	Ferris' goldfields	Asteraceae	annual herb	Feb-May	None	None	G3	S3	4.2	Yes	2001-01-01	 © 2009 Zoya Akulova
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	Yes	1974-01-01	 ©2000 John Game

Leptosiphon ambiguus	serpentine leptosiphon	Polemoniaceae	annual herb	Mar-Jun	None	None	G4	S4	4.2	Yes	1994-01-01	 © 2010 Aaron Schusteff
Leptosyne hamiltonii	Mt. Hamilton coreopsis	Asteraceae	annual herb	Mar-May	None	None	G2	S2	1B.2	Yes	1974-01-01	 ©2012 Aaron Schusteff
Lessingia tenuis	spring lessingia	Asteraceae	annual herb	May-Jul	None	None	G4	S4	4.3	Yes	1974-01-01	 © 2020 Keir Morse
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	Apr-Nov	None	CR	G2	S2	1B.1	Yes	1974-01-01	No Photo Available
Limosella australis	Delta mudwort	Scrophulariaceae	perennial stoloniferous herb	May-Aug	None	None	G4G5	S2	2B.1		1994-01-01	 © 2020 Richard Sage
Madia radiata	showy golden madia	Asteraceae	annual herb	Mar-May	None	None	G3	S3	1B.1	Yes	1988-01-01	No Photo Available
Malacothamnus hallii	Hall's bush-mallow	Malvaceae	perennial deciduous shrub	(Apr)May-Sep(Oct)	None	None	G2	S2	1B.2	Yes	1974-01-01	 © 2017 Keir Morse
Micropus amphibolus	Mt. Diablo cottonweed	Asteraceae	annual herb	Mar-May	None	None	G3G4	S3S4	3.2	Yes	1974-01-01	 © 2008 Aaron Arthur
Microseris sylvatica	sylvan microseris	Asteraceae	perennial herb	Mar-Jun	None	None	G4	S4	4.2	Yes	2001-01-01	No Photo Available
Myosurus minimus ssp. *apus*	little mousetail	Ranunculaceae	annual herb	Mar-Jun	None	None	G5T2Q	S2	3.1		1980-01-01	No Photo Available
Navarretia nigelliformis ssp. *radians*	shining navarretia	Polemoniaceae	annual herb	(Mar)Apr-Jul	None	None	G4T2	S2	1B.2	Yes	1994-01-01	No Photo Available
Phacelia phacelioides	Mt. Diablo phacelia	Hydrophyllaceae	annual herb	Apr-May	None	None	G2	S2	1B.2	Yes	1974-01-01	 ©2019 Steve Matson

Piperia michaelii	Michael's rein orchid	Orchidaceae	perennial herb	Apr-Aug	None	None	G3	S3	4.2	Yes	1984-01-01	No Photo Available
Plagiobothrys glaber	hairless popcornflower	Boraginaceae	annual herb	Mar-May	None	None	GX	SX	1A	Yes	1974-01-01	No Photo Available
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	None	None	G2	S2	1B.2		2015-10-15	No Photo Available
Ravenella exigua	chaparral harebell	Campanulaceae	annual herb	May-Jun	None	None	G2	S2	1B.2	Yes	1974-01-01	No Photo Available
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	None	None	G3	S2	2B.2		1994-01-01	No Photo Available
Spergularia macrotheca var. *longistyla*	long-styled sand-spurrey	Caryophyllaceae	perennial herb	Feb-May	None	None	G5T2	S2	1B.2	Yes	2017-06-16	No Photo Available
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.2	Yes	2001-01-01	 © 2005 Dean Wm Taylor
Tropidocarpum capparideum	caper-fruited tropidocarpum	Brassicaceae	annual herb	Mar-Apr	None	None	G1	S1	1B.1	Yes	1974-01-01	No Photo Available

Showing 1 to 61 of 61 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2024. Rare Plant Inventory (online edition, v9.5). Website https://www.rareplants.cnps.org [accessed 24 January 2024].

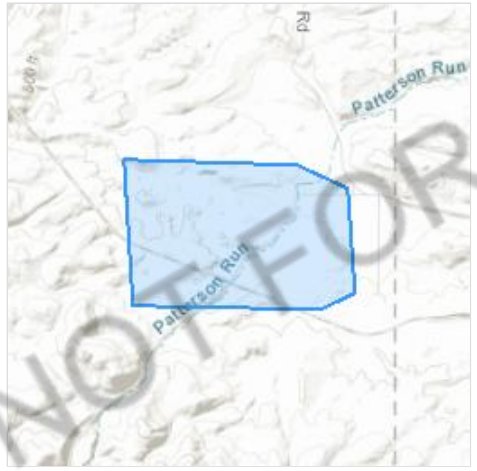
IPaC resource list

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

Alameda County, California



Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

NAME	STATUS
San Joaquin Kit Fox Vulpes macrotis mutica Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS
California Condor Gymnogyps californianus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8193	Endangered

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) Masticophis lateralis euryxanthus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5524	Threatened
Northwestern Pond Turtle Actinemys marmorata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii Wherever found There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened
Western Spadefoot Spea hammondii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5425	Proposed Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Large-flowered Fiddleneck *Amsinckia grandiflora* Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5558	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE

California Red-legged Frog Rana draytonii https://ecos.fws.gov/ecp/species/2891#crithab	Final

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 in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

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

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, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	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 "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "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.

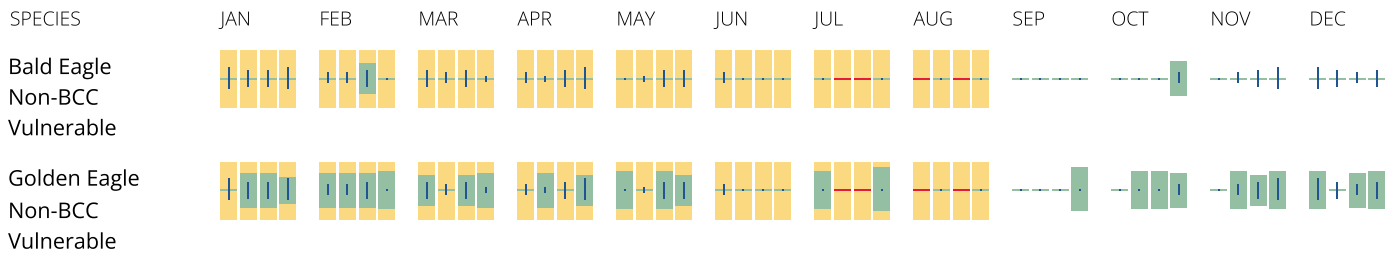
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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 in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

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, see the PROBABILITY OF PRESENCE SUMMARY below 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
Bullock's Oriole Icterus bullockii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull Larus californicus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31

Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
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
Olive-sided Flycatcher Contopus cooperi This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
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
Yellow-billed Magpie Pica nuttalli This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9726	Breeds Apr 1 to Jul 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 "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "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.

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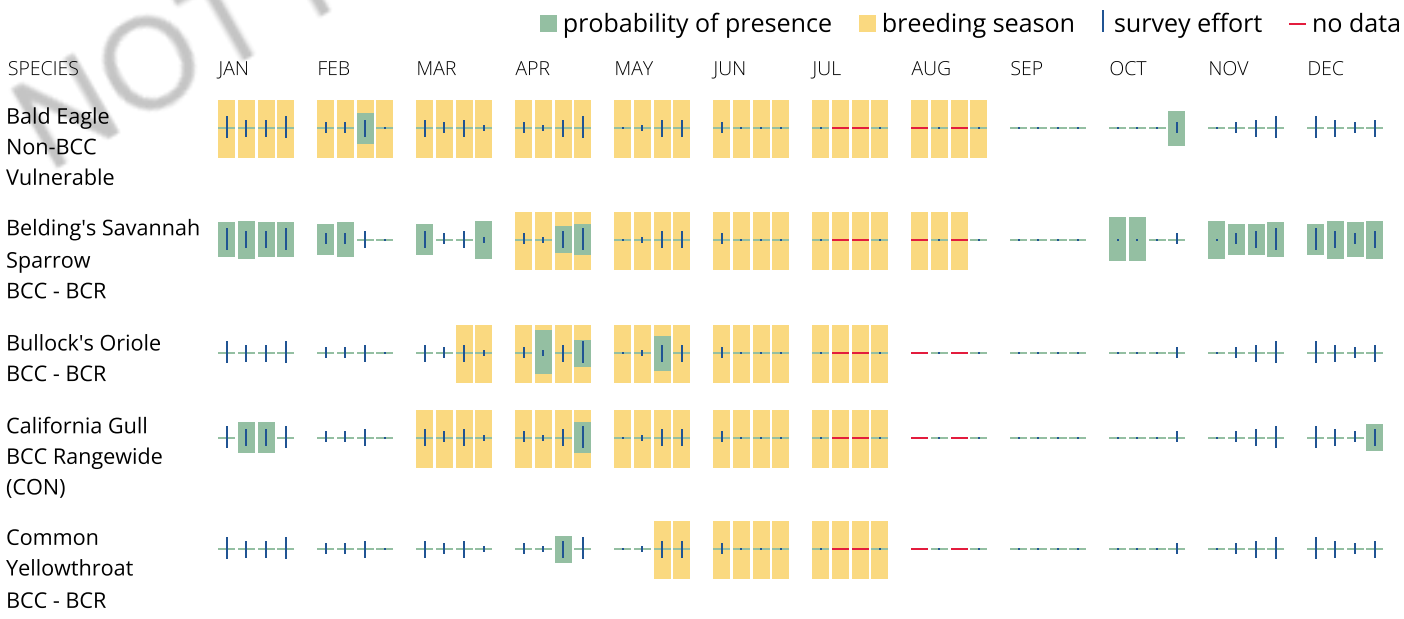
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

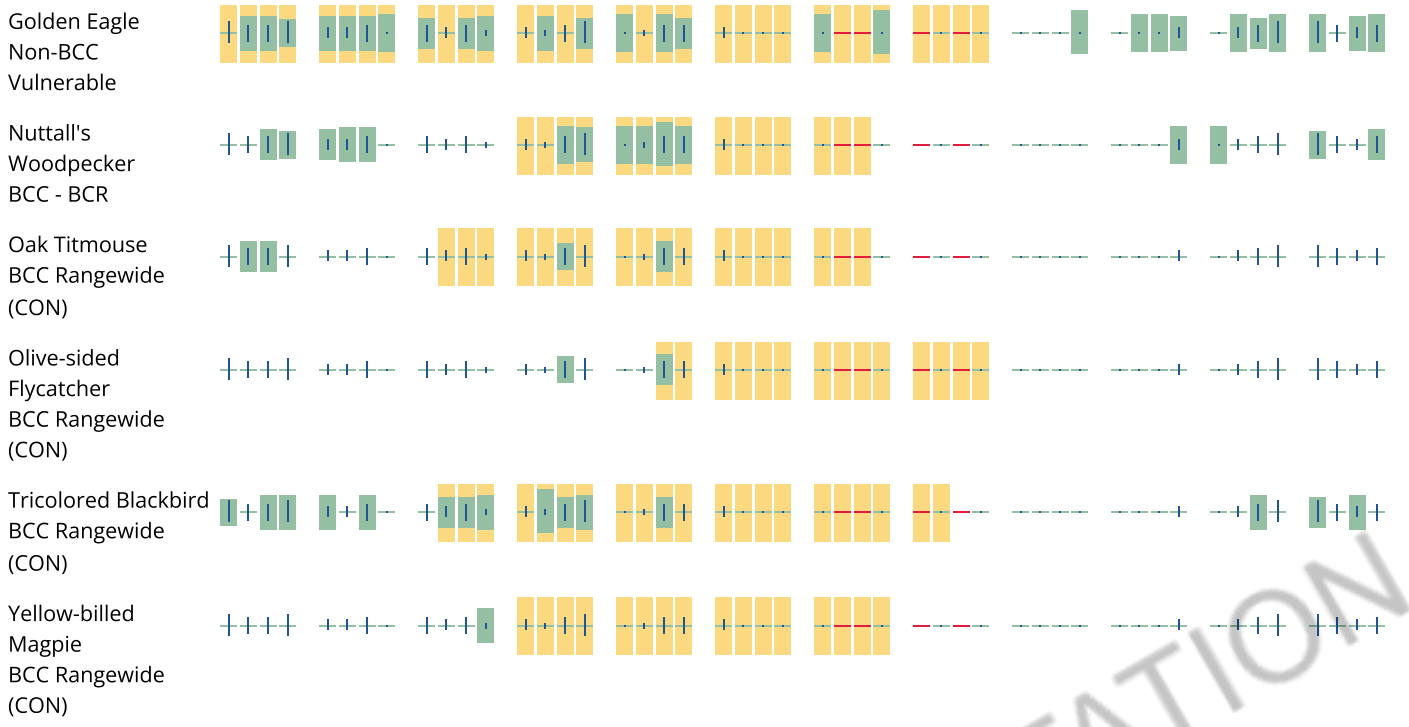
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

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

- PEM1A
- PEM1C

FRESHWATER POND

- PUBHh
- PUSA

RIVERINE

R4SBC
R4SBA
R5UBF

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.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Alameda Area, California

Potentia-Viridi BESS Site

January 24, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

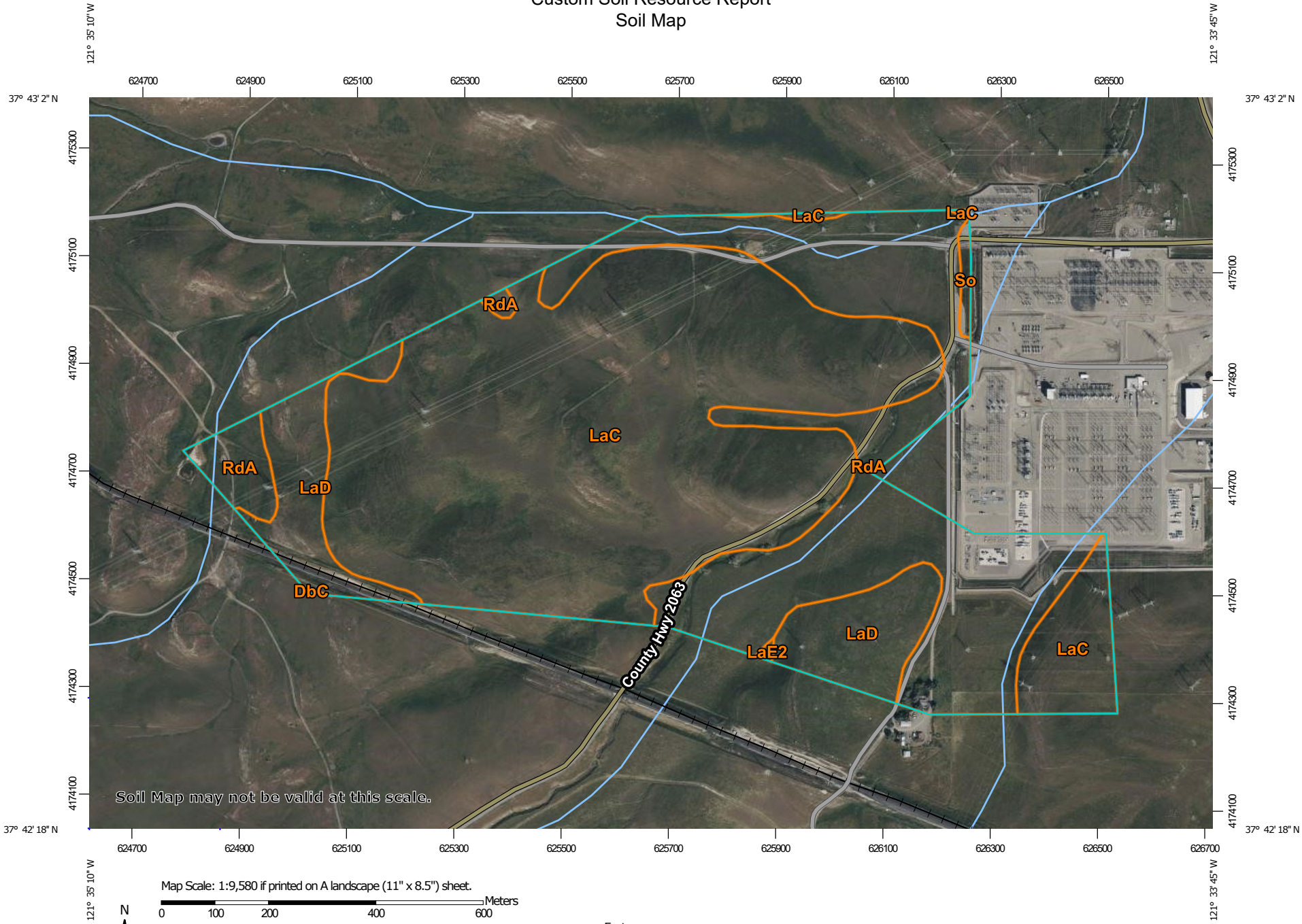
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Alameda Area, California
Survey Area Data: Version 17, Sep 11, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 9, 2022—Mar 11, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DbC	Diablo clay, 7 to 15 percent slopes	0.1	0.0%
LaC	Linne clay loam, 3 to 15 percent slopes	144.4	59.1%
LaD	Linne clay loam, 15 to 30 percent slopes, MLRA 15	23.9	9.8%
LaE2	Linne clay loam, 30 to 45 percent slopes, eroded	0.2	0.1%
RdA	Rincon clay loam, 0 to 3 percent slopes	75.0	30.7%
So	Sycamore silt loam, 0 to 2 percent slopes, MLRA 14	1.0	0.4%
Totals for Area of Interest		**244.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Alameda Area, California

DbC—Diablo clay, 7 to 15 percent slopes

Map Unit Setting

National map unit symbol: hb36
Elevation: 300 to 1,700 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Diablo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Diablo

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Alluvium derived from shale and siltstone

Typical profile

H1 - 0 to 6 inches: clay
H2 - 6 to 42 inches: silty clay
H3 - 42 to 50 inches: silty clay
H4 - 50 to 54 inches: bedrock

Properties and qualities

Slope: 7 to 15 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R015XY008CA - Hills <20"ppt
Hydric soil rating: No

Minor Components

Altamont
Percent of map unit: 5 percent
Hydric soil rating: No

Pescadero
Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Linne
Percent of map unit: 5 percent
Hydric soil rating: No

LaC—Linne clay loam, 3 to 15 percent slopes

Map Unit Setting
National map unit symbol: hb3l
Elevation: 700 to 1,700 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Linne and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Linne

Setting
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile
H1 - 0 to 36 inches: clay loam
H2 - 36 to 40 inches: bedrock

Properties and qualities
Slope: 3 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R015XY008CA - Hills <20"ppt
Hydric soil rating: No

Minor Components

Altamont

Percent of map unit: 5 percent
Hydric soil rating: No

Diablo

Percent of map unit: 5 percent
Hydric soil rating: No

Clear lake

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pescadero

Percent of map unit: 2 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

LaD—Linne clay loam, 15 to 30 percent slopes, MLRA 15

Map Unit Setting

National map unit symbol: 2w63l
Elevation: 110 to 1,560 feet
Mean annual precipitation: 13 to 22 inches

Mean annual air temperature: 59 to 61 degrees F
Frost-free period: 300 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Linne and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Linne

Setting

Landform: Mountain slopes, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from calcareous shale

Typical profile

Ap - 0 to 9 inches: clay loam
A1 - 9 to 14 inches: clay loam
A2 - 14 to 29 inches: clay loam
AC - 29 to 32 inches: sandy clay loam
Ck - 32 to 36 inches: fine sandy loam
Cr - 36 to 51 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 35 to 50 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R015XY013CA - Loamy Mountains <20"ppt
Hydric soil rating: No

Minor Components

Diablo

Percent of map unit: 5 percent
Landform: Mountain slopes, hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Convex
Across-slope shape: Convex

Ecological site: R015XD001CA - CLAYEY
Hydric soil rating: No

Altamont

Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Clear lake

Percent of map unit: 3 percent
Landform: Drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Pescadero

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, dip
Down-slope shape: Concave, convex
Across-slope shape: Concave
Hydric soil rating: Yes

Haploxerolls, landslides

Percent of map unit: 1 percent
Landform: Landslides, slumps
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

LaE2—Linne clay loam, 30 to 45 percent slopes, eroded

Map Unit Setting

National map unit symbol: hb3n
Elevation: 700 to 1,700 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Linne and similar soils: 85 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Linne

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 36 inches: clay loam
H2 - 36 to 40 inches: bedrock

Properties and qualities

Slope: 30 to 45 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R014XD092CA - CLAYEY HILLS
Hydric soil rating: No

Minor Components

Altamont

Percent of map unit: 5 percent
Hydric soil rating: No

Diablo

Percent of map unit: 5 percent
Hydric soil rating: No

Clear lake

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pescadero

Percent of map unit: 2 percent

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

RdA—Rincon clay loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hb4j
Elevation: 10 to 600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 260 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Rincon and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rincon

Setting

Landform: Valley floors, fans
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone and shale

Typical profile

H1 - 0 to 16 inches: clay loam
H2 - 16 to 52 inches: sandy clay
H3 - 52 to 60 inches: stratified sandy loam to clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Clear lake

Percent of map unit: 5 percent
Hydric soil rating: No

Pleasanton

Percent of map unit: 5 percent
Hydric soil rating: No

San ysidro

Percent of map unit: 5 percent
Hydric soil rating: No

So—Sycamore silt loam, 0 to 2 percent slopes, MLRA 14

Map Unit Setting

National map unit symbol: 2xcbh
Elevation: 310 to 380 feet
Mean annual precipitation: 16 to 22 inches
Mean annual air temperature: 60 to 61 degrees F
Frost-free period: 336 to 349 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Sycamore and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sycamore

Setting

Landform: Alluvial fans, flood-plain steps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium derived from sedimentary rock

Typical profile

Ap - 0 to 7 inches: silt loam
Akg - 7 to 18 inches: silt loam
ACkg - 18 to 30 inches: silt loam
Ckg1 - 30 to 44 inches: silt loam

Ckg2 - 44 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: About 18 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water supply, 0 to 60 inches: Very high (about 12.5 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: R014XG918CA - Loamy Fan
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Yolo

Percent of map unit: 5 percent
Hydric soil rating: No

Clear lake

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

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Appendix C
Staff Resumes

Laura Burris

SENIOR BIOLOGIST, BOTANIST

Laura Burris is a biologist with 17 years' experience in terrestrial biology. Ms. Burris specializes in botanical surveys and the ecological study of vegetation communities for application in habitat restoration, mitigation, and conservation. She is knowledgeable about the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) and their processes and is skilled in managing and drafting environmental documents such as biological resource assessments, wetland delineation reports, arborist reports, habitat restoration plans, technical sections of environmental impact reports (EIRs) and environmental impact statements (EISs), and regulatory permit applications.

In addition to botanical expertise, Ms. Burris has extensive training and experience in reconnaissance-and protocol level surveys and construction monitoring for sensitive wildlife species, including Swainson's hawk (*Buteo swainsonii*), burrowing owl (*Athene cunicularia*), sensitive bat species, sensitive butterfly species, California tiger salamander (*Ambystoma californiense*), Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), California red-legged frog (*Rana draytonii*), foothill yellow-legged frog (*Rana boylii*), western pond turtle (*Actinemys marmorata*), native California bumble bees, and California vernal pool branchiopods. Ms. Burris attends annual courses and training seminars on plant identification, special-status species biology, natural resources, CEQA/NEPA, and regulatory permitting.

Project Experience

Development

Elkus Ranch Master Plan Project, San Mateo County, California. Conducted a botanical inventory, biological field assessment, sensitive resource and riparian habitat assessment, and wetland delineation within the University of California Elkus Ranch property located near Half Moon Bay. Target special status plant species observed and documented included Choris' popcornflower (*Plagiobothrys chorisianus*). The purpose of the Elkus Ranch Master Plan study is to assess opportunities and constraints for growing ranch education programs, for extending the use of the conference center, and for improving research and office facilities on site. 2019.

Protocol-Level Special-Status Plant Surveys for the Sierra Hot Springs Master Plan Project, Sierra County, California. Conducted protocol-level rare plant surveys in support of a development Master Plan at the Sierra Hot Springs. The surveys consisted to two passes during the bloom season for high-elevation

Education

Humboldt State University
BS, Biology, 2007

Certifications

USFWS 10(a)(1)(A) Recovery Permit for California tiger salamander, California red-legged frog, and listed large branchiopods (ESPER0057548-0; expires 07/27/2028)

CDFW Memorandum of Understanding for California tiger salamander

CDFW Scientific Collecting Permit (S-230580003-23067-001)

CDFW, Voucher Plant Collector's Permit

CRAM Practitioner, Riverine and Depressional Modules

40-Hour Wetland Delineation Training, Wetlands Training Institute 2014

Professional Affiliations

California Native Plant Society

Northern California Botanists

The Wildlife Society

special-status plant species. Completed technical memoranda of results. 2016.

Granite Bay Development Housing Projects, Placer County, California. Served as primary biologist and wetland delineator. Conducted surveys and wetland delineation fieldwork for various private development projects in Placer County. Compiled results on soils, hydrology, and plants for wetland delineation reports and preliminary jurisdictional determinations. Communicated with the U.S. Army Corps of Engineers (USACE) regarding results and potential project permitting requirements. 2012.

Development Projects in the City of Monterey, Monterey, California. Conducted general biological constraints surveys for various projects in the Monterey area. Surveys included identification and flagging of Monterey dusky-footed woodrat (*Neotoma fuscipes luciana*) middens and recommendations for avoidance or removal. 2015 – 2016.

Lytton Residential Development Technical Biological Studies, Windsor, California. Assisted with protocol-level surveys for the Sonoma population of California tiger salamander and California red-legged frog in compliance with a biological opinion issued by the U.S. Fish and Wildlife Service (USFWS) for land proposed to be placed into federal trust for the Lytton Rancheria of California. In addition, for several consecutive years, conducted focused rare plant surveys on the property in accordance with the Santa Rosa Plain Conservation Strategy. 2014.

Point Molate Casino EIR/EIS Native Grassland Surveys and Technical Report, Point Richmond, California. As botanist, assisted in the design and implementation of quantitative and qualitative native grassland and scrub habitat evaluations on the former Point Molate Naval Refueling Depot in support of a natural resources management plan. Coordinated with the local chapter of the California Native Plant Society (CNPS) and other botanists knowledgeable of the local flora to complete the study. A technical memorandum was drafted detailing results of the surveys and identifying areas suitable for preservation and/or restoration. The report also provided recommendations for restoration techniques and invasive species management practices for the coastal terrace prairie and coastal scrub habitats on site. 2010 – 2012.

Compost Facility and Bureau of Land Management (BLM) Right-of-Way Biological Evaluation and Permitting Compliance, Nursery Products LLC, Barstow, California. Served as project biologist and permitting specialist. Compiled subconsultant technical reports to create a biological evaluation and assessment for the Nursery Products Hawes Composting Facility. The project involved access through BLM land, creating a federal nexus and requiring federal Endangered Species Act Section 7 consultation with USFWS regarding the potential presence of desert tortoise (*Gopherus agassizii*). Also drafted a raven management plan detailing measures to negate predation of desert tortoise by common ravens (*Corvus corax*), which might be attracted to the area due to the development. 2013.

EIR and Technical Botanical and Arborist Reports, White Wolf Ski Resort, Placer County, California. Served as primary botanist and arborist. Conducted focused botanical surveys and arborist surveys to identify biological constraints, impacts, and mitigation measures for proposed development in the Lake Tahoe area. Per the Placer County Tree Protection Ordinance, all trees were assessed and documented in an arborist assessment. Technical botanical and arborist reports were used to draft the biology section of the EIR for the project. 2019.

Jasude Estate Timber Harvest Plan and Timberland Conversion EIR, Napa County, California. Served as project botanist. Conducted botanical and general biological resources surveys of the areas proposed for timberland conversion to a new vineyard. Drafted a supplemental biological technical memorandum and the technical section of the Draft EIR, including recommendations for avoidance and minimization measures to ensure no impacts to sensitive habitats and species. 2014.

Abrue Vineyard Timber Harvest Plan and Timberland Conversion EIR, Angwin, California. Conducted botanical and general biological resources surveys of the areas proposed for timberland conversion to new vineyard. Compiled technical reports from subconsultants and drafted the biological section of the Draft EIR. Special-status species found on the site included northern spotted owl (*Strix occidentalis caurina*) and anadromous fish within the streams. 2014.

Sydney Apartments Vineyard Water Rights Biological Assessment, Napa County, California. Conducted a comprehensive botanical inventory of the project site, with special attention to areas of serpentinite soil substrates in support of a water rights application for extension of time. Provided technical assistance for the biological resources analysis and initial study, and drafted recommendations for preservation and avoidance of native grasslands and other sensitive habitats. 2013 – 2014.

Energy

Pipeline Pathways, Pacific Gas and Electric Company, San Francisco Bay Area, California. Served as primary botanist and conducted focused botanical surveys along gas pipelines where vegetation management was scheduled. Documented occurrences of rare plant species, drafted technical memoranda, and provided technical guidance for avoidance and minimization of potential impacts to rare species as a result of vegetation management. 2012 – 2013.

Confidential Client, Sacramento County, California. Served as biologist, aquatic resource specialist, and botanist. Conducted focused rare plant surveys, aquatic resources delineation surveys, and general wildlife surveys. Documented a new population of Myers' pincushionplant (*Navarretia myersii* ssp. *myersii*). 2023 – 2024.

Confidential Client, Sacramento County, California. Served as biologist, aquatic resource specialist, and botanist. Conducted focused rare plant surveys, aquatic resources delineation surveys, listed large branchiopod wet and dry season surveys, and general wildlife surveys. 2023 – 2024.

Greenbrae Boardwalk Pipeline Replacement Project, Pacific Gas and Electric Company, Greenbrae, California. Served as primary biologist and permitting specialist. Coordinated and obtained wetland permits for emergency work on a gas pipeline in a tidally influenced marsh. Drafted permit applications for restoration work on a neighboring preserve, including Clean Water Act (CWA) Sections 404 and 401, and Bay Conservation and Development Commission permits. Coordinated with project interested parties, clients, and agencies to ensure that the project could be safely completed in a timely manner while obeying the letter and intent of the law. 2013.

Confidential Solar Energy Project, Washoe County, Nevada. Conducted a delineation of waters of the United States and a general habitat assessment on an approximately 1,068-acre portion of the solar project. Assisted with Great Basin habitat and plant identification, and mapping of potentially jurisdictional wetlands. Drafted technical reports and coordinated with BLM staff. 2019 – present.

Gas Pipeline Installation, South Sacramento, California. Served as biologist and biological monitor. Conducted monitoring for Swainson's hawk during a 3-month gas pipeline installation project that included open trenching and horizontal directional boring under a major freeway. Several Swainson's hawk nests were present within 0.25 miles of the project site. Daily monitoring logs were recorded and reported to the California Department of Fish and Wildlife (CDFW). 2010.

28th Street Landfill Solar Farm, City of Sacramento, California. Conducted botanical and general biological resources surveys of the areas proposed for conversion to a solar farm. Drafted a biological resources assessment and assisted with an evaluation of habitat suitability for Swainson's hawk in accordance with CDFW guidelines. Other special-status species found on the site included Northern California black walnut (*Juglans hindsii*) and Valley elderberry longhorn beetle. 2010.

Military

Former Fort Ord Base Realignment and Closure, Annual Rare Plant Survey and Habitat Assessment, Monterey, California. Conducted quantitative rare plant surveys for sand gilia (*Gilia tenuiflora* ssp. *arenaria*), Monterey spineflower (*Chorizanthe pungens* var. *pungens*), and seaside bird's-beak (*Cordylanthus rigidus* ssp. *littoralis*) in support of an ecological study of existing vegetative resources on the former military base. Also conducted transect surveys of chaparral habitat in sensitive areas containing live munitions. 2009.

Municipal

Calaveras County Water District As-needed Biological Support, Calaveras County, California. Provided as-needed biological support for infrastructure projects, including pre-construction surveys for special-status wildlife, nesting birds, and botanical resources. Coordinated avoidance and minimization measures with client and contractors. Monitored construction to ensure no adverse effects to special-status wildlife and botanical resources. 2020 – 2022.

Placer County Government Center Master Plan EIR, California. Served as botanist and wetland delineator. Performed wetland delineation and drafted technical wetland delineation reports. Provided technical expertise on botanical resources, vegetation communities, and permitting. Assisted with drafting the EIR for the Master Plan. 2021-2024.

Wheatland Ranch Project, Yuba County, California. Served as primary botanist and wetland delineator for a City annexation project northeast of the City of Wheatland. Provided botanical survey expertise, vegetation community mapping, and delineated vernal pool habitat on approximately 1,000 acres of undeveloped land. 2017.

Community Center Improvements, City of Citrus Heights, California. Served as primary arborist. In compliance with the Citrus Heights Tree Protection Ordinance, conducted an arborist survey for improvements to the Community Center grounds. Drafted a technical arborist report detailing findings and measures for avoiding permanent impacts to arboricultural resources. Responded to comments from the City's Design Review Board, and aided in the implementation of mitigation measures. 2014.

Resource Management

Vegetation and Land Cover Type Mapping, University of California, Santa Cruz, Santa Cruz County, California. Led and conducted comprehensive vegetation surveys of the University of California, Santa Cruz main campus as part of the Habitat Conservation Plan preparation. Surveys were conducted using guidance and protocol issued by CDFW and CNPS. 2023.

Focused Botanical Surveys for Fire Safe Vegetation Management along Highway 35, Santa Cruz and San Mateo Counties, California. Conducted protocol-level surveys for special-status plant species in areas proposed for vegetation management. Activities included visiting reference sites for special-status plant species and conducting surveys during the appropriate bloom season. Observed, documented, and flagged for avoidance special-status plant species including Kings Mountain manzanita (*Arctostaphylos regismontana*), Anderson's manzanita (*Arctostaphylos andersonii*), and San Mateo woolly sunflower (*Eriophyllum latilobum*). 2023.

Delta Field Division Habitat Conservation Plan, Department of Water Resources, Various Counties, California. Served as senior biologist/field coordinator. As field coordinator, organized and implemented surveys for a wide variety of plant and wildlife species throughout the study area. Created schedules and coordinated with field teams and the client to ensure surveys were completed within the appropriate time frame. As senior biologist, conducted surveys for special-status plant species, vegetation mapping, burrowing owl, Swainson's hawk, tricolored blackbird (*Agelaius tricolor*), listed large branchiopods, and California red-legged frog. Assisted with compiling the data and drafting the baseline biological report. 2020 – present.

Delta Dams Rodent Burrow Remediation Project Permit Compliance, Department of Water Resources, Alameda County, California. Served as senior biologist/compliance manager. Reviewed regulatory permit requirements, coordinated with client and contractors, scheduled pre-construction surveys and construction monitors, and drafted and submitted compliance documents to agency personnel. 2024 – present.

Potrero Hills Landfill Expansion Project, Waste Connections Inc., Solano County, California. Assists with mitigation monitoring for a 10-year monitoring program for rare plants, federally listed large branchiopod species, and California tiger salamander. Monitors populations of special-status San Joaquin spearscale (*Extriplex joaquiniana*), Contra Costa goldfields (*Lasthenia conjugens*), and pappose tarplant (*Centromadia parryi* ssp. *parryi*); conducts annual large branchiopod wet season surveys; and annual surveys for eggs and larvae for California tiger salamander. She compiles data and drafts annual monitoring reports for submittal to the client and responsible agencies. 2016 – 2024.

San Felipe Creek Restoration Project, Santa Clara Valley Habitat Agency, California. Conducted biological surveys and reporting, wetland delineation, and pre-construction survey support for habitat restoration efforts on the San Felipe Creek Restoration Project. Additionally, provides technical assistance and habitat restoration monitoring during the plant establishment period. The project consists of restoration of approximately 1 mile of incised stream channel and enhance wetland areas through the use of channel and floodplain modifications. Leading the 10-year mitigation monitoring efforts post construction, including qualitative and quantitative methods for assessing mitigation success. Conducts monitoring fieldwork, data compilation and management, and report generation. Communicates closely with client and agency staff to ensure timely submittal of progress and annual reports. 2020-2023.

Altamont Landfill Resource Recovery Facility, Livermore, California. As part of a 10-year mitigation monitoring plan and USACE, Regional Water Quality Control Board (RWQCB), and CDFW permit specifications, assists with pre-construction biological surveys to determine the presence of special-status species including California tiger salamander, California red-legged frog, American badger (*Taxidea taxus*), San Joaquin kit fox (*Vulpes macrotis mutica*), and burrowing owl. Assists with annual botanical, wildlife, and wetland monitoring surveys and biological reconnaissance surveys, as well as periodic construction monitoring. Compiles data and drafts annual monitoring reports for submittal to the client and responsible agencies. 2015 – 2019.

Focused Botanical Surveys for Coldstream Canyon Wetland Restoration Project, Donner Pass Area, Placer County, California. Conducted protocol-level surveys for special-status plant species in support of a restoration project. Special-status plant species were documented using hand-held GPS devices. Surveys consisted of two passes to capture the diversity of flora in high elevation wetland and fen habitats.2020 and 2024.

Tilden Nature Area Pond Restoration and Public Access, NCE/East Bay Regional Park District, Berkeley, California. Conducted biological surveys and provided technical botanical assistance for native revegetation and trail system at an interpretive pond area. 2019.

Cloverdale High School Restoration Plan, Cloverdale, Sonoma County, California. Conducted biological and aquatic resources surveys, senior review, and provided technical assistance with development of two alternative conceptual plans for relocation and enhancement of a degraded creek corridor and tributary to accommodate development of athletic fields on vacant land in the City of Cloverdale. 2022 – 2023.

North Delta Ecosystem Habitat Restoration Project, Thornton, California. Served as primary wetland delineator and permit advisor for the McCormack Williamson Tract restoration wetland delineation. Conducted surveys to identify wetlands and waters that were potentially jurisdictional under CWA Section 404. Compiled data and drafted a wetland delineation report to be verified by USACE and used in the permitting process. 2014.

Habitat Mitigation and Monitoring Plan, Brooktrails Community Services District, California. Served as primary botanist and permitting specialist. In compliance with the 5-year monitoring plan for tree and wetland mitigation, conducted surveys to assess the progress of mitigation plantings in the community. Compiled and analyzed data to produce annual reports in compliance with the CWA Section 404 permit and Section 1600 Streambed Alteration Agreement. Consulted with local interested parties, the Community Services District, CDFW, and USACE to ensure all success criteria would be met within the specified period. 2011.

Water Rights Biological Resources Assessment, Hanuman Fellowship, Watsonville, California. Served as primary botanist. Conducted a botanical inventory and general biological resources survey, and assisted with a stream assessment for a reservoir expansion project. Drafted the biological resources analysis and recommended avoidance and minimization measures for sensitive species on site, including Anderson's manzanita (*Arctostaphylos andersonii*). 2010-2011.

Huichica Hills Ranch Off-Stream Storage Pond Conversion and Stream Restoration, Vino Farms, Sonoma County, California. Served as deputy project manager and project biologist. Managed all regulatory permitting and regulatory agency consultations. Conducted general biological surveys, assisted in the delineation of waters of the United States, and drafted a biological technical memorandum in support of a categorical exemption and permit applications. Also drafted habitat mitigation and monitoring plan for restoration and subsequent monitoring of wetlands impacted as a result of the project. 2011-2012.

Water Right Biological Technical Memorandum, Stream Management Plan, and Arborist Report, Marin Country Club, Novato, California. Served as primary botanist and arborist. Conducted surveys to identify biological constraints, impacts, and mitigation measures for trees removed as a result of constructing several on-stream reservoirs. Drafted a stream management plan in accordance with local ordinance and permitting needs. The plan detailed avoidance and minimization measures, restoration techniques, monitoring and reporting methods, and success criteria. 2018.

Off-Stream Storage Pond Conversion Project Stream Restoration Plan and Mitigation Monitoring, Nemerever Vineyards, Oakville, California. Served as primary botanist. Created and implemented a stream revegetation plan in compliance with permits issued by USACE and RWQCB for an off-stream storage pond conversion and stream restoration project. Collected percent vegetation cover data; compiled annual reports; and consulted with the property owner, interested parties, and regulatory agency staff. 2012.

Transportation

Housing and Urban Development Grant Roadway Improvement Biological Assessment, County of Mariposa, California. Served as primary botanist tasked with preparation of technical supporting documents for NEPA review. Conducted preliminary research and general biological resources surveys for all roadway segments scheduled for improvement as part of an emergency evacuation plan. Drafted the biological technical memorandum in support

of an environmental assessment required under NEPA, including recommendations for avoidance and mitigation of impacts to sensitive species and habitats in the project vicinity. 2012.

California High Speed Rail, Fresno, California. Served as project botanist and biologist. Coordinated and conducted surveys for listed large branchiopods, rare plants, sensitive habitat, and other environmentally sensitive areas. Drafted reports of findings and project updates for the client. Attended meetings with agency representatives and other interested parties. 2015 – 2017.

La Rue Bridge Replacement Project, Davis, California. Coordinated with resource agencies for aquatic resources permitting. Conducted pre-construction surveys for western pond turtle and Swainson's hawk, as well as general nesting bird and roosting bat surveys. Coordinated construction monitoring. 2019.

East Bay Area Rapid Transit Project Mitigation Implementation, Antioch, California. Conducted surveys for burrowing owl within the project footprint of the new East Bay Area Rapid Transit depot. Assisted in drafting technical biological reports. Aided in implementing the impact avoidance measures, which included installation of one-way exclusion doors on burrows and construction monitoring. 2013.

Focused Wetland Plant Survey for Mitigation Bank Feasibility Study, California Department of Transportation, Humboldt County, California. Conducted quantitative vegetation surveys of wetland and grassland habitats adjacent to Humboldt Bay for a California Department of Transportation mitigation bank feasibility study. Plotted belt transects, calculated overall and relative percent cover for plant species, and assessed overall habitat at the site. 2012.

Tribal

Fee-to-Trust Project—California Tiger Salamander Study, Plymouth, Ione Band of Miwok Indians, California. Assisted with protocol-level surveys for the Central Valley population of California tiger salamander in compliance with a biological opinion issued by USFWS for land proposed to be placed into federal trust for the Ione Band of Miwok Indians. Surveys also included an evaluation of the status of vernal pools and other potentially suitable aquatic habitat on the site. 2011.

Vernal Pool Study, United Auburn Indian Community Housing, Sheridan, California. Assisted for 2 years with protocol-level vernal pool branchiopod surveys conducted in accordance with regulatory permits to establish baseline data for future land management practices. Vernal pool fairy shrimp (*Branchinecta lynchi*) were present in several of the pools. Also conducted an inventory of plants within the vernal pool complex, and conducted a rangeland evaluation of the overall property, including calculations of residual dry matter.2011 – 2012.

Fee-to-Trust Project—Biological Assessment and Environmental Assessment, Coyote Valley Band of Pomo Indians, Mendocino County, California. Served as project biologist. Conducted preliminary research and general biological resources surveys for the U.S. Bureau of Indian Affairs to support an application from the Coyote Valley Band of Pomo Indians for 6 acres of land to be placed into federal trust. Drafted the biological evaluation with recommendations for avoidance and minimization measures for sensitive species and waters of the United States in the vicinity of the project site. Also provided technical assistance to the Bureau of Indian Affairs throughout the federal Endangered Species Act Section 7 consultation process with USFWS. 2010 – 2011.

Cache Creek Casino Resort Wetland Mitigation and Monitoring Plan Implementation, Yocha Dehe Wintun Nation, Brooks, California. Served as primary botanist and permitting compliance specialist. In compliance with a 10-year wetland mitigation monitoring and reporting plan, conducted annual surveys to assess the progress of mitigation plantings and hydrology. Compiled and analyzed data to produce annual reports in compliance with CWA Section

404 individual permit stipulations. Consulted with local interested parties, the tribe, and USACE to ensure all success criteria would be met within the specified time frame. 2011 – 2012.

Fee-to-Trust Project—Botanical Survey, Sycuan Band of Kumeyaay Nation, San Diego, California. Performed comprehensive floristic surveys on all parcels proposed for transfer to federal trust. Surveys focused on identifying and documenting populations of several locally rare plant species and larval host plants for Quino checkerspot butterfly (*Euphydryas editha quino*). 2013.

Water/Wastewater

Arboretum Waterway Improvement Project, University of California, Davis. Served as biologist. Conducted biological surveys of the project area to assess potential constraints to waterway restoration. Developed a salvage and relocation plan for western pond turtle and assisted with regulatory permitting, pre-construction surveys, and provided biological support for the project. 2021 – 2023.

Newell Creek Dam, Santa Cruz County, California. Served as botanist and wetland specialist. Conducted an aquatic resources delineation and botanical survey in support of CEQA documentation. Botanical surveys were conducted in accordance with USFWS, CDFW, and CNPS protocol. Drafted technical reports and provided technical assistance with environmental documentation and permitting. 2018.

State Water Project—Erosion Repair Routine Maintenance, Contra Costa County, California. As primary biologist, conducted surveys and wetland delineation fieldwork for various proposed erosion repair sites at State Water Project facilities. Compiled results on soils, hydrology, and plants in a wetland delineation report and preliminary jurisdictional determination. Communicated with agencies regarding permitting requirements. Completed documents for CEQA compliance. 2015 – 2016.

Lake Dalwigk Habitat Enhancement Initial Study and Permitting, Vallejo Sanitation and Flood Control District, Vallejo, California. Served as deputy project manager and project biologist. Prepared and performed senior review of multiple sections of the project's CEQA documents. Conducted biological and botanical surveys for technical supporting documents. Ensured that the initial study/mitigated negative declaration was completed within time constraints and budget. Conducted focused plant surveys, habitat assessment field studies, and background research for potential biological constraints. Completed applications and consulted with regulatory agencies to obtain the following permits: Section 1600 Streambed Alteration Agreement from CDFW, CWA Section 404 Individual Permit from USACE, CWA Section 401 Water Quality Certification from the San Francisco RWQCB, and Coastal Development Permit from the Bay Conservation and Development Commission. As part of the permitting process, drafted a wetland mitigation and monitoring plan to be implemented over the next 10 years. 2010 – 2013.

Denniston/San Vicente Creeks Water EIR, Coastside County Water District, Half Moon Bay, California. Served as deputy project manager and project biologist. Prepared and performed senior review of multiple sections of the project's CEQA document, biological survey reports, and supporting technical documents. Assisted the project manager in preparing the EIR for improvements to existing stream diversions to enable the Coastside County Water District to use current water rights on the San Vicente and Denniston Creeks. Assisted in identifying biological constraints in the project vicinity and in formulating alternatives to the project. Responsible for managing the EIR team, including in-house specialists and subconsultants; managing the project budget; assessing biological resources for the CEQA evaluation; and ensuring that the CEQA evaluation was progressing on time and on budget. 2009-2012.

Placer County Sewer Maintenance District 3 Pipeline Improvement, Granite Bay, California. As part of a team of biologists, conducted floristic surveys of proposed pipeline routes and assisted with the delineation of waters of

the United States. Drafted a botanical technical memorandum and provided technical assistance for botanical resources throughout the EIR and permitting process. 2012.

Family Water Alliance Fish Screen Installation, Sacramento and American Rivers, California. As botanist/biologist, assisted fisheries biologists in evaluating riverine and riparian habitat for potential to support special-status plant and animal species as part of a water pump intake fish-screening project. Drafted biological resources assessments for each site, including avoidance and minimization measures for potential impacts. 2012.

Wastewater Treatment Plant Improvement Project, Swainson's Hawk Monitoring, Vacaville Wastewater Treatment Plant, Vacaville, California. Served as biologist and biological monitor. In compliance with measures outlined in the EIR and in consultation with CDFW, monitored two active Swainson's hawk nests within 500 feet of ground-disturbing activities at a wastewater treatment plant. For several months during the nesting season, recorded activities and reported daily on the status of the active nests to ensure that no impacts to Swainson's hawk resulted from project activities. 2014.

Trails/Recreation

Copeland Creek Trail to Crane Creek Regional Park, Sonoma County, California. Serviced as biologist, aquatic resource specialist, and botanist. Ms. Burris conducted focused rare plant surveys, aquatic resources delineation surveys, habitat assessment for California tiger salamander and California red-legged frog, and general wildlife surveys. 2018 – Present.

Focused Botanical Surveys for Martis Valley Habitat Enhancement Project, Martis Valley, Placer County, California. Conducted pre-activity surveys for special-status plant species including Pluma ivesia (*Ivesia sericoleuca*). Hundreds of plants were documented using hand-held GPS devices. Populations of rare plants were flagged for avoidance and included in the Worker Environmental Awareness Training conducted by Dudek for the project. 2023.

Focused Botanical Surveys for the Pines to Mines Trail Project, Tahoe National Forest, Placer County, California. Conducted protocol-level surveys for special-status plant species along the proposed alignment of a back-country trail. Activities included visiting reference sites for special-status plant species and conducting surveys during the appropriate bloom season. 2023 and 2024.

Specialized Trainings

- "Bumble Bees of California" workshop presented by Jaime Pawelek of Wild Bee Garden Design/Essig Museum Research Associate. Participated in a 1-day specialized bumble bee training that focused on the four California candidate species, Crotch bumble bee (*Bombus crotchii*), Franklin bumble bee (*Bombus franklini*), western bumble bee (*Bombus occidentalis*), and Suckley cuckoo bumble bee (*Bombus suckleyi*). Lecture topics included classification and bee morphology, identification of species, life history and ecology, and sampling protocols. A large portion of the workshop included identification of specimens using a microscope and the guidebook "Bumble Bees of the Western United States" (Koch et al. 2012). November 2019.
- 40-Hour Wetland Delineation Training, Wetlands Training Institute. 2014.
- 40-Hour California Rapid Assessment Method (CRAM) Training Course, Depressions and Riverine Module. 2015.

- Rare Pond Species Workshop, Laguna de Santa Rosa, Rohnert Park, California. Workshop covering species biology and survey technique for California red-legged frog, California tiger salamander, and western pond turtle. 2016.
- Listed Large Branchiopod identification course presented by Mary Schug Belk. December 5, 2015. Passed identification lab practical of 26 species of fairy shrimp and 2 species of tadpole shrimp with 100% accuracy. Retested in 2022 with 100% accuracy.
- Advanced Hydric and Problem Area Soils, various locations in Northern California, Wetlands Training Institute. 2023.
- Field Ecology education course, Sacramento City College. Course covering survey and trapping techniques for mammals such as ring-tailed cat (*Bassariscus astutus*) and bats. Included habitat assessment and mist-netting for bat species. 2015.
- Annual courses and seminars on plant identification, special-status species biology, natural resources, CEQA/NEPA, and regulatory permitting. 2007–Present.

Surveying and Monitoring Hours for Relevant Species*

Species	Monitoring Hours	Surveying Hours	Notes
California tiger salamander	200+	200+	Egg, larval and adult pit-fall trap surveys and monitoring conducted. Handled 1000s of larvae, 23 juvenile, and 41 adults under the supervision of permitted biologist. Positive identification of eggs.
California red-legged frog	80	100	Egg, larval, and adult eye-shine surveys conducted. Eggs masses identified and 7 adults handled under supervision of permitted biologist. Observed 19 adults, 7 juveniles, 10 larvae.
Listed Large Branchiopods	80	200+	Conducted protocol level wet and dry season surveys and mitigation monitoring surveys. Monitored construction around occupied vernal pool habitat. Handled 100s of individuals of *Branchinecta conservatio*, *B. lynchii*, *Lepidurus packardii* under the supervision of permitted biologists.
San Joaquin kit fox	-	120	Habitat assessments, spot-light surveys, and burrow mapping.
Burrowing owl	120	300+	Habitat assessments, protocol-level surveys, exclusions, and monitoring conducted.
Nesting birds	200+	500+	Preconstruction surveys for nesting bird and raptor species.
Swainson's hawk	200+	200+	Protocol-level and preconstruction surveys and construction monitoring of active nests.
Bat species	40	80	Conducted daytime roost surveys and evening and nighttime surveys using Anabat systems and mist-netting techniques under the supervision of expert permitted biologists. Monitored exclusion devices.
Western pond turtle	80	100	Conducted aquatic surveys and upland nest surveys. Monitored construction and relocated turtles as needed. Handled 4 adult turtles.
Foothill yellow-legged frog	24	64	Conducted preconstruction surveys, assisted with habitat assessment, positive identification of numerous adults in suitable habitat
Giant garter snake	120	80	Conducted habitat assessments and pre-construction surveys. Provided onsite monitoring during construction.
Blunt-nosed leopard lizard	-	80	Level 1 surveyor. Conducted protocol-level surveys in suitable habitat. Positive identification of one individual.

Mikaela Bissell

ENVIRONMENTAL COMPLIANCE SPECIALIST

Mikaela Bissell (*mi-KAY-la BIS-uhl; she/her*) is an environmental compliance specialist with 4 years' experience as an environmental professional. Ms. Bissell has served as an environmental compliance administrator, consulting utility forester, and field lead forester. Her diverse experience includes hazardous waste management, fueling station regulatory compliance, oil and gas projects, utility forestry, wildfire mitigation, arboriculture, ArcGIS Collector, nesting bird surveys, and riparian surveys.

Education

University of Nevada, Reno
BS, Environmental Science, 2017

Certifications

40-Hour Basic Wetland Delineation Certification - Wetland Training Institute (WTI) [April 2024]

International Code Council California UST Designated Operator Certification, ID: 10165111

American Red Cross Adult CPR/AED, ID: 00NSSHG

Professional Affiliations

International Society of Arboriculture

Project Experience

San Benito College Campus Project, Gavilan Joint Community College District, San Benito County, California. Approved as a California Department of Fish and Wildlife (CDFW) Designated Monitor in CDFW Region 4. Performed five rounds of preliminary pre-construction clearance surveys alongside designated biologist, totaling 30 hours of surveys on behalf of the client for the following targeted species: California tiger salamander (*Ambystoma californiense*), American badger (*Taxidea taxus*), burrowing owl (*Athene cunicularia*), San Joaquin kit fox (*Vulpes macrotis mutica*), and nesting birds. Additionally, monitored active construction of initial ground-disturbing activities of installation of exclusionary salamander fencing alongside approved designated biologist. Independently monitored activities of non-ground-disturbing construction. Total monitoring hours are at 16. No species were detected or handled during the surveys or monitoring. Additionally, serving as a deputy project manager for the project. Assisting with technical writing of reports due to CDFW and U.S. Fish and Wildlife Service (USFWS). Reports include summary of survey results, California tiger salamander mortality and relocation plan, and pre-construction commencement package. ITP No. 2081-2015-014-04; USFWS HCP TE27171C-0. (2023–Present)

Potrero Hills Landfill Expansion Project, Waste Connections Inc., Solano County, California. Conducted a 5-hour field survey for a 10-year monitoring program for San Joaquin spearscale (*Extriplex joaquiniana*). Performed more than 100 hours of monitoring services for the covered species of California tiger salamander. Monitoring efforts include surveying the permanent California tiger salamander exclusionary fencing to check for covered species, leading Workers Environmental Awareness Training for new construction crews, and monitoring construction activities in accordance with the project's permit conditions. Coordinated with biological monitors daily regarding project scope, agency permit stipulations, and biological inquiries. Prepared quarterly regulatory compliance reporting. ITP No. 2081-2011-073-03. (2022–2024)

Confidential Solar Project, Confidential Client, Sacramento County, California. Approved as a CDFW Biological Monitor. Performed nesting pre-construction surveys and biological monitoring for trenching activities. Pre-construction nesting surveys lasted approximately 4 days at 8 hours each. Conducted approximately 32 hours

of nesting surveys; multiple active nests with eggs or chicks were flagged for avoidances. Biological monitoring for trenching involved sweeping area for California tiger salamander and western spadefoot (*Spea hammondii*). No covered species were identified during monitoring. (2023)

Highway 128 Caltrans Emergency Landslide Repairs, Valentine Contractors, Sonoma County, California. Operating under Corps Emergency Permit for 3Y160, performed biological monitoring for nesting birds and general wildlife for Valentine Contractors during construction activities. Assisted project manager in compliance management for contract by scheduling and coordinating monitors to be on site for spot checks. Additionally, performed biological monitoring for 6 days on site, for a total of 24 hours of monitoring. No nests or wildlife species of concern were identified. (2023)

Copeland Creek Trail to Crane Creek Regional Park, City of Rohnert Park, Public Works CIP Division, Sonoma County, California. Assisted Dudek botanist with focused rare plant surveys during blooming season for the following species: Franciscan onion (*Allium peninsulare* var. *franciscanum*), bent-flowered fiddleneck (*Amsinckia lunaris*), pappose tarplant (*Centromadia parryi* ssp.), fragrant fritillary (*Fritillaria liliacea*), congested-headed hayfield tarplant (*Hemizonia congesta*), Jepson's leptosiphon (*Leptosiphon jepsonii*), and two-fork clover (*Trifolium amoenum*). No species were identified during targeted survey. (2023)

Learning Center at Fairfield Osborne Preserve, California State University, Sonoma, California. As an approved CDFW Biological Monitor, performed two rounds of biological monitoring for the following covered species under EPIMS-SON-21304-R3: foothill-yellow legged frog (*Rana boylii*), roosting bats, and nesting birds. Two adult Sierran treefrog (*Pseudacris sierra*) were relocated during monitoring to approved relocation site. (2023)

Confidential Battery Energy Storage Projects, Multiple Confidential Clients, Multiple Counties, California. Responsible for assisting in the field for aquatic resources delineation and biological resources assessment for proposed battery energy storage projects. Following the field effort, responsible for assisting in the completion of an aquatic resources delineation report and biological resources assessment memorandum to be submitted to the client. Conducted field efforts for project sites in Sacramento, Butte, Colusa, San Bernadino, Alameda, and Sonoma Counties. Completing aquatic resources delineation report and biological resources assessment memorandum for project sites in Sacramento and Butte Counties. (2022–Present)

Confidential Solar Projects, Multiple Confidential Clients, Multiple Counties, California. Responsible for the completion of critical issues analyses reports for proposed solar projects documenting environmental constraints (aesthetics, agriculture, biological resources, cultural resources, hydrology/water quality, land use, and zoning) at the project sites and providing recommendations to the clients interested in developing the sites. Project sites analyzed thus far in California include Tulare, Riverside, Fresno, and Los Angeles Counties. (2023–Present)

Confidential Solar and Battery Energy Storage System Project, Confidential Client, Linn County, Oregon. Responsible for the completion of critical issues analyses reports for proposed solar and battery energy storage projects documenting environmental constraints (aesthetics, agriculture, biological resources, cultural resources, hydrology/water quality, land use, zoning) at the project site and providing recommendations to the clients interested in developing the site. (2023–Present)

Confidential Development Project, Confidential Client, King County, Washington. Responsible for completing tree inventory survey for a confidential development project in King County, Washington. Tree inventory data included identification of species, assessment of tree defects/pathogens, submeter GPS data collection, use of rangefinder to record height of species, and collection of each tree's diameter at breast height. Surveyed for approximately 15 hours total. Approximately 200 trees inventoried for the assessment. (2023)

Confidential Development Project, Confidential Client, Washington County, Oregon. Responsible for completing tree inventory survey for a confidential development project in Washington County, Oregon. Tree inventory data included identification of species, assessment of tree defects/pathogens, submeter GPS data collection, use of rangefinder to record height of species, and collection of each tree's diameter at breast height. Surveyed for approximately 8 hours total. Approximately 100 trees inventoried for the assessment. (2023)

Confidential Battery Energy Storage System Projects, Confidential Client, Tulare County, California. Responsible for the completion of critical issues analyses reports for proposed battery energy storage projects documenting environmental constraints (aesthetics, agriculture, biological resources, cultural resources, hydrology/water quality, land use, and zoning) at the project sites and providing recommendations to the clients interested in developing the sites. (2023–Present)

Confidential Solar Project, Confidential Client, Sacramento County, California. Performed three 8-hour night-eye shine surveys for western spadefoot. Surveys took place 30 minutes after dusk during rain events and targeted areas of suitable aquatic and upland habitat for western spadefoot. Various bullfrogs and treefrogs were observed during survey. Night-eye shine surveys involved scanning aquatic features and surrounding uplands to examine for amphibian night-eye shine. No western spadefoot were detected during surveys. Visually observed branchiopods during surveys at a vernal pool feature. (2024)

Confidential Solar Project, Confidential Client, Sacramento County, California. Performed 24 hours of a protocol-level burrowing owl survey in accordance with the 2012 CDFW protocol titled Staff Report on Burrowing Owl Mitigation and the 1993 California Burrowing Owl Consortium Survey Protocol and Mitigation Guidelines. Burrowing owl surveys were performed during the nonbreeding season in areas of suitable habitat. Observed three adult burrowing owls under a piece of plywood and within culverts. Observed evidence of white wash, claw marks, and prey remains on top of the plywood. (2024)

Confidential Solar Project, Confidential Client, Sacramento County, California. Performed one 8-hour protocol-level survey for Swainson's hawk (*Buteo swainsoni*) in accordance with methodology used in the Swainson's Hawk Technical Advisory Committee's 2000 Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley, as well as the California Energy Commission and CDFW's 2010 Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures (for the Renewable Energy Project in Antelope Valley of Los Angeles and Kern County, California). During the survey, two adult Swainson's hawk were identified in paired behavior. Individuals were watched for 15–20 minutes until they flew away. Recorded species and took coordinates for reporting purposes. (2023)

Confidential Solar Projects, Confidential Client, Multiple Counties, Nevada. Performed two rounds of noxious weed surveys in Lyon County, Nevada, and one round of noxious weed surveys in Lassen County, California. Target species identified during surveys includes the following: Russian prickly thistle (*Salsola tragus*), scotch thistle (*Onopordum acanthium*), perennial pepper weed (*Lepidium latifolium*), tall tumble mustard (*Sisymbrium altissimum*), cheatgrass (*Bromus tectorum*), saltlover (*Halogeton glomeratus*), and flixweed (*Descurainia sophia*). (2022–2023)

Confidential Solar Project, Confidential Client, Lyon County, Nevada. Performed one round of rare plant surveys totaling 8 hours. Identified Booth's evening primrose (*Eremothera boothii*) and sagebrush cholla (*Grusonia pulchella*). Additionally, performed an aquatic resources field delineation following the Arid-West supplement for 7 days totaling 56 hours. Identified multiple playa pools during surveys along with ephemeral channels. (2022–2023)

Camino Conduit Project, El Dorado Irrigation District, El Dorado County, California. Performed two rounds of pre-construction clearance surveys for riparian resources and nesting birds, totaling 14 hours. No nesting birds identified during surveys. Various ephemeral channels blocked off for avoidance. Assisted by El Dorado Irrigation District representative Michael Baron. (2023)

West Lake Tahoe Regional Water Treatment Plant Project, Placer County, California. Performed one round of pre-construction clearance survey for nesting birds. No nesting birds identified during survey. (2023)

Neal Road Recycling and Waste Facility, Butte County Public Works, Butte County, California. Served as a compliance monitor and biologist for the project during different task orders. Under the first task order, served as a compliance monitor responsible for monitoring the project's restoration efforts for the procurement and planting of 12 cottonwood (*Populus fremontii*) trees. Following monitoring efforts, drafted a technical memorandum for submittal to the client based on restoration efforts observed and best management practices adopted for the transplanting of trees. Under the second task order, served as a biologist responsible for conducting a preliminary biological resources assessment of a potential expansion project. Summarized the results in a biological resources constraints memorandum. (2022–2023)

Advanced Metering Infrastructure Project, Alameda County Water District, Multiple Counties, California. Assisted with preparing the Workers Environmental Awareness Training presentation and pamphlets. Species covered include California tiger salamander, California red-legged frog (*Rana draytonii*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), and San Francisco garter snake (*Thamnophis sirtalis tetrataenia*). Presentation focused on reviewing the description, appearance, distribution, habitat, and life history of each species. Additionally, reviewed common species that present similar features to covered species in the presentation. Reviewed minimization efforts and penalties for violation of the federal and California Endangered Species Acts. (2022)

Bonturi Ranch Conservation Easement, AKT Santa Nella Solar Investors II LLC., Merced County, California. Conducted 2 days of field surveying for protocol level burrow/den surveys according to the USFWS 1999 survey guidelines for the San Joaquin kit fox. Surveys, totaling approximately 16 hours, were performed by walking 20-meter transects on ongoing grazing ranch property. No active or natal dens identified during survey. (2023)

San Joaquin Habitat Conservation Plan, California Department of Water Resources, Multiple Counties, California. Assisted with the field effort of redeployment of game cameras to capture images of wildlife for the wildlife movement assessment survey and San Joaquin kit fox camera study. Spent more than 100 hours assisting with data management uploads of images and identification of wildlife species caught on camera on CamWon. (2022)

Relevant Previous Experience

Flyers Energy LLC, Auburn, California. Served as an environmental compliance administrator for a fueling station corporation. Assisted the company by working to return the facility back to compliance after regulatory inspections (underground storage tank, aboveground storage tank, fire, air quality, and stormwater) from state or county agencies. Researched regulations in 23 states to resolve violations outlined during inspections. Assisted during renewals of operating permits, fire permits, air quality permits, underground storage tank/aboveground storage tank permits, and authority to construct permits. Input hazardous materials business plan data into the California Environmental Reporting System. Designated as an environmental professional to respond to petroleum-related spills and deem the spills reportable based on regulatory requirements per state and per incident. Reviewed spill prevention, control, and countermeasure documentation for aboveground storage tanks. Became familiar with testing requirements for petroleum storage tanks, dispatching testing contractors, and reviewing testing reports to ensure accuracy per regulatory requirements. Managed repairs and small construction projects by determining

the best course of action, soliciting bids, hiring contractors, and overseeing the completion of each job. Responded to designated operator inspections performed by an outside contractor, as required by the California Water Board's Title 23 regulatory requirements. Resolved and mitigated compliance issues outlined during monthly inspections. (2021–2022)

Enhanced Vegetation Management Program, Subcontracted through Pacific Gas and Electric Company, El Dorado County, California. Served as a subcontracted consulting utility forester and consulting utility forester field lead under the Pacific Gas and Electric Company's Enhanced Vegetation Management Program to reduce wildfire threats in California by surveying vegetation near utility structures. Input data collected from field surveys into ArcGIS Collector and ArcGIS Survey123. Identified flora and fauna in El Dorado and Placer Counties. Conducted visual bird surveys that triggered the field biologist if work was identified to be removed or pruned. Identified riparian zones within 25 feet of project worked under Clean Water Act requirements. As consulting utility forester field lead, performed quality control and quality assurance audits on field surveys completed by the team. Presented educational tailboards to the team about the diagnosis of local plant disorders or risks of failure. Led the team job safety tailboard to ensure all fieldwork was performed in accordance with best management safety practices. (2019–2020)

Specialized Training

- Wetland Training Institute (WTI) Basic Wetland Delineation 40-Hour Certification: In progress on course work for online learning for wetland delineations in Northern California. In addition, will complete a 2-day (16-hour) field practicum. (Ongoing; 2024)
- Dudek Internal Northern California Wetland Delineation Training Series: Completed four courses on aquatic resources delineations in Northern California. One of the courses involved a field practicum. Focused on Arid West U.S. Army Corps of Engineers regional supplements. Hours involved in training = 10 hours. (2023)
- California Native Grass Association Identifying and Appreciating the Native and Naturalized Grasses of California course, class and field practicum held at the University of California Davis Bodega Marine Laboratory. (2023)
- Designated Operator Exam Prep Course, Tait Environmental: Completed training course in preparation for taking the International Code Council Designated Operator Exam. (2022)
- International Society of Arboriculture Course, Tree Test Prep: Completed educational training on the International Society of Arboriculture's Arborist Exam chapters. Actively working to obtain Arborist certification. (2019)

Surveying and Monitoring Hours for Relevant Species

Species	Surveying Hours*	Monitoring Hours*	Notes
American badger	50	16	Pre-construction surveys and construction monitoring. Species was covered under USFWS Habitat Conservation Plan and CEQA FEIR for San Benito College Campus Project. No digs or dens observed. Numerous past American badger activity observed during Bonturi Ranch den surveys.
Bat species	8	10	Assessed for roosting bats during a biological clearance survey in Sonoma County, California.

Surveying and Monitoring Hours for Relevant Species

Species	Surveying Hours*	Monitoring Hours*	Notes
			Additionally monitored for roosting bats in Sonoma County, California, under the Sonoma Fairfield Osborne Project. No species identified.
Burrowing owl	74	100	Pre-construction surveys and construction monitoring. Species was covered under USFWS Habitat Conservation Plan and CEQA FEIR for the San Benito College Campus Project. No active burrows identified. Suitable burrows identified to house species. Additionally, monitors species under the Potrero Hills Landfill. One adult identified during site walk of mitigation lands. Performed protocol-level burrowing owl surveys in suitable habitat in Sacramento County, California. Observed three adult burrowing owls under a piece of plywood and in culverts.
California tiger salamander	50	150+	Pre-construction surveys and construction monitoring. Performed burrow survey targeted for California tiger salamander in critical habitat. More than 200+ burrows flagged off for avoidance during survey. No species identified.
Foothill yellow-legged frog	0	10	Biological monitoring of foothill yellow-legged frog. No species identified during monitoring.
Nesting birds and raptors	30	200+	Pre-construction surveys, woodpecker surveys, shorebird surveys, and nest monitoring during construction. Active nests identified and flagged for avoidance. Various eggs and western kingbird chicks identified during surveys.
San Joaquin kit fox	16	0	Performed San Joaquin kit fox burrow mapping survey in Merced County, California. No positive San Joaquin kit fox burrows mapped, however, species caught on wildlife camera determined presence in area. Identified potential scat of San Joaquin kit fox.
Swainson's hawk	8	0	Protocol-level survey for Swainson's hawk in Sacramento County, California. Two adult Swainson's hawks identified during survey observed in paired behavior. Mapped and recorded data during reporting.
Western spadefoot	24	0	Performed three rounds of night-eye shine surveys for western spadefoot in Sacramento County, California. Surveys targeted suitable aquatic habitat such as vernal pools, seasonal wetlands, and swales. No western spadefoot detected during surveys. Encountered a vernal pool with branchiopods during surveying effort.

* Hours are approximate.

Erin Fisher-Colton

BIOLOGIST

Education

San Jose State University
MS, Environmental Studies, 2020

California State Polytechnic University, Pomona
BS, Environmental Biology, 2012

Permits

CDFW Plant Voucher Collecting Permit, No. 2081(a)-23-133-V

Professional Affiliations

The Wildlife Society – Western Section & SF Bay Area Chapter

Golden Gate Raptor Observatory

Erin Fisher-Colton (*AIR-in FISH-ur COL-ten; she/her*) is a biologist with 5 years' experience providing biological surveying, monitoring, and mapping for nesting birds, special-status species, and rare plants and 5 years' related experience with California birds, mammals, reptiles, and amphibians. Ms. Fisher-Colton has experience with California red-legged frog (*Rana draytonii*), northwestern and southwestern pond turtle (*Actinemys marmorata* and *A. pallida*), Swainson's hawk (*Buteo swainsoni*), burrowing owl (*Athene cunicularia*), tricolored blackbird (*Agelaius tricolor*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), and others.

Ms. Fisher-Colton is proficient with technical report writing, habitat mapping, and data entry and analysis and has worked on numerous vegetation management and water infrastructure projects. She is familiar with state and federal environmental laws, the California Environmental Quality Act, and the Santa Clara Valley Habitat Plan.

Project Experience

Development

DeAnza College Master Plan, DeAnza College, Cupertino, California. Conducted a reconnaissance-level survey to evaluate the potential for special-status species such as white-tailed kite (*Elanus leucurus*), pallid and Townsend's big-eared bats (*Antrozous pallidus*, *Corynorhinus townsendii*), bat roosting colonies, and other biological resources to be impacted by project activities. Prepared a letter report describing existing site conditions, special-status species potential to occur, and summary of biological constraints. (2023)

Confidential Project, Contra Costa County, California. Conducted a reconnaissance-level survey to evaluate the potential for special-status species such as California red-legged frog, California tiger salamander (*Ambystoma californiense*), and other biological resources to be impacted by project activities. Observed 36 juvenile California red-legged frog. (2023)

Augustin Bernal Mountain Bike Trail Project, City of Pleasanton, Pleasanton, California. Conducted a pre-construction nesting bird survey for development of a mountain bike trail. Observed active nests of multiple passerine species. (2023)

East Bay Applied Sciences Center Project; California State University, East Bay; Hayward; California. Conducted a nesting bird and roosting bat habitat assessment to evaluate the potential for future nesting bird and roosting bat occupancy on the proposed project site. (2022)

Vaca Valley Hotel Construction, J and P Hospitality, Vacaville, California. Conducted biological monitoring and daily sweeps for northwestern pond turtle and burrowing owl during culvert installation. (2022)

2410 and 2384 Stony Point Road Temporary Fence Installation, Affordable Housing Development Corporation/ Santa Rosa Ridge Point LLC, Santa Rosa, California. Conducted biological monitoring and daily sweeps for California tiger salamander during ground disturbance activities. (2022)

Eastern Hillside Stabilization, California State University Maritime Academy, Vallejo, California. Conducted surveys for burrowing owl, roosting bats, and nesting birds. Observed one active red-tailed hawk (*Buteo jamaicensis*) nest. (2022)

Energy

Gonzaga Wind Project, Scout Clean Energy LLC, Merced County, California. Conducted protocol-level botanical surveys for rare plants, with positive detection of spiny-sepaled button-celery (*Eryngium spinosepalum*), Hall's bush-mallow (*Malacothamnus hallii*), and rare Navarretia species. Conducted point surveys for bald and golden eagles *(Haliaeetus leucocephalus*, *Aquila chrysaetos*). (2023–Present)

Confidential Project, Alameda County, California. Conducted reconnaissance-level surveys to evaluate the potential for special-status species including California tiger salamander, burrowing owl, and other biological resources to be impacted by project activities. Conducted protocol-level botanical surveys with positive detection of big tarplant (*Blepharizonia plumosa*). Conducted a California red-legged frog habitat assessment. Prepared a biological technical report summarizing existing conditions, survey efforts, and preliminary impact analysis. (2023)

Confidential Project, Fresno County, California. Conducted protocol-level Swainson's hawk surveys. Observed multiple pairs of Swainson's hawks foraging, copulating, nest-building, and incubating. Prepared letter report to client summarizing nesting survey efforts and results. (2023)

Mitigation and Conservation

Bonturi Ranch Conservation Easement, AKT Santa Nella Solar Investors II LLC, Merced County, California. Assisted with pedestrian transect surveys to map burrows and assess site suitability for San Joaquin kit fox (*Vulpes macrotis mutica*) and assisted with camera-trapping efforts on the site. (2023)

California Tiger Salamander Mitigation Pond Monitoring, Potrero Hills Landfill, Solano County, California. Conducted California tiger salamander larval surveys in three mitigation ponds to assess breeding success. (2022)

Vegetation Management

East Dunne Avenue Escape Route Project (Phases 1 & 2), Santa Clara County FireSafe Council, Morgan Hill, California. Project manager for a vegetation management project providing biological resource services on 5.6 miles of rural roadway. Conducted a biological pre-activity survey for San Francisco dusky-footed woodrat, rare plants, and other biological concerns. Prepared a letter report summarizing field survey efforts and results. (2023)

Robleda-Burke Evacuation Route Project, Santa Clara County FireSafe Council, Los Altos Hills, California. Project manager for a vegetation management project providing biological resource services on roughly 3.0 miles of suburban roadway. Conducted a biological pre-activity survey for San Francisco dusky-footed woodrat and other biological concerns. Oversaw the completion of a letter report summarizing field survey efforts and results. (2023)

Magdalena-Summerhill Evacuation Route Project, Santa Clara County FireSafe Council, Los Altos Hills, California. Project manager for a vegetation management project providing biological resource services on 1.7 miles of suburban roadway. Conducted a biological pre-activity survey for San Francisco dusky-footed woodrat and other biological concerns. Prepared a letter report summarizing field survey efforts and results. (2023)

St. Helena Defensible Space Project, City of St. Helena, California. Conducted a reconnaissance-level survey to evaluate the potential for occurrence of special-status species including northwestern pond turtle, Swainson's hawk, bald eagle, foothill yellow-legged frog (*Rana boylii*), pallid and Townsend's big-eared bats, and bat roosting colonies. (2023)

Bear Creek Redwoods Open Space Preserve Vegetation Management Project, Midpeninsula Regional Open Space District, Los Gatos, California. Conducted surveys for nesting birds, San Francisco dusky-footed woodrats, and other species in dense redwood forest, oak woodland, and scrub habitats on highly variable terrain. (2022–2023)

Interstate 280 Hazardous Fuel Reduction Project, Los Altos Hills County Fire District, Los Altos Hills, California. Prepared a biological resources analysis report for a 150-acre, 5.5-mile-long proposed fuel management project on Interstate 280 (northbound, southbound, and center divide rights-of-way). Conducted land cover mapping and field evaluations in which the biotic resources of the site were determined. Evaluated the potential for Santa Cruz black salamander (*Aneides niger*), California red-legged frog, southwestern pond turtle, white-tailed kite, Townsend's big-eared bat, and San Francisco dusky-footed woodrat to be impacted by planned project activities. (2022)

Highway 84 Roadside Fuel Management Project, Fire Safe San Mateo County, San Mateo County, California. Co-authored a biological resources analysis report for a 90-acre, 8.2-mile-long proposed fuel management project on Highway 84. Conducted land cover mapping and field evaluations in which the biotic resources of the site were determined. Evaluated the potential for Santa Cruz black salamander, California giant salamander (*Dicamptodon ensatus*), California red-legged frog, long-eared owl (*Asio otus*), burrowing owl, marbled murrelet (*Brachyramphus marmoratus*), olive-sided flycatcher (*Contopus cooperi*), peregrine falcon (*Falco peregrinus*), bald eagle, pallid bat, Townsend's big-eared bat, San Francisco dusky-footed woodrat, and American badger (*Taxidea taxus*) to be impacted by planned project activities. (2022)

Highway 35 Roadside Fuel Management Project, Fire Safe San Mateo County, San Mateo County, California. Co-authored a biological resources analysis report for a 182-acre, 25-mile-long proposed fuel management project on Highway 35. Conducted land cover mapping and field evaluations in which the biotic resources of the site were determined. Evaluated the potential for Santa Cruz black salamander, California giant salamander, California red-legged frog, red-bellied newt (*Taricha rivularis*), long-eared owl, burrowing owl, marbled murrelet, olive-sided flycatcher, white-tailed kite, peregrine falcon, bald eagle, pallid bat, Townsend's big-eared bat, San Francisco dusky-footed woodrat, and American badger to be impacted by planned project activities. (2022)

Water Resources

Arana Gulch Sewer Line Project, Consor North America Inc., Santa Cruz, California. Conducted preconstruction surveys for nesting birds, roosting bats, and other biological concerns. Relocated 23 San Francisco dusky-footed woodrat middens out of the construction footprint. Conducted biological monitoring of vegetation removal activities. (2023–Present)

John Nicholas Trail Road Project, San Jose Water, Santa Clara County, California. Conducted preconstruction surveys and daily sweeps for special-status amphibians, nesting birds, and other biological resources prior to repair work on access roads. Conducted biological monitoring of access road repair and maintenance. (2023)

Sisk Dam Safety of Dams Modification Project, California Department of Water Resources, Gustine, California. Conducted protocol-level sunrise/sunset surveys for burrowing owl, conducted protocol-level nesting surveys for Swainson's hawk, and evaluated and monitored a nesting colony of more than 500 tricolored blackbirds. Assisted with protocol-level surveys for rare plants including spiny-sepaled button-celery. (2022–Present)

Delta Habitat Conservation Plan, Department of Water Resources, San Francisco Bay Delta Region, California. Conducted focused surveys for burrowing owl, northwestern pond turtle, and dry season branchiopods. Identified wildlife species in wildlife movement study camera trap photos. Assisted with writing of the draft habitat conservation plan. (2022–2023)

San Joaquin Habitat Conservation Plan, Department of Water Resources, San Joaquin Valley Region, California. Conducted focused surveys for rare plants and identified wildlife species in wildlife movement study camera trap photos, including San Joaquin kit fox. (2022)

Relevant Previous Experience

Disaster Recovery

Camp Fire Hazard Tree Removal Project, California Department of Resources Recycling and Recovery, Paradise, California. Conducted nesting bird surveys and biological site assessments prior to hazard tree removal on properties affected by the Camp Fire. Conducted surveys and habitat assessments for California red-legged frog and foothill yellow-legged frog. Established work buffers around active bird nests and sensitive aquatic habitats and provided biological construction monitoring for nesting birds, California red-legged frog, and sensitive aquatic habitat. Provided Worker Environmental Awareness Training to construction personnel. (2021)

Energy

Gas Transmission Line R-985 In-Line Inspection and Upgrade Project, Pacific Gas & Electric, Millbrae, California. Provided biological construction monitoring for California red-legged frog, San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), and nesting birds under the direct supervision of a permitted biologist during earthmoving work and excavation. Provided biological training to construction personnel and vehicle escort between active work areas. (2021)

Electric Power Line Inspections, Pacific Gas & Electric, Moraga and Orinda, California. Conducted nesting bird surveys along electrical lines in preparation for inspections, Orinda to Moraga section. (2021)

Alto Substation Defensible Space Project, Pacific Gas & Electric, Mill Valley, California. Provided biological construction monitoring for California Ridgway's rail (*Rallus obsoletus obsoletus*), salt marsh harvest mouse (*Reithrodontomys raviventris*), and nesting birds during earthmoving and trenching activities. Provided biological training to construction personnel. (2021)

Field Research

Golden Gate Raptor Observatory Hawk Banding Program, Marin Headlands, California. Participating in ongoing migration monitoring of diurnal raptors during autumn migration season. Working with a team at a banding station to trap, band, and collect morphometric data on migrating hawks and falcons in the Golden Gate National Recreation Area. Handled, banded, measured, aged, and sexed red-tailed hawk, red- shouldered hawk (*Buteo lineatus*), Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), northern harrier (*Circus hudsonius*), and merlin (*Falco columbarius*). (2016–Present)

Mourning Dove Banding Program, California Department of Fish and Wildlife, San Mateo County, California. Participating locally in ongoing population monitoring for the National Mourning Dove Strategic Harvest Management Plan. Working independently to trap, band, sex, and age mourning doves (*Zenaida macroura*) during the summer banding season. (2021–Present)

San Jose State University, Department of Environmental Studies, Master of Science Graduate Thesis Research, Santa Clara County, California. Investigated the effects of urbanization on the diet and reproduction of nesting red-shouldered hawks in Santa Clara County. Independently conducted raptor nest surveys, identified prey species (mammal, bird, reptile, and amphibian), and collected data in the field. Mapped and analyzed habitat characteristics using ArcGIS, conducted statistical analyses, and synthesized existing literature and study results in a master's thesis. Thesis defended in April 2020 and published in August 2020. (2018–2020)

California State Polytechnic University, Pomona, Department of Biology, Honors Undergraduate Research, Pomona, California. Conducted visual and aural detection surveys for coastal California gnatcatcher (*Polioptila californica californica*) and vegetation sampling to determine habitat preferences on the Voorhis Ecological Reserve in Pomona. Conducted GIS mapping of habitat and gnatcatcher activity and statistical analysis of habitat preference. Presented results at the Kellogg Honors College Capstone Symposium in June 2012. (2011–2012)

Water Resources

Calaveras Fault Inlet-Outlet Levee Road Culvert Repair Project, Valley Water, San Benito County, California. Conducted protocol-level surveys for Swainson's hawk, including six sunrise and three sunset surveys in the 2020 nesting season and one sunrise survey in 2021. Conducted presence-absence and nesting surveys for burrowing owl, white-tailed kite, bald eagle, tricolored blackbird, and loggerhead shrike (*Lanius ludovicianus*). (2020–2021)

Cheltenham Way Culvert Replacement Project, Valley Water, San Jose, California. Prepared a biological site assessment for the Cheltenham Way Culvert Replacement Project in accordance with Valley Water Avoidance and Mitigation Measures, Santa Clara Valley Habitat Plan applications, the California Environmental Quality Act, and other permits. Conducted reconnaissance-level biological surveys at the project site and geospatial analyses of wildlife records using the California Natural Diversity Database. (2020)

Chesbro Dam Spillway and Plunge Pool Inspection, Valley Water, Morgan Hill, California. Conducted monitoring for southwestern pond turtle and relocation of non-salmonid fish species during water draining and inspection activities under the supervision of a senior biologist. Assisted with daily water sampling activities utilizing a Horiba U-50. (2020)

South County Stream Gauges Project, Valley Water, Morgan Hill and Gilroy, California. Conducted surveys for least Bell's vireo (*Vireo bellii pusillus*) and tricolored blackbird for two proposed stream flow gauges in south Santa Clara County. Performed habitat assessments and geographic information system (GIS) analyses of habitat impacts. Co-authored biological site assessment memorandum for Item 5 of the Valley Habitat Plan Application Package. (2020)

Vasona Pump Station Fence and Gate Replacement Project, Valley Water, Los Gatos, California. Conducted pre-construction surveys for nesting birds and San Francisco dusky-footed woodrat at the Vasona Pump Station. Provided monitoring for nesting raptors during construction activities. (2020)

San Francisquito Creek Flood Protection Project, Valley Water, Palo Alto, California. Assisted with protocol-level passive detection surveys for California Ridgway's rail as part of the mitigation and monitoring plan for the San Francisquito Flood Protection Project. (2020)

In-House Water Utility Enterprise Projects, Valley Water, Santa Clara County, California. Projects included, but were not limited to, routine maintenance on pipelines, pump stations, water treatment plants, canals, and groundwater recharge facilities; vegetation management; invasive plant control and removal; and dam maintenance and inspection. Conducted pre-activity surveys and biomonitoring for nesting birds, burrowing owl, tricolored blackbird, least Bell's vireo, California red-legged frog, California tiger salamander, southwestern pond turtle, San Francisco dusky-footed woodrat, and rare plants including Santa Clara Valley dudleya (*Dudleya abramsii* ssp. *setchellii*), smooth lessingia (*Lessingia micradenia* var. *glabrata*), and Hall's bush-mallow. Produced internal field reports and biological clearances for distribution to facility managers and project leads. Conducted database searches in the California Natural Diversity Database and managed database of survey activities. (2019–2021)

In-House Stream Maintenance Program Projects, Valley Water, Santa Clara County, California. Projects included, but were not limited to, routine maintenance of channelized rivers and creeks, vegetation management, invasive plant control and removal, and hazard tree removal. Conducted pre-activity surveys and biomonitoring for nesting birds, tricolored blackbird, least Bell's vireo, California red-legged frog, California tiger salamander, southwestern pond turtle, and San Francisco dusky-footed woodrat. Conducted nighttime eyeshine surveys for California red-legged frog and assisted with electrofishing activities for relocation of non-salmonid native fish species. Conducted monitoring for salt marsh harvest mouse under direct supervision of experienced biologists. (2019–2021)

Specialized Training

- **Pond Turtle Nesting Workshop, The Wildlife Project, June 2023.** Attended an online lecture (3 hours) and field workshop (4.5 hours) covering upland habitat use and breeding behavior of northwestern and southwestern pond turtles. Field portion included techniques for conducting nest surveys, documenting nest predation, and assessing nesting habitat. Handled 4 southwestern and 1 northwestern pond turtles and identified 2 intact and 1 predated pond turtle nests.
- **Adult First Aid/CPR/AED, Dudek, September 2022.**
- **Level I California Red-Legged Frog Natural History and Identification Workshop, The Wildlife Project, July 2021.** Attended an online lecture (3.5 hours) and overnight field workshop (6.0 field hours) covering the identification, ecology, and survey techniques for California red-legged frog, including dip netting, hand capture, and eyeshine surveys. Additional identification information on other rare species likely to co-occur including foothill yellow-legged frog and northwestern/southwestern pond turtle. Captured and handled California red-legged frog, foothill yellow-legged frog, northwestern pond turtle, and coast range newts (*Taricha torosa*).
- **Graduate Certificate in Environmental Planning, San Jose State University, June 2020.** Certificate program of 12 semester units, including courses on environmental planning, land use planning and law, and environmental impact analysis, intended to provide a working knowledge of environmental planning regulations and procedures.

Publications

Fisher, C.Y. 2020. "Effects of Urbanization and Habitat on the Diet and Reproduction of Red-shouldered Hawks in Central California." Master's thesis; San Jose State University, San Jose.

Surveying and Monitoring Hours for Relevant Species*

Species	Surveying Hours	Monitoring Hours	Notes
Bat species	60	0	Conducted diurnal roost surveys and roost habitat assessments.
Burrowing owl	115	0	Provided pre-activity visual encounter and nesting surveys and protocol-level sunrise/sunset surveys. Positive identification of active burrows and owls.
California red-legged frog	170	100	Provided pre-construction visual encounter surveys, nocturnal eyeshine surveys, construction monitoring, and general habitat assessment. Experience with hand-capture and dip-netting for adults. Attended CRLF Level I workshop in which positive detection of adult CRLF was made.
California tiger salamander	85	20	Provided pre-activity visual encounter surveys; conducted seine and dip netting surveys for larvae. Positive detection of larval CTS was made.
Eagles (bald/golden)	20	0	Conducted point count eagle activity surveys and visual detection surveys. Positive detection of adult and juvenile bald and golden eagles.
Fish	5	5	Assisted with non-salmonid fish relocation and monitoring, including electrofishing.
Foothill yellow-legged frog	50+	0	Provided pre-construction visual encounter surveys and general habitat assessment. Attended CRLF Level I workshop in which positive detection of adult FYLF was made.
Nesting birds and raptors	850+	350+	Provided pre-construction surveys and monitoring for nesting bird and raptor species. Positively identified numerous bird nests of various species.
Pond turtle (northwestern/ southwestern)	60	20	Conducted visual encounter surveys and monitoring. Attended Pond Turtle Nesting Workshop in which positive detection of adults and nests were made of both species. Attended CRLF Level I workshop in which positive detection of adults was made of both species.
Rare Plants	180	0	Conducted protocol-level transect surveys and pre-construction activity surveys. Positive identification of several species of focal plants.
San Francisco dusky-footed woodrat	430	50	Provided pre-construction surveys and biomonitoring for woodrat middens. Positive identification of several active middens. Relocated 23 middens.
San Joaquin kit fox	70 (field), 120 (images)	0	Provided pre-activity visual encounter surveys and transect surveys for habitat assessment with positive detection via scat. Processed and tagged SJKF camera trap images including 6 positive detections of images of adult SJKF.
Swainson's Hawk	35	0	Protocol-level nesting surveys. Observed several pairs during courtship, nest-building, incubation, nestling, and fledgling stages.
Tricolored Blackbird	10	24	Conducted visual detection surveys and biomonitoring of colony of approx. 500 nests through fledging and a second brood.
Vernal Pool Branchiopods	50	0	Dry season surveys.

Notes

* Hours are approximate.

Kelsey Higney

BIOLOGIST

Kelsey Higney (*KEL-see HIG-nee; she/her*) is a biologist with 5 years' experience in field biology, conducting surveys for birds, herpetofauna, invertebrates, mammals, and plants, as well as habitat assessments and compliance monitoring. She has worked extensively on protocol-level and preconstruction surveys for a range of sensitive species including burrowing owl (*Athene cunicularia*),California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), California spotted owl (*Strix occidentalis occidentalis*), Swainson's hawk (*Buteo swainsoni*), rare plants, and Migratory Bird Treaty Act nesting birds. Ms. Higney has extensive experience and leads crews in nesting bird surveys in Northern and Central California. She has a broad skill set in wildlife and botanical sampling techniques, invasive plant management, technical report writing, and data management.

Education

Antioch University New England
MS, Environmental Studies (Conservation Biology)

San Francisco State University
BS, Biology (Zoology)

Project Experience

Development

Main Street Ferry Terminal Marine Mammal Surveys and Monitoring, San Francisco Bay Area Water Emergency Transport Authority, Alameda, California. Performed preconstruction surveys for the presence of harbor seals (*Phoca vitulina*) and California sea lions (*Zalophus californianus*) within the Alameda ferry terminal impact zones. Provided construction monitoring for marine mammals during in-water construction. (2023)

El Salto Drive Project, City of Capitola, California. Performed a biological resources reconnaissance survey for sensitive biological resources including plants, wildlife, and potentially jurisdictional aquatic resources. Provided the client with the scope of work. Composed a biological resources technical memorandum. (2023)

Don Dahvee Trailhead Improvement Project, City of Monterey, California. Performed a biological resources reconnaissance survey for sensitive biological resources including plants, wildlife, and potentially jurisdictional aquatic resources. Target plant species in the area included Yadon's rein-orchid (*Piperia yadonii*), Monterey pine (*Pinus radiata*), and Hickman's onion (*Allium hickmanii*). Monterey pine was identified on the project site. Provided the client with the scope of work. Composed a biological resources technical memorandum. (2023)

Veterans Memorial Park Parking Lot Improvement Project, City of Monterey. California. Performed a biological resources reconnaissance survey for sensitive biological resources including plants, wildlife, and potentially jurisdictional aquatic resources. Target plant species in the area included Monterey pine, which was identified on the project site. Yadon's rein-orchid is known to occur in the project region. Provided the client with the scope of work. Composed a biological resources technical memorandum. (2023)

Pelican's Jaw Blunt-Nosed Leopard Lizard Surveys, Confidential Client, Kettleman City, California. Performed blunt-nosed leopard lizard (*Gambelia sila*) protocol transect survey of a potential solar energy site as a Level 1 surveyor, under the guidance of a Level 2 survey lead. (2023)

Coyote Creek Swainson's Hawk and Burrowing Owl Surveys, Confidential Client, Sloughhouse, California. Led nesting season surveys for burrowing owl and Swainson's hawk. Performed habitat mapping of potential nectar resources and nesting habitat for Crotch's bumble bee (*Bombus crotchii*). (2022–2023)

San Benito Campus Project Burrow Survey, Gavilan College, Hollister, California. Surveyed for burrows with potential to support sensitive wildlife including California tiger salamander, American badger (*Taxidea taxus*), burrowing owl, and San Joaquin kit fox (*Vulpes macrotis mutica*), and reviewed the draft of a biological resources technical memorandum. (2023)

Habitat Conservation Plan Vegetation Mapping, University of California, Santa Cruz, California. Assisted senior botanist with vegetation mapping on the University of California, Santa Cruz, campus. (2022)

Brio Studios Mixed-Use Building Site Nesting Bird Survey, Confidential Client, Fairfield, California. Performed a Migratory Bird Treaty Act nesting bird survey of the work site for active bird nests. (2022)

Mission Trail Preserve Reconnaissance Survey, Confidential Client, Carmel-by-the-Sea, California. Surveyed for sensitive wildlife and plant species to inform project constraints and drafted a technical memorandum. (2022)

Energy

Confidential Solar Project, Alameda County, California. Performed biological resources surveys including burrow mapping, floral resources mapping for Crotch's bumble bee, California red-legged frog habitat assessment, and a rare plant survey for an energy storage site. Identified big tarplant (*Blepharizonia plumosa*) within the survey area. (2023)

Gonzaga Ridge Wind Farm Repowering Project Rare Plant and Aquatic Delineation Surveys, Confidential Client, Los Banos, California. Performed rare plant surveys under supervision of a qualified botanist in the vicinity of San Luis Reservoir, California (field logistics lead). Target plant species were big-scale balsam root (*Balsamhoriza macrolepis*), Hall's bush-mallow (*Malacothamnus hallii*), lime-ridge navarretia (*Navarretia gowenii*), shining navarretia (*Navarretia nigelliformis* ssp. *radians*), and spiny-sepaled button celery (*Eryngium spinosepalum*). Assisted with the jurisdictional delineation of aquatic resources, identifying multiple vernal pools, ephemeral drainages, seasonal wetlands, and seasonal wetland swales. Composed a rare plant survey memorandum, aquatic resources delineation report, and biological sections of the project's California Environmental Quality Act (CEQA) addendum. (2023)

Gonzaga Raptor Point-Count Surveys, Confidential Client, Los Banos, California. Performed point counts for all raptor species present on a wind energy site, with a focus on the age class and flight path of golden eagles (*Aquila chrysaetos*) and bald eagles (*Haliaeetus leucocephalus*). (2022–2023)

Sonrisa Solar Swainson's Hawk Surveys, Confidential Client, Mendota, California. Performed breeding-season surveys for Swainson's hawk to locate and monitor nests. Identified Swainson's hawk pairs and individuals and determined stages of active nests. (2022–2023)

Ponderosa Battery Energy Storage Biological Reconnaissance Survey, Confidential Client, Sacramento, California. Surveyed for potential habitat to support sensitive wildlife, plants, and aquatic resources to inform project constraints and drafted a biological resources assessment. (2022)

Confidential Solar Project, Confidential Client, Santa Rosa, California. Performed wildlife reconnaissance and assisted with rare plant reconnaissance and jurisdictional delineation. Composed a biological resource assessment technical report. (2022)

Berrenda Mesa Solar Project, Confidential Client, Lost Hills, California. Monitored the installation of utility poles for blunt-nosed leopard lizard and the safety of common wildlife. (2022)

Confidential Solar Project, Confidential Client, Newman, California. Participated in preconstruction surveys for San Joaquin kit fox (15 transect miles), burrowing owl (15 transect miles), and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*; 1 hour), for a total of approximately 20 survey hours. (2021)

Confidential Solar Project, Confidential Client, Mojave, California. Participated in site clearance surveys for Mojave desert tortoise (60 transect miles) and preconstruction surveys for San Joaquin kit fox, burrowing owl, and American badger (30 transect miles). Performed four burrow/den excavations and compliance monitoring, including the relocation of non-listed small mammals and snakes, for a total of approximately 150 hours. (2021)

Fire/Fuels Mitigation

Robleda-Burke Evacuation Route Project, Santa Clara County FireSafe Council (SCCFSC), Los Altos, California. Performed preconstruction surveys for sensitive biological resources including San Francisco dusky-footed woodrat (*Neotoma fuscipes* ssp. *annectens*) middens, sensitive California Department of Fish and Wildlife sensitive vegetation communities, and aquatic resources to flag for avoidance prior to vegetation/fuels management. (2023)

Page Mill Road Evacuation Route Project, SCCFSC, Los Altos, California. Performed preconstruction surveys for sensitive biological resources including nesting birds prior to vegetation/fuels management. (2023)

Bear Creek Redwoods Preconstruction Surveys, Midpeninsula Open Space Trust, Los Gatos, California. Surveyed and flagged sensitive natural resources including San Francisco dusky-footed woodrat middens and aquatic resources for avoidance during vegetation treatments for fuels mitigation. (2022–2023).

Highways 35 and 84 Roadside Fuel Management Project, FIRE SAFE San Mateo County, California. Performed field reconnaissance for sensitive wildlife and plant resources along highway corridors. Performed vegetation mapping to California Department of Fish and Wildlife (CDFW) alliances. Composed a biological constraints analysis technical report. (2022)

Infrastructure

Arana Gulch Sewer Line Replacement Project, County of Santa Cruz, California. Relocated woodrat middens to new locations away from the project site to mitigate impacts of vegetation clearing. Provided construction monitoring during vegetation clearing and debris removal. Delivered the project-specific Worker's Environmental Awareness Training (WEAT). (2023)

Iris Canyon Sediment Removal Project, City of Monterey, California. Performed preconstruction surveys for sensitive biological resources including nesting birds and California red-legged frog and monitored vegetation clearing and sediment removal activities within Iris Canyon, Monterey, California. (2023)

Presidio of Monterey Preconstruction Surveys, City of Monterey, California. Performed preconstruction nesting bird surveys prior to tree work within the Presidio of Monterey. Composed a biological resources technical memorandum. (2023)

East Cliff Sanitary Sewer Transmission Marine Mammal Surveys, Confidential Client, Santa Cruz, California. Performed site impact surveys for bridge alteration on marine mammals in the Santa Cruz Small Craft Harbor, collecting data on off-haul sites and the number of individuals. (2022)

Eureka Manchester Fiber Optic, Confidential Client, Eureka and Ukiah, California. Assisted with jurisdictional delineation and vegetation mapping along the project alignment. (2022)

Mitigation Monitoring

Bonturi Ranch Kit Fox Surveys, Los Banos, California. Performed San Joaquin kit fox burrow survey transects and camera trap study support on a potential mitigation site within San Joaquin kit fox habitat. (2023)

Potrero Hills Landfill Mitigation Site California Tiger Salamander Survey, Confidential Client, North San Francisco Bay, California. Performed dip-net surveys for larval California tiger salamanders. Handled more than 400 larval individuals. (2022)

Permitting

San Joaquin Field Division Culvert Replacement Project, California Department of Water Resources (DWR), Bakersfield, California. Assisted with compiling permit applications for receipt by the U.S. Army Corps of Engineers (USACE), CDFW, and the Regional Water Quality Control Board (RWQCB) for a culvert replacement project. (2023)

Alpine Rancho Palo Verde Project, Confidential Client, Chula Vista, California. Assisted with compiling permit applications for receipt by USACE, CDFW, and the RWQCB for a residential development. (2023)

Nirvana Project, Confidential Client, Chula Vista, California. Assisted with compiling permit applications for receipt by USACE, CDFW, and the San Diego RWQCB for a commercial development in Chula Vista. (2021)

Transportation

Highway 128 Emergency Repairs Monitoring, California Department of Transportation, Sonoma County, California. Provided biological monitoring within foothill yellow-legged frog (*Rana boylii*) and red-bellied newt (*Taricha rivularis*) habitat during emergency highway repairs. (2023)

Water Resources/Stormwater

Storm Drain Maintenance Program, City of Monterey, California. Performed biological pre-construction surveys for sensitive plants and wildlife including California red-legged frog in areas of impact associated with the City of Monterey's storm drain maintenance program. Delivered the project-specific WEAT and the city's annual WEAT training, covering all sensitive biological resources potentially occurring in the project region. (2023)

New Groundwater Well Project, Scotts Valley Water District, Scotts Valley, California. Surveyed for sensitive wildlife and plant species to inform project constraints at a water infrastructure site and drafted a technical memorandum. (2022)

Clifton Court Forebay Rodent Burrow Remediation Project Compliance, DWR, Tracy, California. Monitored rodent burrow remediation activities aimed at preventing damage to state water infrastructure along the slope of the forebay. Performed a preconstruction nesting bird survey identifying an active red-winged blackbird (*Agelaius phoeniceus*) nest. (2022–2023)

Sisk Dam Compliance and Biological Surveys, DWR, Los Banos, California. Performed fence checks for and preconstruction burrow excavations of burrows with potential for California red-legged frog and California tiger salamander. Monitored construction activities in potential habitat for American badger, kit fox, California red-legged frog and California tiger salamander, and sensitive raptors. Conducted Swainson's hawk, bald eagle, and golden eagle surveys (lead). Performed rare plant surveys under supervision of a lead botanist. The primary target plant in the area was spiny-sepaled button-celery (2022–2023)

Saratoga Creek Hazard Tree and Restoration Project Stormwater Pollution Prevention Plan (SWPPP) Inspections, Confidential Client, Saratoga, California. Performed pre-storm, during-storm, and post-storm SWPPP inspections of the active restoration site including water pH and turbidity sampling. Recommended best management practices where necessary. (2022–2023)

Moss Landing SWPPP Inspections, Confidential Client, Moss Landing, California. Performed pre-storm, during-storm, and post-storm SWPPP inspections of the active battery energy storage system project site including water pH and turbidity sampling. Recommended best management practices where necessary. (2022–2023)

Intertie-1 Biological Reconnaissance Survey, Scotts Valley Water District, Scotts Valley/Santa Cruz, California. Surveyed for potential habitat to support sensitive wildlife, plants, and aquatic resources to inform project constraints and drafted a biological resources assessment in accordance with the City of Santa Cruz Water Rights Environmental Impact Report. Target rare plants in the project area included Anderson's manzanita (*Arctostaphylos andersonii*), Santa Cruz tarplant (*Holocarpha macradenia*), and Scott's Valley spineflower (*Chorizanthe robusta* var. *hartwegii*). Updated biological records searches and vegetation mapping to California Wildlife Habitat Relationships (CHWR) classifications for the client's new project alignment. (2023)

Buttonbush Solar Jurisdictional Delineation, Confidential Client, Bakersfield, California. Assisted experienced wetland delineators with a jurisdictional delineation of aquatic resources. Performed vegetation mapping of the survey area. (2023)

Mid-County Aquifer Storage and Recovery Project, City of Santa Cruz, California. Performed biological reconnaissance surveys at urban aquifer storage sites prior to infrastructure improvements. Composed a technical memorandum. (2022)

Graham Hill Water Treatment Plant Improvement Project Vegetation Mapping, City of Santa Cruz, California. Updated records searches for sensitive plants and wildlife for the addition of a new project area. Performed vegetation mapping to CDFW alliances. (2022)

Delta/San Joaquin Habitat Conservation Plans, DWR, Central Valley, California. Performed wildlife surveys for burrowing owl, desert kit fox (*Vulpes macrotis*), American badger, fairy shrimp (*Anostraca*), California red-legged frog, California tiger salamander, and western pond turtle (*Actinemys marmorata*) along the California aqueduct

and easements. Set up bioacoustics monitoring equipment for the detection of bat species. Assisted botanists with rare plant surveys and vegetation mapping in the San Joaquin Valley. Composed species profile accounts for the final Delta Habitat Conservation Plan report. (2021–2022)

Water Tank #9 Burrowing Owl Survey, Confidential Client, Rohnert Park, California. Performed two burrowing owl surveys of the work area and its surrounding habitat. Composed a technical memorandum. (2022)

Relevant Previous Experience

Disaster Recovery

Pipeline P00457 Incident, Industrial Economics, Huntington Beach, California. Performed human-use spot count data collection on beaches after an oil spill, for a total of approximately 350 survey hours. (2021)

CZU Fire Debris Cleanup, CalRecycle, Santa Cruz and Santa Clara Counties, California. Conducted Migratory Bird Treaty Act nesting bird surveys, for a total of approximately 1050 survey hours. Conducted sensitive species site assessments for California red-legged frog, Foothill yellow-legged frog (*Rana boylii*), California tiger salamander, California giant salamander (*Dicamptodon ensatus*), Santa Cruz black salamander (*Aneides flavopunctatus niger*), San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), Coho salmon (*Thamnophis sirtalis tetrataenia*), steelhead trout (*Oncorhynchus mykiss irideus),* and western pond turtle. Performed watercourse classifications and flagging to establish work buffer. Performed compliance monitoring for these target species of concern and water resources during hazard tree and fire debris removal, for a total of approximately 150 hours. (2021)

Federal

U.S. Forest Service Wildlife Site Occupancy Surveys, U.S. Forest Service, Groveland Ranger District, California. Served as lead technician. Surveyed and collected data on California spotted owl, great gray owl, and northern goshawk during callback surveys and nest searches following U.S. Forest Service (USFS) standardized protocols, for a total of approximately 500 survey hours. Performed Pacific fisher camera surveys following USFS Pacific Southwest Research Station survey protocol. Responsible for survey mapping using ArcMap and data entry using the USFS NRIS natural resources management database. (2021)

USFS Wildlife Site Occupancy Surveys, Great Basin Institute for USFS, Calaveras County, California. Surveyed and collected data on California spotted owl and Northern goshawk during callback surveys and nest searches following USFS standardized protocols, for a total of approximately 500 survey hours. Performed Pacific fisher camera surveys following USFS Pacific Southwest Research Station survey protocol. Responsible for survey mapping using ArcMap and data entry using the USFS NRIS natural resources management database. (2020)

Research

Grassland Breeding Bird Nesting Habitat and Predation Study, Centro de Ecologia Aplicada del Litoral, Corrientes, Argentina. Assisted PhD candidate, Melanie Brown, in nest searching and nest monitoring for sensitive Ibera grassland avian species to determine predation rates and nest habitat quality at a variety of levels of cattle grazing. Target species were strange-tailed Tyrant (*Alectrurus risora*), black-and-white monjita (*Heteroxolmis dominicana*), Ibera seedeater (*Sporophila iberaensis*), rufous-rumped seedeater (*Sporophila hypochroma*), and tawny-bellied Seedeater (*Sporophila hypoxantha*). Performed vegetation transects for grass, sedge, and forb frequency at nest sites. Banded strange-tailed tyrant chicks from nest. Misted netted target species for banding using playback. (2019)

Sierra Nevada Bioacoustics Monitoring for California Spotted Owl, University of Wisconsin, Madison, Plumas and Lassen National Forests, California. Responsible for deployment and retrieval of Cornell University's Swift automated recording devices for California spotted owl and barred owl (*Strix varia*) detections within the study grid, for a total of approximately 1000 field hours. Performed bioacoustics data analysis using Raven software, for a total of approximately 50 hours. (2019)

Cape Cod National Seashore Salt Marsh Restoration, Antioch University New England, Keene, New Hampshire. Served as research assistant in a benthic macroinvertebrate lab processing water samples for macroinvertebrate species' richness and abundance in a restoration study under Dr. Rachel Thiet. Separated organisms to finest level possible by eye, primarily by phylum, order, or sometimes family (including *Amphipoda*, *Arthropoda*, *Gastropoda*, *Nematoda*, *Annelida*), and sent to the U.S. National Park Service for speciation. (2019)

IPBio Bioacoustics Internship, Reserva Betary, Iporanga, Brazil. Assisted a non-governmental organization with analyzing one year of acoustic data for endemic frogs using Wildlife Acoustic's Kaleidoscope software. Assisted in chytridiomycosis lab monitoring progression of *Batrachochytrium dendrobatidis* in tadpoles. (2018)

Restoration

Restoration Project, American Conservation Experience for U.S. Fish and Wildlife Service, Kern and Pixley National Wildlife Refuges, California. Removed invasive salt cedar (*Tamarisk*) from upland habitat. Performed point count surveys for wintering Sandhill cranes (*Antigone canadensis*). (2021)

Specialized Training

- **Identifying and Appreciating the Native and Naturalized Grasses of California, California Native Grasslands Association.** Attended 1-day workshop at the University of California, Davis, Bodega Bay Marine Lab focused on keying and identifying California's grasses using the Jepson eFlora dichotomous key. Toured the coastal prairie and learned the identification of local coastal bluff species. Instructors: Andrea Williams, Emily Allen, Michele Hammond. May 2023.
- **California Red-legged Frog Level II Workshop, The Wildlife Project.** Attended five field trainings addressing all California red-legged frog life stages with positive identification of the species throughout Central California including El Dorado, Marin, Sonoma, Santa Clara and San Benito Counties. 2023.
- **Rare Pond Species Workshop, Laguna de Santa Rosa Foundation.** Attended a lecture, taught by Jeff Alvarez and Dave Cook, on the identification, habitat, life history, and conservation of California red-legged frog, California tiger salamander, and western pond turtle. Learned techniques for safe handling of the species. Performed eye-shine surveys for California red-legged frogs, including successful identification, catching, and handling of adult California red-legged frogs. 2022.
- **California Tiger Salamander Workshop, Laguna de Santa Rosa Foundation.** Attended a lecture, taught by Jeff Alvarez and Dave Cook, on the identification, habitat, life history, and conservation of California tiger salamander. Visited California tiger salamander tunnels in Sonoma County. Learned methods and assisted in the construction of drift fencing. Performed larval dip-net surveys and measured individual California tiger salamander larva at the Alton Lane mitigation site and study area. 2022.

Tara Johnson-Kelly

BIOLOGIST I

Tara Johnson-Kelly (she/her) is a biologist with 6 years' professional experience in field biology, conducting preconstruction and protocol-level surveys for special-status species, technical report writing, regulatory permitting, and compliance monitoring for projects throughout California.

Tara has extensive experience surveying and monitoring for California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), foothill yellow-legged frog (*Rana boylii*), western pond turtle (northwestern pond turtle [*Actinemys marmorata*] and southwestern pond turtle [*Actinemys pallida*]), dusky-footed woodrat (San Francisco dusky-footed woodrat [*Neotoma fuscipes annectens*] and Monterey dusky-footed woodrat [*Neotoma fuscipes luciana*]), roosting bats, nesting birds, and others. She is proficient in special-status species identification, ecology, and habitat requirements, and is familiar with state and federal environmental laws, CEQA, and the Santa Clara Valley Habitat Plan.

Education

University of California, Santa Cruz, BA, Environmental Studies, 2017

Cabrillo College, AA, Liberal Arts and Sciences, Interdisciplinary Studies, 2015

Permits

USFWS, Section 10(a)1(A) Native Endangered and Threatened Species Recovery Permit, No. PER0040489-0

- *California tiger salamander*

CDFW, Specific Use Scientific Collecting Permit, No. SC-222890002-22298-001 (pending)

- *California tiger salamander*
- *Foothill yellow-legged frog*

Additionally, Ms. Johnson-Kelly possesses a U.S. Fish and Wildlife Service Section 10(a)1(A) Native Endangered and Threatened Species Recovery Permit for California tiger salamander and an amendment for California red-legged frog and foothill yellow-legged frog is pending. She has also applied for a California Department of Fish and Wildlife (CDFW) Specific Use Scientific Collecting Permit for foothill yellow-legged frog and California tiger salamander.

Approximate Surveying and Monitoring Hours for Relevant Species and Resources

Species	Years of Experience	Monitoring Hours	Surveying Hours	Notes
Rare plants	5	0	100	Conducted rare plant surveys in vernal pools, annual grassland, oak savannah, and inland and coastal chaparral habitats. Positively identified species including spiny-sepaled button-celery, Lime Ridge navarretia, Hall's bush-mallow, Kern mallow, woodland woollythreads, and Anderson's manzanita.
California red-legged frog	6	1,000	500	Conducted pre-activity visual encounter-surveys, nocturnal eyeshine surveys, compliance monitoring, burrow excavation, relocation under Biological Opinion, and general habitat assessments. Attended the Rare Pond Species Workshop, Level I and Level II California Red-Legged Frog Field Workshops, and Baja California Reptile and Amphibian workshop where positive species detections were made and supervised handling occurred. Relocated five frogs on a project in Alameda County.
Foothill yellow-legged frog	3	16	100	Conducted pre-activity visual encounter surveys, nocturnal eyeshine surveys, and general habitat assessments. Attended Level I and Level II Foothill Yellow-Legged Frog Field workshops

Approximate Surveying and Monitoring Hours for Relevant Species and Resources

Species	Years of Experience	Monitoring Hours	Surveying Hours	Notes
				where positive species detections were made and supervised handling occurred.
California giant salamander	3	16	100	Conducted preconstruction surveys in suitable habitat. Observed and handled larvae and adults during Advanced CRLF Workshop (2 adults, 7 larvae) and Level I Foothill Yellow-legged Frog workshop (2 larvae).
Pond turtle (northwestern/ southwestern)	5	300	100	Conducted pre-activity visual encounter surveys, compliance monitoring, relocation under Biological Opinion, and general habitat assessments. Attended the Rare Pond Species Workshop where positive species detections were made and supervised handling occurred. Relocated four turtles on a project in Santa Clara County.
Nesting birds	5	1,000	1,000	Conducted pre-activity surveys and monitoring for nesting birds and raptors. Positively identified numerous bird nests and established no-disturbance buffers around active nests.
San Francisco dusky-footed woodrat	6	0	200	Conducted pre-activity surveys for woodrat nests, mapped nest locations, established no-disturbance buffers around nests, and relocated sixteen nests on projects in Santa Cruz and Santa Clara Counties.
Roosting bats	5	500	200	Conducted pre-construction surveys and monitoring for roosting bats.

Relevant Project Experience

Delta Dams Rodent Burrow Remediation Project at Patterson Dam Monitoring and Maintenance Plan, Department of Water Resources, Alameda County, California. Served as a CDFW-approved monitor for California red-legged frog. Monitored ground disturbing activities and channel sediment clearing, relocated California red-legged frogs found during construction, inspected wildlife exclusion fencing and cover boards, and conducted Worker Environmental Awareness Training for project personnel. Relocated five adult frogs during channel sediment removal activities to suitable habitat outside the project site. (2024)

B.F. Sisk Dam Safety of Dams Modification Project, Department of Water Resources, Merced County, California. Conducted protocol-level pedestrian surveys for rare plants and identified several populations of spiny-sepaled button-celery (*Eryngium spinosepalum*). Performed wildlife exclusion fence checks and construction monitoring as a Qualified Biologist for California red-legged frog. (2023-present)

Loma Chiquita Road—Mt Chual Spur Road Escape Route Project, Santa Clara County FireSafe Council, Santa Clara County, California. Conducted reconnaissance surveys for rare plants, San Francisco dusky-footed woodrat, California red-legged frog, foothill yellow-legged frog, western pond turtle, roosting bats and nesting birds within 30-feet of the road edge along Loma Chiquita Road and Mt. Chual Spur Road in Santa Clara County. Identified woodland woollythreads (*Monolopia gracilens*) within the treatment area during the surveys. Prepared a Biological Resources Analysis of sensitive resources that could be impacted by project activities. (2024)

Mt. Madonna—Summit Road Evacuation Route Project, Santa Clara County FireSafe Council, Santa Clara County, California. Conducted preconstruction surveys for rare plants, San Francisco dusky-footed woodrat, nesting birds,

roosting bats, and aquatic resources prior to wildfire fuel reduction activities with 30-feet of the road edge along 11 miles of Summit Road in Santa Clara County. Identified several populations of Anderson's manzanita (*Arctostaphylos andersonii*) and flagged them with avoidance buffers. (2023)

Gonzaga Ridge Wind Farm Repowering Project, Scout Clean Energy LLC, Merced and Santa Clara Counties, California. Conducted protocol-level pedestrian surveys for rare plants for a wind turbine replacement project. Positively identified populations of big-scale balsam root (*Balsamorhiza macrolepis*), spiny-sepaled button-celery, Hall's bush-mallow (*Malacothamnus hallii*), and Lime Ridge navarretia (*Navarretia gowenii*). (2023)

Arana Sewer Trunk Line Replacement Project, Santa Cruz County Sanitation District, Santa Cruz County, California. Served as Qualified Biologist for California red-legged frog for the replacement of an asbestos cement gravity sanitary sewer trunk line. Developed and presented a Worker Environmental Awareness Program and relocated 13 San Francsico dusky-footed woodrat nests to suitable habitat outside the project site using California Department of Fish and Wildlife (CDFW)-approved methods. (2023)

Iris Canyon Sediment Removal Project, City of Monterey, Monterey County, California. Performed a preconstruction survey for California red-legged frog, Monterey dusky-footed woodrat, and southwestern pond turtle for the Iris Canyon Sediment Removal Project. Sensitive resources were mapped and flagged with appropriate buffers for avoidance during project implementation. (2023)

Highway 35 Roadside Fuel Management Project, Fire Safe San Mateo County, San Mateo County, California. Performed preconstruction surveys for San Francisco dusky-footed woodrat, nesting birds, and aquatic resources. Sensitive resources were flagged for avoidance during project implementation. (2023)

Bear Creek Redwoods Open Space Preserve Vegetation Treatment Project, Midpeninsula Regional Open Space District, Santa Cruz County, California. Conducted preconstruction surveys for California red-legged frog, foothill yellow-legged frog, western pond turtle, San Francisco dusky-footed woodrat, roosting bats, nesting birds, and other special-status species for a vegetation management project. San Francisco dusky-footed woodrat nests and potential habitats for California red-legged frog and western pond turtle were identified, mapped, and flagged for avoidance. (2022)

Meritage Dam Removal and Restoration Project, Meritage Home Owners Association, Gilroy, California. Monitored dewatering and earthwork activities for western pond turtle during the removal and restoration of a dam built illegally on mitigation land within the Santa Clara Valley Habitat Plan area. Observed eight western pond turtles and assisted with the relocation of four western pond turtles to suitable habitat off site. (2022)

Berkeley-Tuolumne Camp Reconstruction Project, City of Berkeley, Tuolumne County, California. Conducted pre-construction daytime visual encounter surveys and nocturnal eyeshine surveys for California red-legged frog and foothill yellow-legged frog along the South Fork Tuolumne River. Additionally, performed surveys for western pond turtle and nesting birds. The project was the reconstruction of Berkeley-Tuolumne Camp, which was largely destroyed by the 2013 Rim Fire. (2020)

Mowry Bridge Replacement Project, U.S. Bureau of Reclamation, Fresno County, California. Conducted pre-activity surveys and compliance monitoring for western pond turtle and nesting birds for a bridge replacement project over Fresno Slough in Mendota, California. Provided Worker Environmental Awareness Training to construction personnel. (2019–2021)

Palo Colorado Road Repair Project, Monterey County Public Works and Facilities, Big Sur, California. Conducted daily preconstruction surveys for California red-legged frog and Monterey dusky-footed woodrat for a culvert repair project. Also provided Worker Environmental Awareness Training to construction personnel. (2018)

Specialized Training

- **Master (Level II) California Red-Legged Frog Field Workshop, The Wildlife Project, October 2022–August 2023.** Attended a field-based workshop in which biologists meet in five locations within the range of the California red-legged frog over a 12-month period. The workshop covered techniques for identification of the species at all life stages and safe survey and handling techniques. It also covered California red-legged frog habitat, life cycle, and conservation. As part of this workshop, observed frog egg masses and performed dipnet surveys for larvae and daytime visual encounter and nocturnal eye-shine surveys for frogs, including successful identification, hand capture, and handling of juvenile and adult California red-legged frogs. Other species encountered during this workshop included big brown bats (*Eptesicus fuscus*) and Townsend's big-eared bats (*Plecotus townsendii*).
- **Baja California Amphibian and Reptile Workshop, Fauna del Noroeste, April 2023.** Attended a multi-day field workshop in Baja California focused on observation and handling of several species with special statuses in California: arroyo toad (*Anaxyrus californicus*), California red-legged frog, western spadefoot, southwestern pond turtle, coast horned lizard, orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), southern California legless lizard (*Anniella stebbinsi*), Baja California coachwhip (*Coluber fuliginosus*), coast patch-nosed snake (*Salvadora hexalepis*), and red diamond rattlesnake (*Crotalus ruber*). During this workshop, handled 13 adult California red-legged frog and pit-tagged three of them with Dr. Anny Peralta-Garcia.
- **Master (Level II) Foothill Yellow-legged Frog Field Workshop, The Wildlife Project, June 2022–April 2023.** Attended a field-based workshop in which biologists meet in four locations within the range of the foothill yellow-legged frog over a 12-month period. The workshop covered techniques for identification of the species at all life stages and safe survey and handling techniques. It also covered foothill yellow-legged frog habitat, life cycle, and conservation. As part of this workshop, observed frog egg masses and performed dipnet surveys for larvae and daytime visual encounter surveys and nocturnal eye-shine surveys for frogs, including successful identification, hand capture, and handling of juvenile and adult foothill yellow-legged frogs. Other species encountered during this workshop include red-bellied newts (*Taricha rivularis*), rough-skinned newts (*Taricha granulosa*), California newts (*Taricha torosa*), and western terrestrial garter snakes (*Thamnophis elegans*).
- **Level I Foothill Yellow-Legged Frog Ecology and Conservation Workshop, Laguna de Santa Rosa Foundation, Sonoma County, California, October 2019.** Attended a lecture and field-based training covering the identification, ecology, and conservation of and survey techniques for foothill yellow-legged frog, including dip net surveys, hand capture, and daytime visual encounter surveys under direct supervision of permitted biologists. Captured and handled three metamorphosed frogs and two adult frogs.
- **Rare Pond Species Workshop, Laguna de Santa Rosa Foundation, Sonoma County, California, March 2019.** Attended a lecture and field-based training covering the identification, ecology, and conservation of and aquatic survey techniques for California red-legged frog, California tiger salamander, and western pond turtle. Performed dip net surveys and nocturnal eye-shine surveys under direct supervision of permitted biologists. Captured and handled three adult California red-legged frogs.

Paul Keating

BIOLOGIST

Paul Keating (*PAHL KEE-ting; he/him*) is a wildlife biologist with 10 years' experience conducting biological field studies throughout California. Mr. Keating is familiar with California's wildlife and associated vegetation communities on the ground through his experience with the California Department of Fish and Wildlife (CDFW) as a scientific aid in its Region 2 headquarters from 2013 to 2016. He has extensive training and experience conducting surveys and sampling for a wide array of special-status and common species, including California red-legged frog (*Rana draytonii*), foothill yellow-legged frog (*Rana boylii*), western pond turtle (*Emys marmorata*), California tiger salamander (*Ambystoma californiense*), giant gartersnake (*Thamnophis gigas*), Swainson's hawk (*Buteo swainsoni*), salt marsh harvest mouse (*Reithrodontomys raviventris*), and burrowing owl (*Athene cunicularia*). Additionally, he has assisted senior staff in training other biologists on proper techniques for habitat assessment, survey, and handling of these species. Mr. Keating has extensive experience with field GPS systems, including Trimble devices, Esri Collector, and others.

Education

University of San Francisco
BS, Biology

American River College
AS, Environmental Conservation

Certifications

USFWS Recovery Permit, No. PER0045233-0

- *California red-legged Frog*
- *California tiger salamander*
- *Vernal pool branchiopods*

Project Experience

Wind Energy Project, Confidential Client, Santa Barbara County, California. Received specific training and approval by CDFW to conduct focused surveys and mapping of Gaviota tarplant (*Deinandra increscens* ssp. *villosa*) and seacliff buckwheat (*Eriogonum parvifolium)*, which is the host plant for the federally listed El Segundo blue butterfly (*Euphilotes battoides*). Searched for suitable pools present along multiple drainages and then conducted pre-construction to protocol-level surveys for California red-legged frog and larval sampling for western spade foot toad. Positive identification of California red-legged frog and western pond turtle. (2019–2020)

Wind Energy Project, Confidential Client, Merced County, California. Sampled eight pools and ponds for the presence of California tiger salamander and California red-legged frog larvae multiple times over multiple years. Spotlighted and handled California red-legged frog at four pools/ponds on site in support of expanding an existing wind energy site. Also conducted point count eagle surveys at designated locations. (2017–2023)

Fuel System Replacement Project, Confidential Client, Fairfield, California. Service approved biologist for construction monitoring services on site for California tiger salamander and vernal pool species. (2017–2018)

La Rue Bridge Redevelopment Project, Yolo County, California. Provided construction monitoring services for a bridge redevelopment project. Monitoring included active nesting birds and the netting and relocation of western pond turtles. (2020)

Delta Field Division Habitat Conservation Plan; California Department of Water Resources; Santa Clara, Alameda, Contra Costa, San Joaquin, Stanislaus, and Merced Counties; California. Conducted baseline biological surveys in support of the preparation of the Delta Habitat Conservation Plan, including camera studies for San Joaquin kit fox (*Vulpes macrotis mutica*) and movement corridors, a wetland delineation, protocol surveys for listed large branchiopods, and multispecies burrow mapping to identify suitable and/or active burrows for burrowing owl, San Joaquin kit fox, and American badger (*Taxidea taxus*). (2021–2022)

San Joaquin Field Division Habitat Conservation Plan, California Department of Water Resources, Kings and Kern Counties, California. Conducted blunt-nosed leopard lizard (*Gambelia sila*) and burrowing owl surveys in support of the preparation of the San Joaquin Habitat Conservation Plan. (2021)

Delta Dams Burrow Remediation Project, California Department of Water Resources, Alameda and Contra Costa Counties, California. Proposed project is a rodent burrow remediation project at the following three reservoirs within the Delta Field Division: Clifton Court Forebay, Dyer, and Patterson. Conducted a delineation of aquatic resources, construction monitoring, burrow mapping, and camera studies. (2020–2022)

State Water Project – Dams Modification, California Department of Water Resources, San Luis Reservoir, Merced County, California. Proposed project is the retrofitting of the B.F. Sisk Dam within 1,690 acres. Conducted rare plant surveys, protocol Swainson's hawk surveys, and multispecies burrow mapping for burrowing owl, San Joaquin kit fox, and American badger. (2020, 2023)

Raw Water Intake Bypass Flow Study, San Jose Water Company, California. Conducted extensive habitat assessments and protocol-level visual encounter surveys for California red-legged frog, foothill yellow-legged frog, western pond turtle, and California giant salamander (*Dicamptodon ensatus*) within nine creeks in the Saratoga Creek and Los Gatos watersheds. (2019–2021)

Newell Creek Dam Inlet Outlet Replacement Project, City of Santa Cruz Water District, Santa Cruz County, California. Conducted a stream reach assessment and habitat suitability evaluation for California red-legged frog, foothill yellow-legged frog, western pond turtle, and California giant salamander to support the regulatory permitting and mitigation phases at Loch Lomond Reservoir. New California Natural Diversity Database record for foothill yellow-legged frog made with Craig Seltenrich. (2019)

Caltrain Modernization Project, Balfour Beatty Infrastructure, City of Sacramento, California. As part of the Caltrain electrification project, provided construction monitoring for burrowing owl, California clapper rail (*Rallus longirostris obsoletus*), California red-legged frog, salt marsh harvest mouse, and San Francisco gartersnake (*Thamnophis sirtalis tetrataenia*). (2017)

Estero Public Trail Easement, Sonoma County Parks and Recreation, Sonoma County, California. In support of the preparation of a habitat assessment, performed surveys for both western pond turtle and California red-legged frog to ensure that trail corridors and associated staging areas are consistent with the conservation easement. Positive identification of both species was made in multiple drainages on site. (2017)

South Sacramento Light Rail Construction Biological Monitoring, Sacramento Regional Transit, PGH Wong Engineering Inc., City of Sacramento, California. Provided construction monitoring services for burrowing owl and giant gartersnake along with conducting Worker Environmental Awareness Program training. (2016)

Jenny Lind Wastewater Treatment Plant Improvements Project, Calaveras County Water District, Calaveras County, California. Performed pre-construction surveys for California red-legged frog and foothill yellow-legged frog. (2017)

Gonzales Industrial Water Recycling Facility Project, City of Gonzales, Monterey County, California. Prepared a biological technical report and wetland delineation for the City of Gonzales' proposed upgrade to its wastewater treatment infrastructure. (2020)

Combie Reservoir Sediment Removal Project, Nevada Irrigation District, Nevada County, Placer County, California. Performed pre-construction surveys for California red-legged frog, foothill yellow-legged frog, and western pond turtle and provided Worker Environmental Awareness Program training. (2019)

Martis Valley, Truckee River Watershed Council, Nevada County, Placer County, California. Marked out environmentally sensitive areas, performed nesting bird surveys, and conducted Worker Environmental Awareness Program training for a multi-use trail alignment. E-fished to relocate fish during dewatering activities, which required identifying fish to the species level within the range of Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*). (2018–2022)

Solar Energy Project, Confidential Client, Sacramento County, California. In support of a proposed 700-acre solar site, conducted a wetland delineation and protocol-level surveys for Swainson's hawk, burrowing owl, and listed large branchiopods. Evaluated elderberry shrubs (*Sambucus* sp.) present within a riparian corridor for valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) suitability. (2020–2023)

Solar Energy Project, Confidential Client, Sacramento County, California. Conducted a wetland delineation and protocol-level surveys for Swainson's hawk and burrowing owl for a proposed 550-acre solar site. (2020–2023)

River Bluff Lower Terrace Project, City of Ceres, California. Provided construction monitoring services during a park restoration project that included monitoring elderberry shrubs, the host plant for valley elderberry longhorn beetle, present on site. (2018)

California State University, Chico Physical Sciences Building Renovation, Butte County, California. Performed emergent bat surveys and marked out an appropriate buffer for elderberry shrubs immediately adjacent to project activities in a riparian corridor. (2021–2023)

Solar Energy Project, Confidential Client, Sacramento County, California. Conducted burrow surveys and mapping for American badger, burrowing owl, and California tiger salamander. Additionally, provided construction monitoring during construction activities on the 550-acre solar project. Relocated several California tiger salamander and spadefoot toads during construction monitoring in compliance with the approved California tiger salamander and spadefoot mortality reduction and relocation plans. (2019–2020)

Potrero Hills Landfill Expansion Project – California Tiger Salamander Trapping and Relocation, Waste Connections, Solano County, California. As part of an ongoing 10-year monitoring program for rare plants, monitored federally listed large brachiopods and California tiger salamander. Served as an approved biologist for this multiyear trapping and relocation study within the proposed expansion area for the Potrero Hills Landfill. Handled more than 50 adult and juvenile California tiger salamander during the tenure of this project. Additionally, as part of the ongoing project, continued to monitor for California tiger salamander eggs, larvae, and listed large brachiopods. (2016–2023)

Altamont Landfill Comprehensive Management Plan Implementation, Waste Management, City of Livermore, California. Performed egg, larval, and adult surveys for California tiger salamander and California red-legged frog. Conducted pre-construction surveys and construction monitoring for the above listed species along with burrowing owl, American badger, and San Joaquin kit fox. Observed and identified several California red-legged frogs during night surveys conducted in both March and April, 2018 and 2020, respectively. Captured and handled an adult

California red-legged frog during the 2020 surveys. Additionally, conducted construction monitoring during work on a mitigation pond for California red-legged frog and California tiger salamander with active relocation of three California tiger salamanders and two California red-legged frogs during 2019. (2017–2020)

SR4 Wagon Trail Mitigation Project, Dokken Engineering and California Department of Transportation, Calaveras County, California. Conducted site assessments and assisted in the development of an existing conditions report for restoration/creation of a pond for California red-legged frogs on a 40-acre site as part of mitigation for the re-routing of State Route 4. Helped develop two alternate conceptual designs that focused on the following: (1) enhancing an existing pond through improvement of habitat characteristics including removal of American bullfrog (*Rana catesbeiana*), and (2) creating a new 0.5-acre pond on site that would be suitable for breeding for California red-legged frog. Option 2 was preferred by the landowners, so currently developing plans, specifications, and estimates for new pond establishment and riparian and oak woodland restoration. (2019)

McIver Dairy Restoration Project, Truckee River Water Council, Nevada County, Placer County, California. Evaluated a stream reach and sampled for benthic macroinvertebrates. (2018)

Solar Energy Project, Confidential Client, Washoe County, Nevada. Completed a wetland delineation and botanical surveys for a 2,650-acre site in support of a photovoltaic project. Prepared an avian survey report following a year of bird surveys to provide baseline information for the preparation of a bird and bat conservation plan. (2019–2020)

Singh Property Conservation Bank, City of Le Grange, California. Assisted with protocol-level surveys for listed large branchiopods, including the mapping of 240 vernal pools and swales present. Additionally, assessed pools on site for presence of California tiger salamander and then sampled appropriate pools for the presence of California tiger salamander larvae. (2017–2018)

Beyer Ranch, Confidential Client, City of Oakdale, California. Assisted with a California tiger salamander preliminary habitat assessment for a proposed conversion of grazing land to orchards on approximately 100 acres near the town of Oakdale. The site is located within the known historic range of this species. (2019)

Dami Property, Confidential Client, City of Oakdale, California. Assisted with a California tiger salamander preliminary habitat assessment for a proposed orchard on approximately 160 acres within the historic range of California tiger salamander. (2017–2020)

Elkus Ranch Master Plan Project, University of California Agriculture and Natural Resources Division, San Mateo County, California. Assisted in the preparation of a habitat assessment report for California red-legged frog along with conducting a sensitive resource and riparian habitat assessment, and wetland delineation for several creeks and one impoundment within the 126-acre project site. (2018)

Cloverdale High School Field Improvement, Cloverdale Unified School District, Sonoma County, California. Conducted a general biological survey, habitat assessment, and preliminary jurisdictional delineation of waters of the United States and waters of the state. (2019)

Solar Energy Project, Confidential Client, Stanislaus County, California. In conjunction with completing a jurisdictional delineation, conducted protocol-level surveys for rare plant species, Swainson's hawk, and burrowing owl. (2016–2020)

Daylight Legacy Solar, Daylight Solar, Kings County, California. Completed a habitat assessment and burrow survey for American badger, burrowing owl, and San Joaquin kit fox on a 2,000-acre site and along associated gen-tie lines. (2017)

Tres Amigos Solar Energy Project, Tres Amigos Solar LLC, Merced County, California. Completed a habitat assessment and burrow survey for American badger, burrowing owl, and San Joaquin kit fox on a 1,500-acre site. (2017)

Solar Energy Project, Confidential Client, Stanislaus County, California. Completed a habitat assessment and burrow survey for American badger, burrowing owl, and San Joaquin kit fox. Protocol-level surveys for Swainson's hawk and burrowing owl were carried out in coordination with several biologists. Also performed botanical surveys, which included mapping of all elderberry shrubs in support of a valley elderberry longhorn beetle habitat assessment. (2017–2018)

Solar Energy Project; Confidential Client; Kern, Tulare, and Fresno Counties; California. Performed protocol-level surveys for blunt-nosed leopard lizard at multiple sites throughout several counties. During the 2016 season, became qualified as a Level 2 blunt-nosed leopard lizard surveyor while working on the project. During surveys, recorded all other wildlife species observed, including burrowing owl, loggerhead shrike (*Lanius ludovicianus*), LeConte's thrasher (*Toxostoma lecontei*), American badger, Nelson's antelope squirrel (*Ammospermophilus nelsoni*), and San Joaquin kit fox. (2016–2017)

Calaveras County Water District Ebbetts Pass Water System Reach 1 Pipeline, Calaveras County, California. Conducted pre-construction surveys for tree-roosting bats and nesting birds. Marked out previously delineated wetlands and plants. (2018–2019)

Flumes 38–40 Canal Conversion near Pollock Pines, El Dorado Irrigation District, El Dorado County, California. Conducted surveys for northern goshawk (*Accipiter gentilis*) and California spotted owl (*Strix occidentalis occidentalis*) in Eldorado National Forest in accordance with U.S. Fish and Wildlife Service-approved survey methodology. Aurally and/or visually detected two adult spotted owls. (2019, 2021)

Saugstad Urban Rivers Grant Project, Placer County, California. Served as biologist on a City of Roseville Environmental Utilities Department bank stabilization and restoration/enhancement project on Dry Creek within Saugstad Park. Conducted a stream reach assessment in support of Section 7 consultation with the National Marine Fisheries Service and permit applications. (2021–2022)

Auburn Regional Park Project, Placer County, California. Conducted a pre-construction survey for nesting birds and western pond turtle. (2020)

Solar Energy Project, Confidential Client, Kern County, California. Performed protocol-level surveys for blunt-nosed leopard lizard for a proposed 14-acre solar facility. (2017)

Palo Alto Airport Improvements, City of Palo Alto, California. Provided pre-construction and construction monitoring services for burrowing owl, salt marsh harvest mouse, San Francisco gartersnake, and delineated wetlands. Conducted Worker Environmental Awareness Program training. (2017)

Newhall Ranch, Newhall Ranch LLC, Los Angeles County, California. Performed general botanical surveys and focused botanical surveys in support of ongoing monitoring and pollinator studies for San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*). (2018)

Solar Energy Project, Confidential Client, Kern County, California. Performed botanical surveys on a 2,000-acre site for the construction of a photovoltaic project. (2018)

Bodega Solar, Suniva Systems LLC, California. Completed botanical and general biological resources surveys of the proposed site for conversion to a solar farm. Drafted a biological resources constraints assessment and evaluation of habitat suitability for Swainson's hawk, American badger, burrowing owl, and California tiger salamander. (2017)

Berggruen Institute Project, City of Los Angeles, California. Identified species captured on camera traps for a habitat connectivity and wildlife corridor study.(2018)

Spectrum Charter Communications Alturas California Department of Transportation Project, Spectrum Charter Communications, Modoc County, California. Performed a wetland delineation and surveyed and assessed habitat for several focal species along a 42-mile-long fiber optic line within the California Department of Transportation right-of-way along Highway 395 from Alturas, California, north to the Oregon state border. (2018)

Relevant Previous Experience

CDFW Statewide Swainson's Hawk Survey, Sacramento, San Joaquin and Yolo Counties, California. Received internal training from Jim Estep to participate in the statewide survey of nesting Swainson's hawk pairs. Protocol surveys over multiple-square-mile blocks were conducted to document nesting pairs of Swainson's hawk. (2015, 2017)

Ecoregion Biodiversity Monitoring, CDFW, Sierra Nevada Mountain Range, California. Visited randomized locations throughout the Sierra Nevada requiring use of four-wheel drive vehicles, GPS units, maps, and hiking in inclement weather in all types of terrain. The Ecoregion Biodiversity Monitoring project is a broad survey of both vegetation and wildlife. Established plots with exact centers to be revisited in 10 years using GPS and triangulation methods. At plot center point, conducted surveys for birds and placed automated recorders. Collected and identified plants to species level using field guides and keys. Performed botanical surveys for specific species. Collected information such as habitat type, tree counts, tree condition, diameter at breast height, canopy cover, canopy height, slope and aspect, soil type, and fuel models. Camera traps with bait were used to capture as many species as possible. Received training and performed small mammal trapping. Data from the project were used to update species distribution in the California Natural Diversity Database, and for timber harvest plans regarding species such as marten and fishers. Performed quality control on both botanical field samples and camera trap identifications. (2013–2016)

Lands Management Program, CDFW, Various Counties, California. Performed a wide array of services depending on specific location and habitat need. Some more in-depth projects have included working with the California Native Plant Society on the Pine Hill Preserve to survey for protected plants. Utilized prior training and experience with giant gartersnake identification to use hand tools during vegetation removal at the Cosumnes River Preserve. Also performed habitat restoration in conjunction with the Nature Conservancy at the Cosumnes River Preserve and various other CDFW properties throughout Region 2. (2015–2016)

Northern Sierra Nevada Foothills Habitat Connectivity, CDFW, Shasta and Madera Counties, California. Conducted road surveys for 30 focal species to fit predicted geographic information system models. Used extensive track and scat identification training while performing surveys along roads. Identified habitat types and placed camera traps along with walking transects. Acted as sole quality control checker for all track and scat photos taken during the survey to compile data for analysis. (2014–2015)

Monitoring the Pacific Deer Herd, CDFW, Icehouse Reservoir, California. Established and walked transects to collect DNA as part of a pilot program to estimate deer populations. The survey was for mark-and-recapture analysis, which required detailed logging into GPS units and flagging to follow the same deer trails year to year. Also participated in trapping, hobbling, monitoring, sampling, and collaring of live deer. (2013–2014)

Pika Surveys, CDFW, Sierra Nevada Mountain Range, California. Conducted focused surveys for American pika (*Ochotona princeps*) at high-elevation talus slopes. (2014–2015)

Giant Gartersnake Habitat Evaluation and Survey, CDFW, Gray Lodge Wildlife Area, California. Trapped giant gartersnakes in canals, seasonal ponds, and permanent ponds following established protocols. Set trap lines and checked set traps daily. Upon capture, measured, DNA sampled, branded, and tagged with passive integrated transponder before release. Along with trapping, recorded vegetation and habitat type. (2013)

Assistant Planner, Pacific Municipal Consultants, Elk Grove, California. Worked as an assistant planner for the City of Elk Grove. Provided public assistance at the front counter, completed plan checks, and prepared California Environmental Quality Act (CEQA) documents for housing and infrastructure projects. (2007–2009)

Specialized Training

- Basic Wetland Delineation – 40 Hours of Basic Training, The Wetland Training Institute
- Plants of the Wetland Boundary, The Wetland Training Institute
- CEQA for Biologists, University of California Davis Extension
- CEQA: A Step-by-Step Approach, University of California Davis Extension
- Rare Pond Species Workshop, Laguna de Santa Rosa Foundation
- California Tiger Salamander Terrestrial Ecology Workshop, Laguna de Santa Rosa Foundation
- College of Bioassessment, Surface Water Ambient Monitoring Program (SWAMP), California Department of Fish and Wildlife
- California Endangered Species Act Permit Academy, California Department of Fish and Wildlife
- Botany Basics: Morphology & Plant Families of California, The Jepson Herbarium
- California Anostraca and Notostraca Identification Class, Mary Schug Belk
- Identifying and Appreciating the Native and Naturalized Grasses of California, Pepperwood Preserve

Elliot Maldonado

BIOLOGIST

Education

University of California, Berkeley
BS, Natural Resources and Conservation, Concentration: Wildlife Biology, 2016

Permits/Certifications

- *CDFW Plant Voucher Collecting Permit, No. 2081(a)-22-074-V*
- *Certified/Qualified Biologist: Yolo County HCP/NCCP and East Contra Costa County HCP/NCCP*

Professional Affiliations

Sierra Wildlife Rescue (Board Member, Bat Team Lead, Wildlife Rehabilitator, Public Education Assistant)

The Wildlife Society Sacramento-Shasta, California North Coast, San Francisco Bay Area, and San Joaquin Valley Chapter Committee Member

Elliot Maldonado (*she/her*) has 11 years' experience as a professional biologist. She has worked on numerous utility, renewable energy, development, and public transportation projects throughout California. Ms. Maldonado conducts habitat assessments and natural resource inventories. She prepares documents in accordance with the California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) process, including biological technical reports; state, federal, and local permits; habitat conservation plan (HCP) applications; and proposals. She provides project management and conducts surveys and monitoring for projects within various ecosystems throughout California. Ms. Maldonado conducts surveys for special-status wildlife, bat mist netting, small mammal and amphibian trapping, and point count and acoustic surveys. She has professional training and volunteer experience with special-status species including, but not limited to, foothill yellow-legged frog (*Rana boylii*), Sierra Nevada yellow-legged frog (*Rana sierrae*), California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), northwestern pond turtle (*Actinemys marmorata*), giant garter snake (*Thamnophis gigas*), blunt-nosed leopard lizard (*Gambelia sila*) (Level 2 Biologist), willow flycatcher (*Empidonax traillii*), burrowing owl (*Athene cunicularia*), golden eagle (*Aquila chrysaetos*), Swainson's hawk (*Buteo swainsoni*), and valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). Ms. Maldonado has served as a project manager and lead biologist under and with the Natomas Basin Conservancy, South Sacramento HCP, Kern County Valley Floor HCP, Placer County Conservancy, and Santa Clara Valley HCP, and is a certified biologist under the Yolo and East Contra Costa Counties HCP/natural community conservation plans (NCCPs). She is also an experienced wildlife rehabilitator and handler, and teaches local wildlife identification courses in El Dorado County.

Relevant Project Experience

Development

Sonoma State University Pond Modernization, CSU, Sonoma County, California. Drafted biological resources assessment for California State University (CSU). Focus species include California red-legged frog, California tiger salamander, northwestern pond turtle, and monarch (*Danaus plexippus*). Future additional surveys and permitting tasks. (2024–Ongoing)

Stockton Campus Master Plan, CSU Stanislaus, San Joaquin County, California. Conducted baseline biological surveys (i.e., aquatic, plant, wildlife resources). Drafted biological resources assessment and environmental impact report (EIR) in accordance with CEQA. (2024–Ongoing)

Indian Wells Crossing, Private Developer, Riverside County, California. Drafted Lake and Streambed Alteration Agreement mitigation status response memorandum to provide California Department of Fish and Wildlife (CDFW) staff with status of the project, ownership, and implementation of the Lake and Streambed Alteration Agreement (1600-2015-0033-R6) mitigation. (2024–Ongoing)

Gateway Village Project, Private Developer, Placer County, California. Completed the Placer County Conservation Program/County Aquatic Resources Program application. (2024)

San Joaquin Multi-Species Habitat Conservation Plan On-Call Biological Services Contract, San Joaquin County, California. As the project manager and lead biologist, worked on over 50 SJMSCP covered projects. Implemented the Multi-Species Habitat Conservation Plan (Section 10/NCCP) via sensitive species and habitat surveys and reporting. Conducted San Joaquin kit fox (*Vulpes macrotis mutica*) detection surveys via camera traps, dusting of potential dens, and wildlife sign analysis. Performed habitat assessments including water resource and vegetation community mapping. Direct experience with burrowing owl, Swainson's hawk, giant garter snake, western pond turtle, and nesting birds. Prepared the San Joaquin Multi-Species Habitat Conservation Plan pre-construction and Incidental Take and Minimization Measures ITMMs forms. (2018–2023)

Triangle Point Development, MP Elk Grove LLC, Sacramento County, California. As the project manager and biologist, made an administrative appeal of a verified wetland delineation, obtained approval for off-site Swainson's hawk mitigation, coordinated with local regulatory agencies regarding the stormwater detention basin for potential habitation by special-status species, and obtained the Section 404 Nationwide Permit and Section 401 Water Quality Certification (WQC) for Triangle Point. Work was conducted in compliance with the South Sacramento HCP. (2021)

Cessna APN-170, Buzz Oates Construction, Solano County, California. Conducted a wetland delineation and biological survey on ±25 acres of proposed development. Prepared letter report documenting results. Assessed project impacts and recommended mitigation measures. (2021)

4286 and 4296 Business Drive, MW Construction, El Dorado County, California. As project manager and lead biologist/botanist, composed contract materials, conducted seasonally timed botanical survey for Pine Hill plants and other special-status species, and produced report. (2021)

Superior RV and Boat Storage, Superior Storage Group, Sacramento County, California. As project manager and lead biologist, conducted post-construction surveys, provided Notices of Completion in compliance with the Section 401 WQC, Section 404 Nationwide Permit, and Section 1602 Lake and Streambed Alteration Agreement (LSAA) permits, and client coordination. (2021)

4370 Business Drive, El Dorado County, California. As project manager, composed contract materials, coordinated survey, composed botanical survey report for Pine Hill plants and other special-status species, and produced report. (2021)

APN 109-420-017 on Dividend Drive, El Dorado County, California. As project manager, composed contract materials, coordinated survey, composed botanical survey report for Pine Hill plants and other special-status species, and produced report. (2021)

Hyatt House and Place, The HR Group Architects, City of Sacramento, California. As project manager, composed contract materials, coordinated survey, and composed Natomas Basin HCP survey memorandum. (2021)

Barandas Park Phase 2, City of Sacramento, California. As project manager and lead biologist, under the South Sacramento HCP guidance, composed contract materials, conducted pre-construction survey for South Sacramento HCP listed species, and composed survey report. (2021)

North Natomas Regional Park Aquatics Complex, City of Sacramento, California. Conducted pre-construction surveys for Natomas Basin HCP covered species and prepared survey report. (2020)

Cook Riolo Pathway, Placer County, California. As a project manager and lead biologist, conducted water quality monitoring per the project's Section 401 WQC, coordinated with client and agency, and composed compliance reports. (2019–2020)

Eubanks and Chancellor Warehouse, City of Vacaville, California. As project manager and lead biologist, conducted water quality monitoring per the project's Section 401 WQC, coordinated with client and agency, and composed compliance reports. (2018–2019)

Pock Lane, Buzz Oates Construction, City of Stockton, California. As project manager and lead biologist, coordinated with client, conducted monthly burrowing surveys, and prepared reports prior to construction. (2019-2020)

8405 Washington Boulevard Development, City of Roseville, California. As project manager and lead biologist, provided contract materials, coordinated with client, conducted burrowing owl survey, and composed compliance report. (2020)

Simplot Lathrop Facility Improvement, City of Lathrop, California. As project manager and lead biologist, produced contract materials, coordinated with client, and conducted a burrowing owl survey. (2019–2020)

Zinfandel Residential Development, Amador County, California. As project manager and lead biologist, conducted pre-construction surveys for western burrowing owl and nesting birds. Submitted Notification of LSAA via the Environmental Permit Information Management System portal. Coordinated with CDFW for draft and final LSAA. (2020–2021)

Starbucks Retail Center at 7056 Sunrise Boulevard, City of Citrus Heights, California. As project manager and lead biologist, provided contract materials; coordinated with client, contractor, and the City; conducted pre-construction survey; and provided compliance reports. (2019–2020)

Sunworks, Inc. Reese Road Pepsi Solar, Sacramento California. In compliance with South Sacramento HCP, conducted pre-construction surveys for burrowing owl and provided compliance report. (2020)

Mace Ranch Innovation Center/ARC, City of Davis/Yolo County, California. As a Yolo HCP qualified biologist, conducted biological surveys for HCP listed species, including protocol-level burrowing owl surveys, and produced associated reports. Positive identification of multiple burrowing individuals and Swainson's hawk. (2019–2020)

Watt and Blackfoot Commercial Development, Antelope, California. Conducted pre-construction surveys for nesting raptors/birds. Prepared pre-construction survey report. (2019)

Zephyr Court Development, Buzz Oates Real Estate, San Joaquin County, California. Conducted burrowing owl monitoring/surveys, installed and removed exclusion devices, and prepared weekly monitoring reports in accordance with the project's burrowing owl exclusion plan. (2019)

Lambert Lane Tentative Map, El Dorado County, California. Conducted baseline biological communities, wetlands, and tree inventory surveys. Prepared the biological resource evaluation. (2019)

Mace Boulevard and Alhambra Drive Commercial Development, Yolo County, California. As project manager and a Yolo HCP qualified biologist, implemented project avoidance and minimization measures, conducted burrowing owl monitoring/surveys, installed and removed exclusion devices, prepared monitoring reports in accordance with the project's burrowing owl exclusion plan, and coordinated with the City of Davis. Conducted Worker Environmental Awareness Program (WEAP) training and biological monitoring. Positive identification of multiple burrowing individuals and Swainson's hawk. (2019–2020)

Green Valley Convenience Center, El Dorado County, California. As project manager and lead biologist, conducted annual wetland rehabilitation monitoring in accordance with the project's Streambed Alteration Agreement (SAA) requirements. Monitoring included tree condition assessment, vegetation community evaluation, and annual reporting of survey results. (2019–2020)

1690 Bell Avenue, Sacramento County, California. Assisted with dry season branchiopod surveys under Incidental Take Permit (ITP) No. 799564-4. Conducted pre-construction burrowing owl and nesting bird surveys. (2018-2020).

Amador Dispatch Acorns News Development, Jackson Rancheria, Amador County, California. Prepared final monitoring report in accordance with project permits for a development project including a sewer line upgrade. (2018–2019)

Familystyle Development, Amador County, California. Assisted with the preparation of a biological assessment and the aquatic resource delineation report. (2018)

Shadowfax Self Storage, El Dorado County, California. Assisted in drafting the biological resource evaluation. (2018)

Energy and Telecommunication

Confidential Agrivoltaic Project, Confidential Client, Sacramento County, California. Performed protocol-level and biological assessment surveys for western spadefoot (*Spea hammondii*), burrowing owl, Swainson's hawk, Crotch's bumble bee (*Bombus crotchii*), and botanical resources. Surveys included operation of utility terrain vehicle. (2024–Ongoing)

Elmore North Geothermal, California Energy Commission, Imperial County, California. Assisted with the biological resources analyses for the draft EIR. Major focuses included geofluid, brine ponds, and atmospheric flash systems. (2023)

Fountain Wind, California Energy Commission, Shasta County, California. Performed quality assurance/quality control of draft CEQA documents. Drafted wind turbine impact and mitigation resource summary. Conducted protocol-level fixed-point count avian surveys for listed raptors, including golden eagle and northern goshawk (*Accipiter gentilis*), in accordance with the U.S. Fish and Wildlife Service (USFWS) Eagle Conservation Plan Guidance for land-based wind energy projects. Completed Anabat systems training for setup and use of hardware

and software for detecting bat species via vocalizations. State Clearinghouse No. 2019012029. (2016–2017; 2022–2023)

On-Call Biological Support Services, Western Area Power Administration, Sierra Nevada Region, California. Provided on-call biological support services via pre-construction surveys that included identification and flagging of sensitive biological resources such as riparian areas, ponds, seasonal wetlands, channels, and other aquatic features; elderberry shrubs to protect valley elderberry longhorn beetle; giant garter snake aquatic and upland habitat; and nesting Migratory Bird Treaty Act birds and birds of prey, including burrowing owl and burrowing owl habitat. Surveys supported Western Area Power Administration's environmental compliance prior to mastication, herbicide treatments, and other vegetation management activities; access road grading; and road improvements. NEPA Project No. 100153025. (2022–2023)

Bowers Backup Generating Facility, California Energy Commission, Santa Clara County, California. Drafted the biological resources analyses for the EIR. Major focuses included nitrogen deposition. Mitigation pulled from outside of Santa Clara Valley HCP boundary; appropriate mitigation applied where necessary. State Clearinghouse No. 2023020228. (2023)

Parker-Blythe #2 Full Line Maintenance, Western Area Power Administration, Desert Southwest Region, San Bernadino and Riverside Counties, California. Assisted the lead biologist in drafting the biological resources evaluation and preliminary jurisdictional waters/wetlands delineation report. Department of Energy Project No. DOE/EA-2168. (2022)

Sky River Energy Facility Repowering, Kern County, California. Assisted in preparation of the botanical inventory report. (2018)

Hell Hole Reservoir Federal Energy Regulatory Commission Relicensing, Placer County Water Agency, Placer County, California. In accordance with the Federal Energy Regulatory Commission (FERC) relicensing requirements for public utility facilities, conducted protocol-level surveys for Sierra Nevada yellow-legged frog. Recorded all amphibian species encountered. (2018)

Florence Lake FERC Relicensing, Southern California Edison, Fresno County, California. In accordance with FERC relicensing requirements for public utility facilities, conducted protocol-level surveys for willow flycatcher, great gray owl (*Strix nebulosa*), Yosemite toad (*Anaxyrus canorus*), and Sierra Nevada yellow-legged frog. Utilized bird call broadcast units to conduct the bird surveys and identified incidental species both visually and aurally. Special-status species observations included Yosemite toad (larvae and froglets). (2018)

Kaweah FERC Relicensing, Southern California Edison, Tulare County, California. In accordance with FERC relicensing requirements for public utility facilities, conducted wildlife camera installation and associated species identification and data collection to evaluate the use of wildlife bridges and escape ramps; special-status plants and invasive/noxious weeds surveys including identifying, mapping, and data collection; wildlife reconnaissance surveys identifying wildlife visually, through species-specific vocalizations; and diagnostic field signs such as scat, pellets, and tracks as well as mapped associated vegetation communities. (2018)

Community Pipeline Safety Initiative, Pacific Gas & Electric (PG&E), Northern California. Conducted pre-construction surveys and monitoring for nesting birds (observed), raptors (observed), and giant garter snake. Conducted habitat assessments for giant garter snake. (2016–2018)

Pit 1 Northwestern Pond Turtle Monitoring Project, PG&E, Shasta County, California. Conducted reconnaissance/planning-level surveys for northwestern pond turtle along segments of the Pit and Fall Rivers. Surveys were conducted in accordance with the northwestern pond turtle protection plan as stipulated by the project's FERC license. Observed more than 10 adult individuals.

King Flat Wind Energy, Terra-Gen, Yolo County, California. Conducted bird use count, eagle point, and raptor migration surveys through visual and species-specific vocalization identification. Collected data, prepared weekly reports in accordance with agency protocols, and maintained the project database. Observed numerous bird species, including burrowing owl, Swainson's hawk, and golden eagle. (2017–2018)

Oroville 230 kV Transmission Line, Lake Oroville, Butte County, California. Conducted nesting bird and birds of prey surveys, oversaw vegetation clearing, documented stormwater pollution prevention plan compliance, and monitored construction activities for a power line project associated with the Lake Oroville Spillway Emergency Repair Project. (2017)

PG&E Line 406/407, PG&E, Sacramento and Placer Counties, California. Acted as assistant project manager and lead biologist. In compliance with the Placer County HCP, supervised a group of biological monitors on a 12-mile-long pipeline installation. Conducted pre- and post-construction surveys for nesting birds and sensitive species, delineated sensitive habitats and other resources, captured and relocated at-risk wildlife within the project area, performed permit compliance monitoring, and provided WEAP training. Sensitive species that occur or had the potential to occur within the project area included giant garter snake, Swainson's hawk, white-tailed kite (*Elanus leucurus*), burrowing owl, valley elderberry longhorn beetle, western pond turtle, California tiger salamander, and vernal pool fairy shrimp (*Branchinecta lynchi*). Monitored giant garter snake activity, active Swainson's hawk nests, and work occurring around valley elderberry shrubs and vernal pools. LSA No. 1600-2015-0167-R2; SAA 1600-2008-0333. (2017)

SKIC 20 Solar, Algonquin Power, Kern County, California. Following Kern County Valley Floor HCP guidance, monitored active Swainson's hawk and burrowing owl nests to determine construction activity impacts on the bird species, set up a CDFW-approved exclusion area buffer around the nests, and provided observation reports. (2014)

Kettleman North Dome Exploration, Kings and Fresno Counties, California. Conducted protocol-level blunt-nosed leopard lizard surveys; pre-construction surveys for San Joaquin kit fox, giant kangaroo rat (*Dipodomys ingens*), San Joaquin antelope squirrel (*Ammospermophilus nelsoni*), burrowing owl, LeConte's thrasher (*Toxostoma lecontei*), and loggerhead shrike (*Lanius ludovicianus*); and special-status plant and invasive/noxious weed surveys, reptile inventories, and habitat assessments on Bureau of Land Management land. (2013–2014)

Occidental Exploration, Kings and Kern Counties, California. As part of the Kern County Valley Floor HCP, monitored construction activities associated with the building of oil well pads in sensitive habitats. Duties included protocol-level surveys, pre-construction surveys, and monitoring for blunt-nosed leopard lizards, nesting birds, and birds of prey; capture and relocation of wildlife; CDFW ITP compliance enforcement; and environmental awareness training. The ITP covered species such as giant kangaroo rat, San Joaquin antelope squirrel, San Joaquin kit fox, and burrowing owl. (2012–2014)

Line 2000 Anomaly Repairs, Angeles National Forest, Los Angeles County, California. Performed pre-construction surveys for coast horned lizard (*Phrynosoma coronatum*), coastal rosy boa (*Lichanura orcutti*), slender mariposa-lily (*Calochortus clavatus* var. *gracilis*), nesting birds, and birds of prey on a pipeline. Duties included providing environmental awareness training to all on-site staff, monitoring all ground disturbance, monitoring for California condor (*Gymnogyps californianus*) and other sensitive species, delineating disturbance areas, monitoring active bird nests, and conducting post-construction botanical surveys to determine restoration success in compliance with the U.S. Forest Service (USFS) special use permit. (2013)

Municipal

Granite Esparto Mining and Reclamation, Granite Construction, Yolo County, California. Conducted bird use point-count (audial and visual) surveys at on-site mitigation area near Capay open space. Observed more than 34 bird species. State Clearinghouse No. 2009022033. (2023)

Sacramento Municipal Utility District (SMUD) Environmental Services On-Call Contract (Operations and Maintenance), Sacramento County, California. As project manager/lead biologist, worked on more than 150 SMUD projects/task orders. Prepared and conducted WEAP trainings, pre-construction surveys, construction monitoring, and restoration plans for California tiger salamander, giant garter snake, valley elderberry longhorn beetle, burrowing owl, vernal pool avoidance, Swainson's hawk, white-tailed kite, other nesting birds, and other special-status species and habitat. Worked on multiple pole and line replacement/relocation/removal projects as well as restoration projects throughout the greater Sacramento area, including the Natomas Basin Conservancy and Cosumnes River Preserve. Work conducted under South Sacramento HCP and Natomas Basin HCP. State Clearinghouse No. 2018092030. (2019–2023)

Bee Canyon Sag Pipe Rehabilitation, Los Angeles Department of Water and Power, Los Angeles, California. Assisted in drafting a biological assessment, biological resources technical report, and biological evaluation for a proposed maintenance project along the Los Angeles Aqueduct. State Clearinghouse No. 2021050347. (2021)

Rancho Seco Solar II, SMUD, Herald, California. As a CDFW designated biologist and the project manager, conducted pre-construction surveys and biological monitoring for California tiger salamander, western pond turtle, and other special-status species. Prepared daily and monthly monitoring reports. Conducted WEAP training and training for designated biological monitors. Moved wildlife species to safe off-site locations. Assisted a California tiger salamander permitted handling biologist in the relocation of California tiger salamander found on site. Special-status species observed included California tiger salamander, Swainson's hawk, and nesting birds. State Clearinghouse No. 2017092042; SAA No. 1600-2018-0241-R2; ITP No. 2081-2018-057-02. (2019–2020)

Rio Cosumnes Correctional Center Substation, Sacramento County, California. Conducted pre-construction surveys for special-status species, including Swainson's hawk, nesting birds, western pond turtle, and giant garter snake, and several special-status plant species. Conducted monitoring of active nests and provided compliance reports. Special-status species observations included Swainson's hawks and other nesting birds. State Clearinghouse No. 2018082017. (2019–2020)

Solano Wind Road Erosion Repair, SMUD, Solano County, California. Conducted WEAP training and construction monitoring. Monitored for burrowing owl, Swainson's hawk, American peregrine falcon (*Falco peregrinus anatum*), nesting birds, and in-channel work for water resource protection. Special-status species observations included burrowing owl and Swainson's hawk. State Clearinghouse No. 2017058393. (2018)

Resource Management

Delta Dams, Department of Water Resources, Northern/Central California. Qualified biologist to handle California tiger salamander and California red-legged frog for monitoring of infrastructure maintenance. (2024–Ongoing)

Oroville Pumpback Storage, Department of Water Resources, Oroville, California. Conducted baseline biological surveys (i.e., aquatic resources, plants, wildlife). Prepared special-status species potential to occur evaluation table. (2024–Ongoing)

Forest Resiliency Project, Confidential Client, California. Drafting EIR in contribution to CEQA analyses. (2024-Ongoing)

Arboretum Waterway Improvements, University of California Davis, Yolo County, California. Performed fish relocation of hundreds of common fish species, including Sacramento blackfish (*Orthodon microlepidotus*), as well as western pond turtle per the Lake and Streambed Alteration Agreement EPIMS Notification No. YOL-32039-R2. (2024)

Los Padres National Forest Ecological Restoration, DJ&A, Los Padres National Forest, California. Task manager/coordinator for the wildlife survey effort. Performed desktop habitat assessment and coordinated protocol-level surveys for California spotted owl (*Strix occidentalis occidentalis*), blunt-nosed leopard lizard, California-red legged frog, southwestern pond turtle (*Actinemys pallida*), San Emigdio blue butterfly (*Plebejus emigdionis*), two-striped garter snake (*Thamnophis hammondii*), and vernal pool fairy shrimp. USFS is proposing the Ecological Restoration Project within the Los Padres National Forest. The project would involve analyzing potential fuel treatments along roads, off-highway vehicle trails, property lines, areas identified by the Los Padres Strategic Fuelbreak Assessment, and in other general forested areas in need of forest health thinning. The project occurs in Monterey, Mt. Pinos, Santa Lucia, and Santa Barbara Ranger Districts. The Los Padres National Forest Ecological Restoration Project requires analysis under NEPA including an environmental assessment, long-term operation and maintenance plans, and permit applications with the Regional Water Quality Control Board, CDFW, USFWS, U.S. Army Corps of Engineers, and others.(2022–2023)

Thousand Palms Flood Control, Coachella Valley Water District, Riverside County, California. Drafted decision documents for the Final EIR/environmental impact statement. State Clearinghouse No. 2016111053. (2022)

Blue Mountain Minerals Revegetation Services, Tuolumne County, California. Conducted biannual weed and revegetation monitoring for a 4.5-acre restoration test plot program and planting plan. Performed seed viability testing and data entry. (2019–2020)

South Fork Preserve Improvements, Yolo County, California. Conducted reconnaissance-level valley elderberry long-horned beetle/elderberry shrub surveys. (2019)

Sherman Island Levee PL 84-99 Repair Areas, Sacramento County, California. Conducted pre-construction surveys and prepared associated reports for giant garter snake, western pond turtle, Swainson's hawk, burrowing owl, and nesting birds (observed). Observed one hybrid tricolored blackbird (*Agelaius tricolor*)/red-winged blackbird (*Agelaius phoeniceus*) individual outside of the project area. State Clearinghouse No. 2012092029. (2018)

Greenhorn Creek Aggregate Mining Expansion Project, Hansen Brothers, Placer County, California. Conducted a habitat assessment, delineation of environmentally sensitive areas, and visual encounter surveys for foothill yellow-legged frog. Performed biological monitoring and aquatic species rescue including the successful relocation of more than 1,000 foothill yellow-legged frog individuals (froglets and larvae), and other aquatic fish and amphibian species in accordance with CDFW SAA No. 1600-2017-0074-R2 and ITP No. 2081-2017-050-02 A1. (2017)

Transportation

U.S. Highway 50 Camino Safety, California Department of Transportation (Caltrans), El Dorado County, California. Performed a baseline biological field assessment and drafted a biological technical memorandum to update the initial study/mitigated negative declaration. (2020–2021)

Gold Country Home Owners Association Indian Creek Horse/Foot Bridge Repair, R.E.Y. Engineers, Inc., Confidential Client, El Dorado County, California. As project manager and lead biologist, conducted biological resource surveys for foothill yellow-legged frog, western pond turtle, and other special-status species. Composed contract materials, coordinated with client and CDFW, and resubmitted a completed Notification of LSAA. (2020-2021)

Gold Country Home Owners Association 2020 Culvert Maintenance, R.E.Y. Engineers, Inc., Confidential Client, El Dorado County, California. As project manager and lead biologist, provided coordination between client and CDFW, conducted baseline biological and pre-construction surveys for foothill yellow-legged frog and other special-status species, and prepared compliance reports and SAA verification request forms. (2020–2021)

Penryn Road at Secret Ravine Repair, Placer County Department of Public Works and Facilities, Placer County, California. Served as biologist for a storm-damaged culvert replacement project. Coordinated with the U.S. Army Corps of Engineers regarding Section 7 consultation for salmon and steelhead. Conducted post-construction and annual monitoring surveys for western pond turtle and salmonids. (2018–2019)

CR40 LWB Replacement Over Cache Creek, MGE Engineering, Inc., Yolo County, California. As project manager and lead biologist, performed a biological field assessment, wetland delineation, and pre-construction surveys for birds, bats, foothill yellow-legged frog, western pond turtle, and valley elderberry longhorn beetle. Prepared the preliminary environmental study, the natural environmental study, and the aquatic resource delineation report. Incorporated mitigation from Yolo County HCP. (2018–2021)

Crosby Herold Road Bridge Replacement at Doty Creek Ravine, Placer County Department of Public Works and Facilities, Placer County, California. Managed Environmental Commitments Record (ECR) and contract materials for the Crosby Herold Road bridge replacement. Implemented compliance with CEQA/NEPA measures via work notifications. Conducted pre-construction surveys for California red-legged frog, western pond turtle, nesting birds, and other special-status species. Conducted WEAP training and monitoring of in-water work. Mitigation met Placer County HCP standards. LSA No. 1600-2020-0128-R2; USFWS Biological Opinion No. 08ESMF00-2015-F-0296-1. (2020–2021)

Diamond Springs Parkway Phase 1A, Caltrans, El Dorado County, California. As project manager and USFWS qualified biologist, conducted pre-construction surveys for California red-legged frog, bats, and nesting birds. Conducted WEAP training and biological monitoring within wetlands. Coordinated with County and contractor for permit compliance. LSA No. 1600-2016-0217-R2; USFWS Letter of Concurrence No. 08ESMF00-2016-I-1769. (2019–2021)

Tuolumne County On-Call Environmental Services Contract, Tuolumne County, California. As project manager and lead biologist, conducted pre-construction bat (observed), nesting avian (observed), revegetation, and biannual weed surveys for Tuolumne County and composed associated compliance reports. (2020)

Butte Fire Road Recovery Culvert Replacement, Calaveras County, California. As project manager and lead biologist, coordinated with client and CDFW for the SAA; conducted pre- and post-construction surveys for California red-legged frog, nesting birds, and other special-status species; and composed compliance reports. LSA No. 1600-2020-0076-R2. (2020)

Interim Indian Gulch Bridge, Mariposa County, California. As project manager and lead biologist, composed contract and WEAP training materials; coordinated with client; conducted pre-construction surveys for California red-legged frog (observed five individuals), nesting birds, and other special-status species; and provided compliance reports. (2020)

Jacksonville Road Crossing Tuolumne River Bridge Preventive Maintenance Program, Tuolumne County, California. As lead biologist, conducted emergence and pre-construction surveys for roosting bats and nesting birds, positively detected a roosting bat colony. Composed survey reports. LSA No. 1600-2016-0156-R4. (2019–2020)

Highspeed Rail (Merced to Fresno), Madera County, California. Conducted data analysis and assisted in the preparations of amendments for Section 404 of the Clean Water Act (CWA), Section 401 WQC, Section 1602 SAA, Section 2081 ITP, and Section 7 biological opinion. (2019)

Storm Damage Repair Projects, El Dorado County Department of Transportation, El Dorado County, California. Served as assistant project manager and biologist for multiple emergency road and bridge repairs throughout El Dorado County. Conducted compliance surveys (pre- and post-construction) and/or protocol surveys for special-status species, including nesting birds, California spotted owl, California red-legged frog, Sierra Nevada yellow-legged frog, and foothill yellow-legged frog. Managed the biological field staff, coordinated with USFS, and attended County/contractor kickoff meetings. Prepared the biological technical reports, environmental trainings, resource permit applications, and ECR. Projects are listed below. (2018–2021)

- **Union Mine Culvert Repair, Caltrans, El Dorado County, California.** As project manager and lead biologist, provided a biological desktop analysis for initial biological assessment at the request of the County and in compliance with the Notification of LSA Application. (2020–2021)
- **Clear Creek Road Bridge Replacement (0.25 and 1.82), Caltrans, El Dorado County, California.** As project manager and lead biologist, coordinated with client and permitting agencies, created survey protocol for foothill-yellow legged frog, conducted pre- and post-construction surveys and bat emergence surveys, provided WEAP training, composed and implemented the fish and aquatic species relocation plan, and provided compliance reports. Successfully relocated brown trout (*Salmo trutta*) and other aquatic species. LSA Nos. 1600-2019-0101-R2 and 1600-2019-0101-R2. (2020–2021)
- **Greenstone Road at Slate Creek Bridge Replacement, Caltrans, El Dorado County, California**. As project manager and CDFW qualified biologist, created survey protocol and conducted pre-construction surveys for foothill yellow-legged frog, western pond turtle, nesting birds, and special-status plants. Conducted WEAP training and post-construction survey and prepared survey reports. LSA No. 1600-2018-0093-R2. (2019–2020)

- **Bucks Bar Road Sinkhole Repair, Caltrans, El Dorado County, California.** Assisted with project completion memoranda in accordance with California Fish and Game Code Section 1610 Emergency Notification, CWA Section 404 Regional General Permit #8, and CWA Section 401 Notice of Intent. Conducted abbreviated biological assessment for California red-legged frog and prepared ECR package. (2019-2020)
- **Newtown Road Slide Repair, Caltrans, El Dorado County, California.** Assisted with project completion memoranda in accordance with California Fish and Game Code Section 1602 SAA Notification, CWA Section 404 Regional General Permit No. 8, and CWA Section 401 Notice of Intent. Prepared ECR package. (2018)
- **White Meadow Road Repair, Caltrans, El Dorado County, California.** Conducted USFS protocol surveys for California spotted owl. (2018–2019)
- **Pony Express Road Slip Repair, Caltrans, El Dorado County, California.** Assisted with project completion memoranda in accordance with California Fish and Game Code Section 1602 SAA Notification, CWA Section 404 Regional General Permit No. 8, and CWA Section 401 Notice of Intent. Prepared ECR package. (2018)

East Zayante Road Bridge (36C-142) at Zayante Creek Maintenance, Caltrans, Santa Cruz County, California. Prepared a construction-related noise technical memorandum. (2018)

Bucks Bar Road Bridge (25C-0003) at North Fork Cosumnes River, Caltrans, El Dorado County, California. Conducted a historical aerial analysis for the EIR and natural environmental study. (2018)

Crabtree Road over Dry Creek Bridge Replacement, Stanislaus County, California. Prepared farmland memorandum and associated attachments. (2018)

Water/Wastewater

Murphys Sanitary District Wastewater Treatment Plant: Maintenance and Improvement, Town of Murphys, California. Conducted pre-construction surveys for western pond turtle, California red-legged frog, nesting birds, and other special-status species. Composed compliance reports. (2020–2021)

Sloan Dam and Reservoir, Confidential Client, El Dorado County, California. As project manager and lead biologist, produced contract materials, coordinated with client, conducted biological resources survey, and composed report in accordance with County applications. (2020)

Union Public Utilities District Water Storage Tank, Calaveras County, California. Prepared the aquatic resource delineation report and assisted in preparation of the biological assessment. (2018)

Snowshoe Waterline Replacement, Calaveras County Water District, Calaveras County, California. Assisted with preparation of the biological resource evaluation. (2018)

City of Ukiah Recycled Water, Mendocino County, California. Conducted pre-construction surveys for foothill yellow-legged frog, western pond turtle, nesting birds, and birds of prey, as well as and presence/absence surveys and identification of fish, amphibian, and turtle species in accordance with the SAA. Provided biological monitoring and daily reports for the installation of a water pipeline near a creek. (2018)

Specialized Training and Education

- Crotch's Bumble Bee Training. Identification, life history, handling, etc. (16 hours total/8 field). Capture and ID of 5+ bumble bee species. Conducted under handling biologist Callie Amoaku.
- California Red-Legged Frog Master Workshop (inc. western pond turtle, California tiger salamander, and foothill yellow-legged frog), Petaluma, California. February 2024-Ongoing.
- Identification and Rehabilitation of Local Bats, Tri County Wildlife Care/NorCal Bats. December 2023.
- California Red-Legged Frog Level I Workshop, Petaluma, California. July 2023.
- Western Pond Turtle Nesting Workshop, Martinez, California. June 2023.
- Rare Pond Species Survey Techniques Workshop (western pond turtle, California tiger salamander, California red-legged frog, and foothill yellow-legged frog), Santa Rosa, California. March 2023.
- California Tiger Salamander (Sonoma Distinct Population Segment) Terrestrial Ecology Workshop, Santa Rosa, California. March 2023.
- Bat Rehabilitation: Common Injuries in Insectivorous Bats. September 2023.
- Introduction to Bat Rehabilitation. August 2023.
- Using Wildlife Audio Recorders, The Wildlife Society Riverside. Hands-on workshop. Set up Song Meter Micro, Mini, Mini Bat recorders and application for audial wildlife monitoring. February 2023.
- Bat Rehabilitation: Caring for Mothers and Pups, Introduction to Bat Rehabilitation. May 2023.
- Baby Songbird Rehabilitation Training, Sierra Wildlife. 2022–2023.
- Western Section Wildlife Society 70th Annual Conference, Riverside, California. February 2023.
- CEQA Basic Workshop (SMUD and AECOM), Association of Environmental Professionals. 2023.
- Wildlife Rehabilitation Intro Courses: Raptors; Adult Songbirds; Corvids; Foxes; Coyotes, Bobcats, and Skunks; Rabbits; and Opossums. Spring 2022 and 2012.
- Yosemite Toad Field Identification. USFS, 2018.
- University of California (UC), Davis Extension Courses: Streambank Assessment and Restoration Wetlands Regulation and Mitigation; Writing for Planners, Engineers, and Policymakers. 2016–2017.
- Bird Mist Netting, Ornithology UC Berkeley, Blue Oak Ranch Reserve, San Jose, California. Net setup, handling, biometrics, and identification. March 2015.
- Field Entomology, UC Berkeley, Ants – Pepperwood Preserve, Santa Rosa, California; Spiders – Angelo Coast Range Reserve, Mendocino Co., California. Identification, collection, and preservations methods. 2014–2016.
- Bat Mist Netting, Mammalogy UC Berkeley, Sagehen Creek Field Station and Chilcoot, California. Net setup, handling, biometrics, and identification. September and October 2014.
- Small Mammal Trapping, Mammalogy UC Berkeley, Sagehen Creek Field Station and Hastings Natural History Reservation. Trap setup and checks, handling, biometrics, identification, museum specimen preparation. September and October 2014.
- Level 2 Blunt-Nosed Leopard Lizard Biologist – Protocol Level Surveys. 2012–2014.

Volunteer Experience

- Tiger Salamander Migration Management, Travis Airforce Base. California Tiger Salamander Relocation Volunteer, Solano County, California. Relocation of California tiger salamander to safe corridors for migration to and from upland and aquatic habitat. Includes pitfall trap and fencing maintenance.

Incidental observations and relocation of other non-listed amphibians, reptiles, and small mammals. California tiger salamander life stages: Breeding and non-breeding adults, and metamorphs. Observed 200+ individuals and handled 40+ individuals.

- Wildlife Rehabilitation Training and Lead. Volunteer and board member for a non-profit organization that rehabilitates injured and orphaned wildlife. Handles, feeds, and medically treats a range of wildlife daily, in home and on site, including bats, birds and raptors, and mammals. Ensures compliance with facility permits/agreements from USFWS, U.S. Department of Agriculture, and CDFW. 2023–Present.
  - Sierra Wildlife Rescue, Diamond Springs, California. In-home Wildlife Rehabilitator for bats (Team Lead), raptors, corvids, opossums, skunks, fox, coyote, and bobcat; Education/Public Outreach Team, Wildlife Transportation Coordinator, and Board Member. 2022–Present.
  - California Living Museum, Bakersfield, Kern County, California. Wildlife Rehabilitator. 2012–2013.
- CDFW Bat Fest. Sacramento, California. Volunteered on the CDFW bat identification team for deceased bats submitted by Animal Services throughout the state. Handled 60+ bats, approximately 10+ species. 4+ hours. February 2024
- Yolo Causeway Bat Count, Yolo Causeway, Yolo County, California. Participated in bat count training, conducted bat inventory surveys via visual encounters using high power flashlights and binoculars, and estimated guano coverage along transects. Observed and documented approximately 3,300 adult and juvenile Mexican free-tailed bats (*Tadarida brasiliensis*) during counts in June and August. 2021.

Awards

- Biology Department Award, 2014.
- Chemistry Top-of-Class Award, 2011 and 2012.
- A+Stem Scholarship, 2013–2014.
- Norman Levan Scholarship, 2014.
- KC Mineral Society Scholarship, 2014.
- Rotary Club Scholarship, 2014.
- Forestry Department Scholarships, 2014.
- UC Berkeley Scholarships, 2014–2016.

Surveying and Monitoring Hours for Relevant Species*

Species	Surveying Hours	Monitoring Hours	Handling Hours	Notes
Bat species	40	200	150	Bat emergence surveys and monitoring of active roosts. Monitoring included WEAP. Sierra Wildlife Rescue Bat Rehabilitation Lead 2022–Present. Yolo Causeway Bat Count, Yolo Causeway, 2021. Bat Mist Netting, UC Berkeley NorCal Field Sites Mammalogy, 2014.
Burrowing owl	500	1,500	2	Habitat assessments, protocol surveys, exclusion, and construction monitoring.

Surveying and Monitoring Hours for Relevant Species*

Species	Surveying Hours	Monitoring Hours	Handling Hours	Notes
				Positive identification of active burrows and owls, including fledglings. Monitoring included WEAP. Triaged/handled one adult individual through Sierra Wildlife Rescue, summer 2022.
California red-legged frog	60	80	20	Adult eye-shine surveys, pre-construction surveys, protocol site assessments, and construction monitoring. Positive identification and/or handling of adults. Monitoring included WEAP.
California tiger salamander	500	1,000	30	Larval surveys, pre-construction surveys, and construction monitoring. Observed 900+ individuals. Handled 100+ larvae, 100+ metamorphs/juveniles, and 10+ adults under the supervision of permitted biologists. Monitoring includes WEAP.
Desert tortoise	0	0	100	Awaiting Desert Tortoise Keeper Permit from CDFW. Handled one hatchling/juvenile individual.
Foothill (and Sierra Nevada) yellow-legged frog	80	32	16	Visual encounter surveys, pre-construction surveys, and habitat assessments. Positive identification and handling/relocation of more than 1,000 froglets and larvae. Monitoring includes WEAP.
Giant garter snake	400	400	0	Pre-construction surveys, habitat assessments, and monitoring. Observed three individuals in Sacramento County (Natomas Basin and Baseline/W Riego Road).
Great gray owl	40	0	0	Protocol nighttime point call surveys
Nesting birds and raptors	3,000+	500+	750+	Pre-construction surveys and nest monitoring prior to and during construction. Raptor and bird rehabilitator, Sierra Wildlife Rescue, 150+ individuals. Bird Mist Netting, UC Berkeley NorCal Field Sites Ornithology, 2015.
Salmonids	40	40	8	Pre-construction surveys and habitat assessments. Relocation of brown trout in Clear Creek. Steelhead observed in Secret Ravine.
San Joaquin kit fox	1,300+	100+	0	Experience in den identification and mapping, track dusting, and camera trapping.

Surveying and Monitoring Hours for Relevant Species*

Species	Surveying Hours	Monitoring Hours	Handling Hours	Notes
				Surveys conducted in accordance with Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance USFWS, 2011, and San Joaquin Multi-Species Habitat Conservation and Open Space Plan, November 2000. Enclosure maintenance at California Living Museum. Observed 2 adults and 2 pups.
Spotted owl	16	0	40	Protocol nighttime point call surveys. Ongoing handling of Sierra Wildlife Rescue California spotted owl education ambassador (Whisper).
Swainson's hawk	750	750	0	Protocol surveys, pre-construction surveys, and nest monitoring prior to and during construction. Positive detection of multiple active nests and more than 150 hawks, including fledglings (light and dark morphs).
Valley elderberry longhorn beetle	500	500	0	Pre-construction surveys. Positive identification of shrubs with suitable exit holes.
Vernal pool branchiopods	100	200	*0	*Dry season surveys.
Western pond turtle	400	500	10	Pre-construction surveys, habitat assessments, aquatic and upland nest surveys, and construction monitoring. Positive detection of more than 40 individuals and 2 nests/eggs. Handled 12 adults and 5 hatchlings/juveniles.
Willow flycatcher	30	0	0	Protocol-level surveys.
Yosemite toad	30	0	2	Presence/absence surveys; USFS on-site training. Observed 1,000+ larvae and handled 15 froglet individuals.

Notes:
* Hours are approximate.

Emily Scricca

BIOLOGIST

Emily Scricca is a wildlife biologist with 8 years' field experience providing biological monitoring and conducting surveys for numerous species, including burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsonii*), least Bell's vireo (*Vireo bellii pusillus*), tricolored blackbird (*Agelaius tricolor*), western snowy plover (*Charadrius alexandrines*), California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), western pond turtle (*Actinemys marmorata*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), and San Joaquin kit fox (*Vulpes macrotis*). Ms. Scricca possesses a federal 10(a)1(A) recovery permit for California tiger salamander. From her various positions in California, Ms. Scricca has strong knowledge of California flora and fauna and is well versed in environmental survey and sampling techniques. She has extensive experience conducting nesting bird surveys and a demonstrated ability to identify birds by sight and sound.

Ms. Scricca has a working knowledge of regulatory permitting processes including; National Environmental Policy Act, California Environmental Quality Act, federal Endangered Species Act, California Fish and Game Code, Lake and Streambed Alteration Agreements, Migratory Bird Treaty Act, and Clean Water Act. Additionally, she is a detail-oriented, effective communicator, and has prepared numerous technical reports in support of the environmental review and permitting processes for dozens of projects.

Education

San Jose State University MS, Environmental Studies, 2017

University of Vermont BS, Animal Sciences, 2010

Certifications

USFWS, Section 10(a)(1)(A) Native Endangered and Threatened Species Recovery Permit, No. TE45251C-0

- *California tiger salamander*

CDFW, Memorandum of Understanding, Scientific Collecting Permit, No. SC-013755

- *California Tiger Salamander*

Professional Affiliations

National Wildlife Federation

San Francisco Bay Bird Observatory

The Wildlife Society

Western Bird Banding Association

Project Experience

Development

Riparian Setback Analysis Project, San Jose, California. Conducted a riparian habitat and setback analysis for a small commercial development site adjacent to Ross Creek in San Jose, California. Prepared an extensive Riparian Setback Analysis Report and Alternatives Analysis specific to the City of San Jose's Riparian Corridor Policy Study and Condition 11 in chapter 6 of the Santa Clara Valley Habitat Plan. (January 2018–February 2019)

Virginia Smith Trust, Campus Community North Phase 6, and 2020 Projects, University of California, Merced, Merced County, California. The UC Merced Virginia Smith Trust, Campus and Community North Projects are the development of an 810-acre campus and associated 835-acre university community neighborhood, combined with preservation of over 26,000 acres of mitigation lands in the project vicinity. Conducted pre-construction surveys for California tiger salamander, San Joaquin kit fox, burrowing owl, and succulent owl's clover (*Castilleja campestris* ssp. *succulenta*) on the project site lands. Also conducted protocol-level surveys for Swainson's hawk, and monitored active Swainson's hawk nests onsite. Served as a designated biologist (CDFW) and an approved

biologist (USFWS) for the construction of the campus and monitored construction activities to ensure compliance with the project's environmental documents and permits (USFWS Biological Opinion, CDFW Incidental Take Permit, EIR, 401 and 404, etc.). In addition to pre-construction surveys and biological monitoring, provided daily environmental awareness trainings to construction personnel, and supervised the installation of one-way CTS exclusion fencing. (June 2017–January 2019)

East Garrison Housing Development, Monterey, California. The project is the development of single-family residences, parks, and other community areas that will be constructed in several phases over a 10-year period on an approximately 240-acre site within East Garrison, formerly Fort Ord. Serves as a designated biologist for this this project, which is regulated underneath a CDFW 2081 ITP. Conducted onsite preconstruction surveys, construction monitoring, and training targeting the protection of CTS, nesting birds, and roosting bats. Provided project personnel environmental awareness trainings for all project staff, conducted onsite compliance monitoring, species entrapment inspections, species relocations, passive bat exclusions, nest buffer establishment, and agency reporting on an annual, quarterly, and species-observation basis. (December 2016–January 2019)

McCarthy Ranch Sprig Center and McCarthy Creekside Phase II, Milpitas, California. Conducted protocol-level burrowing owl surveys for the McCarthy Ranch projects under the 2012 CDFW guidelines. Additionally, provided biological training to construction personnel and distributed results of the surveys to construction managers in written reports. (June 2018–October 2018)

VTA Highway 237 Express Lanes Phases I and II, San Jose, California. Conducted protocol-level burrowing owl surveys for the Highway 237 Express Lane project under the 2012 CDFW guidelines as well as the Santa Clara Valley Habitat Conservation Plan protocol. Additionally, provided biological training to construction personnel and monitored installation of Environmentally Sensitive Area fencing. (March–June 2018)

Communications Hill Housing Development Phase II, San Jose, California. Conducted protocol-level burrowing owl surveys for the Communications Hill Phase II development project under the 2012 CDFW guidelines as well as the Santa Clara Valley Habitat Conservation Plan protocol. Established exclusion barriers around active burrowing owl burrows, and monitored burrows during construction activities. Additionally, provided biological training to construction personnel. (August 2017–January 2018)

Sellers Avenue Subdivision Map Project, Brentwood, California. Conducted protocol-level burrowing owl and Swainson's hawk surveys for the Sellers Avenue Subdivision Map project under the 2012 CDFW guidelines as well as the East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan. Additionally, established construction-free buffers around active bird nests, and distributed results of the surveys to construction managers in written reports. (August 2017)

Arcadia Evergreen Subdivision Project, San Jose, California. Prepared a private application package for the 64-acre housing subdivision site for Santa Clara Valley Habitat Plan coverage. Calculated land cover and burrowing owl fees, for the project applicant. Conducted protocol-level burrowing owl surveys for the Arcadia Evergreen Subdivision project under the 2012 CDFW guidelines as well as the Santa Clara Valley Habitat Conservation Plan protocol. (May–November 2017)

Education

Pleasant Hill Library Project, Contra Costa County, California. Conducted a biological constraints analysis for the 15-acre Pleasant Hill Library site. Potential constraints identified for future buildout of the site included potential impacts to nesting birds and raptors, identification of the East Fork of Grayson Creek as a potential water of the United States, and City of Pleasant Hill creek setback ordinances. (January–February 2018)

Energy

Maricopa Sun, LLC, Habitat Conservation Plan, Kern County, California. Conducted protocol-level blunt-nosed leopard lizard (*Gambelia sila*) and Nelson's antelope squirrel (*Ammospermophilus nelson*) surveys at various HCP sites for the Maricopa Sun LLC solar project. Also provided biological monitoring under the direct supervision of an authorized USFWS designated biologist for blunt-nosed leopard lizard, western spadefoot toad (*Spea hammondii*), San Joaquin coachwhip (*Coluber flagellum ruddocki*), San Joaquin antelope squirrel, Tipton's kangaroo rat (*Dipodomys nitratoides nitratoides*), burrowing owl, and other covered species for trash removal at the 10-C Maricopa West project site. (June 2017 and May 2018)

Federal

Closure of Former Defense Fuel Supply Point Fuel Facility Project, Moffett Federal Airfield, Mountain View, California. Served as USFWS-Approved Biological Monitor for this project. Provided biological monitoring for burrowing owl, California least tern (*Sternula antillarum browni*), Ridgeway's rail (*Rallus obsoletus*), and salt marsh harvest mouse (*Reithrodontomys raviventris*) at the 7-acre site. This effort involved conducting protocol-level pre-construction surveys, installing one-way doors into burrows for passive relocation, installing artificial burrows for owl recruitment, implementing owl exclusion measures and monitoring of construction activities. Conducted environmental awareness trainings for field personnel, and coordinated construction activities with multiple agencies at Moffett Field. Daily observations of wildlife were collected as points, polygons, lines, and track logs on ArcGIS Collector and summarized in written reports. (February 2016–February 2017)

Municipal

Newby Island Landfill Bank Stabilization Project, San Jose, California. Assisted in the preparation of a biological evaluation report for the Newby Island Bank Stabilization project site. Conducted field evaluations in which the biotic resources of the site were determined, and evaluated the potential for green sturgeon (*Acipenser medirostris*), central California coast steelhead (*Oncorhynchus mykiss)*, California Ridgeway's rail (*Rallus obsoletus obsoletus*), and salt marsh harvest mouse (*Reithrodontomys raviventris*) to be impacted by planned project activities. The report also included an Essential Fish Habitat Assessment. (October 2018–December 2018)

Resource Management

Frantoio Grove California Tiger Salamander and California Red-Legged Frog Habitat Assessment, San Martin, California. Assisted in the preparation of a CTS and CRLF habitat assessment for the 95-acre Frantoio Grove property in San Martin, California. Evaluated the existing conditions and habitat assessment of the site, distribution of CTS and CRLF in the region, surrounding aquatic habitats, and likelihood of CTS and CRLF occurring on the site. The purpose of this assessment was to provide the USFWS with sufficient information so that the agency may conclude that CTS and CRLF are not present on the site. (October 2017–February 2018)

Sargent Ranch Quarry, Gilroy, California. Performed aquatic seine-net surveys for California tiger salamander and California red-legged frog in multiple stock ponds of the mitigation areas of the Sargent Ranch site. Data collected was compiled and summarized in a written report for project client. (May 2017)

Water/Wastewater

In-House Water Utility Maintenance Projects, Santa Clara Valley Water District, Santa Clara County, California. Projects included, but were not limited to annual maintenance on reservoirs, vegetation management and abatement, treatment plant and various facility upgrades, pipeline maintenance, and tree removal. Provided biological monitoring for California tiger salamander, California red-legged frog, western pond turtle, burrowing owl, Least Bell's vireo, tricolored blackbird, San Francisco dusky-footed woodrat and San Joaquin kit fox at various project sites. These efforts involved conducting pre-construction biological surveys, grassland and wetland bird surveys, permit review, environmental impact assessment, and writing technical reports. Additionally, used GIS to ground-truth construction footprints and calculated land cover fees in compliance with the Santa Clara Valley Habitat Conservation Plan. (September 2015–February 2017)

Specialized Training

- **Fifty Plant Families in the Field: San Francisco Bay Area, Jepson Herbarium, March 2018.** Attended a four day workshop introducing the flora of the San Francisco Bay area and the techniques used to identify plants of California. Emphasis was on learning to recognize characteristics of the Bay Area's plant families. The workshop included practice keying plants in the field using the third edition of the book Plants of the San Francisco Bay Region: Mendocino to Monterey.
- **Rare Pond Species Survey Techniques Workshop, Laguna de Santa Rosa Foundation, March 2017.** Workshop covered species biology and survey technique for California red-legged frog, California tiger salamander, and western pond turtle. Field trips provided hands-on experience with all three species, including dip net sampling, spotlight surveys, and visual encounter and trapping.
- **Amphibians of the San Francisco Bay Area Workshop, Laguna de Santa Rosa Foundation, November 2016.** Workshop provided an overview of the life history, ecology and conservation, identification features, range and distribution, habitat requirements, and behavior of frogs, toads, and salamanders that occur in the San Francisco Bay Area. Workshop also included a field trip to Fairfield Osborn Preserve on Sonoma Mountain for hands-on experience.
- **CEQA Essentials Workshop, Association of Environmental Professionals, November 2016.** Workshop provided a basic understanding of the fundamentals of the California Environmental Quality Act and the State Guidelines, and included intermediate-level practice pointers and case studies.
- **First Aid Wilderness and CPR Certification Training, Santa Clara Valley Water District, July 2016.**
- **California Tiger Salamander Terrestrial Ecology Workshop, Laguna de Santa Rosa Foundation, March 2016.** Workshop covered terrestrial ecology, land use management, and regulations of the California tiger salamander (CTS). Reviewed the biology, upland habitat use, and migration patterns of CTS, the theory and design of roadway tunnels to facilitate safe passage of migrating salamanders; design of pitfall trap arrays; survey protocols; and implementing and monitoring land use management practices. Field trips provided pitfall trap and fence array construction training and hands-on experience.

Publications

Moffitt, Emily. 2017. Using Stable Isotope Analysis to Infer Breeding Latitude and Migratory Timing of Juvenile Pacific-slope Flycatchers (Empidonax difficilis). M.S. Thesis, San Jose State University.

Presentations

"Preparing Feather Samples for Stable Isotope Analysis: Basic Principles and Techniques", 2016. Presented at the Western Bird Banding Association Annual Meeting. Point Reyes Station, California.

Awards

Outstanding Thesis of the Year Award, San Jose State University, 2017–2018, for superior quality of research and presentation.

Appendix D

Plant and Wildlife Species Compendium

Plant Species

Vascular Species

Eudicots

AMARANTHACEAE – AMARANTH FAMILY

* *Amaranthus albus* – prostrate pigweed

APOCYNACEAE – DOGBANE FAMILY

Asclepias fascicularis – Mexican whorled milkweed

ASTERACEAE – SUNFLOWER FAMILY

Blepharizonia plumosa – big tarplant
* *Carduus pycnocephalus* – Italian plumeless thistle
* *Centaurea calcitrapa* – red star-thistle
* *Centaurea solstitialis* – yellow star-thistle
* *Cynara cardunculus* – cardoon
* *Grindelia squarrosa* – curlycup gumweed

Holocarpha virgata – yellowflower tarweed

Isocoma acradenia – alkali goldenbush
* *Lactuca serriola* – prickly lettuce

Lasthenia sp. – unidentified goldfield species
* *Silybum marianum* – blessed milkthistle

Xanthium spinosum – spiny cocklebur

BORAGINACEAE – BORAGE FAMILY

Amsinckia intermedia – common fiddleneck

Heliotropium curassavicum – salt heliotrope

Plagiobothrys canescens – valley popcornflower

BRASSICACEAE – MUSTARD FAMILY

* *Brassica nigra* – black mustard

CHENOPODIACEAE – GOOSEFOOT FAMILY

* *Atriplex prostrata* – fat hen

Atriplex sp. – unidentified Atriplex species
* *Salsola tragus* – prickly Russian thistle

CONVOLVULACEAE – MORNING-GLORY FAMILY

* *Convolvulus arvensis* – field bindweed

EUPHORBIACEAE – SPURGE FAMILY

Croton setiger – dove weed

FABACEAE – LEGUME FAMILY

Lupinus microcarpus – valley lupine
Lupinus sp. – unidentified lupine species
Trifolium sp. – unidentified clover species

GERANIACEAE – GERANIUM FAMILY

* *Erodium botrys* – longbeak stork's bill
Erodium cicutarium – redstem stork's bill

LAMIACEAE – MINT FAMILY

* *Marrubium vulgare* – horehound

MALVACEAE – MALLOW FAMILY

Malvella leprosa – alkali mallow

OROBANCHACEAE – BROOM-RAPE FAMILY

Castilleja exserta – exserted Indian paintbrush

POLYGONACEAE – BUCKWHEAT FAMILY

* *Rumex crispus* – curly dock

SALICACEAE – WILLOW FAMILY

Populus fremontii – Fremont cottonwood

VERBENACEAE – VERVAIN FAMILY

Verbena lasiostachys – western vervain

Monocots

CYPERACEAE – SEDGE FAMILY

Bolboschoenus maritimus – salt marsh bulrush
Eleocharis sp. – unidentified spikerush species

POACEAE – GRASS FAMILY

* *Avena fatua* – wild oat
* *Bromus diandrus* – ripgut brome
* *Bromus rubens* – red brome
Distichlis spicata – salt grass
* *Festuca perennis* – perennial rye grass
Festuca sp. – unidentified fescue species

* *Hordeum murinum* – mouse barley
* *Poa bulbosa* – bulbous bluegrass
* *Polypogon monspeliensis* – annual rabbitsfoot grass

THEMIDACEAE – BRODIAEA FAMILY

Brodiaea elegans – harvest brodiaea

Dipterostemon capitatus – bluedicks

Triteleia laxa – Ithuriel's spear

Wildlife Species

Amphibians

Frogs

HYLIDAE – TREEFROGS

Pseudacris sierra – Sierran treefrog

Birds

Blackbirds, Orioles and Allies

ICTERIDAE – BLACKBIRDS

Agelaius phoeniceus – red-winged blackbird

Agelaius tricolor – tricolored blackbird

Sturnella neglecta – western meadowlark

Falcons

FALCONIDAE – CARACARAS AND FALCONS

Falco sparverius – American kestrel

Finches

FRINGILLIDAE – FRINGILLINE AND CARDUELINE FINCHES AND ALLIES

Haemorhous mexicanus – house finch

Flycatchers

TYRANNIDAE – TYRANT FLYCATCHERS

Tyrannus verticalis – western kingbird

Hawks

ACCIPITRIDAE – HAWKS, KITES, EAGLES, AND ALLIES

Buteo jamaicensis – red-tailed hawk

Jays, Magpies and Crows

CORVIDAE – CROWS AND JAYS

Corvus corax – common raven

Larks

ALAUDIDAE – LARKS

Eremophila alpestris – horned lark

New World Vultures

CATHARTIDAE – NEW WORLD VULTURES

Cathartes aura –turkey vulture

Pigeons and Doves

COLUMBIDAE – PIGEONS AND DOVES

Zenaida macroura – mourning dove

Shorebirds

CHARADRIIDAE – LAPWINGS AND PLOVERS

Charadrius vociferus – killdeer

Starlings and Allies

STURNIDAE – STARLINGS

* *Sturnus vulgaris* – European starling

Waterfowl

ANATIDAE – DUCKS, GEESE, AND SWANS

Anas platyrhynchos – mallard

Lophodytes cucullatus – hooded merganser

Wood Warblers and Allies

PARULIDAE – WOOD-WARBLERS

Setophaga coronata – yellow-rumped warbler

New World Sparrows

PASSERELLIDAE – NEW WORLD SPARROWS

Passerculus sandwichensis – savannah sparrow

Mammals

Canids

CANIDAE – WOLVES AND FOXES

Canis latrans – coyote

Squirrels

SCIURIDAE – SQUIRRELS

Otospermophilus beecheyi – California ground squirrel

Reptiles

Lizards

PHRYNOSOMATIDAE – IGUANID LIZARDS

Sceloporus occidentalis – western fence lizard

* signifies introduced (non-native) species

Appendix E
Photo Record

Photo 1. Non-native annual grasslands, March 2023.

Photo 2. Non-native annual grasslands and site topography, March 2023.

Photo 3. Exposed bedrock within non-native annual grasslands, March 2023.

Photo 4. Rocky outcrops that may provide nesting habitat for native bumble bees, March 2023.

Photo 5. Stock pond (Pond 1) west of the Project site, March 2023.

Photo 6. Stock pond (Pond 2) west of the Project site, March 2023.

Photo 7. Pond 1 at the start of August 2023, with very little water remaining.

Photo 8. Pond 2 at the start of August 2023, with considerable water remaining.

Photo 9. Patterson Run (EPH-01) with moderate flow in March 2023.

Photo 10. Patterson Run (EPH-01) with dry streambed at the start of August 2023.

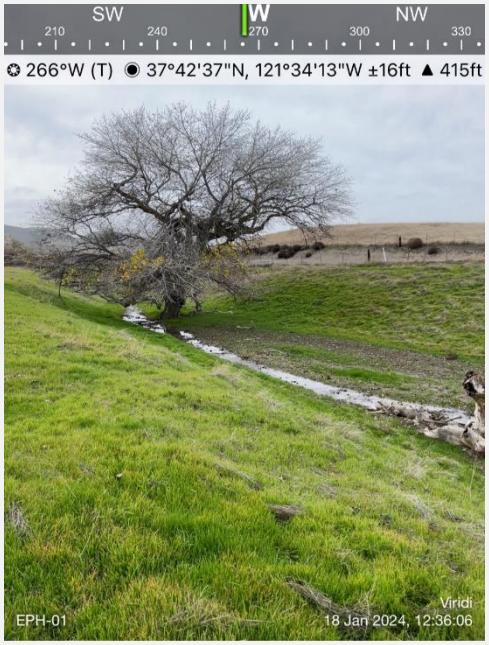

Photo 11. Patterson Run (EPH-01) with moderate flow in January 2024.

Photo 12. Patterson Run (EPH-01), deep channel near Patterson Pass Road in January 2024.

Photo 13. Non-native annual grassland habitat on the generation-tie alignment, August 2023.

Photo 14. Example of a small mammal burrow with large soil tailing present on the Project site, August 2023.

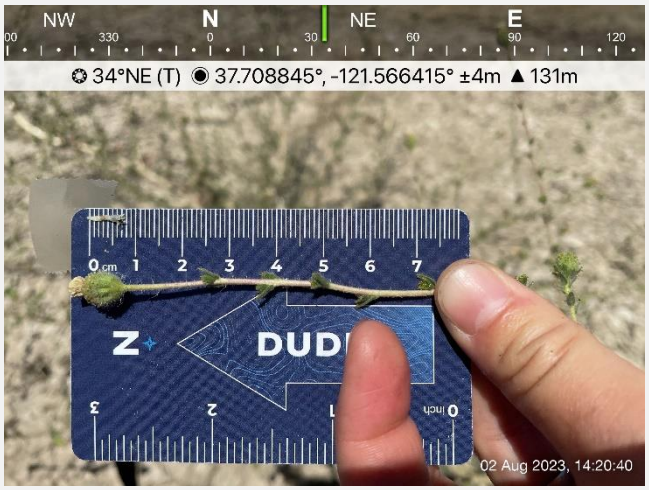

Photo 15. Sample of big tarplant, *Blepharizonia plumosa*, blooming in August 2023.

Photo 16. Flower of big tarplant, *Blepharizonia plumosa*, August 2023.

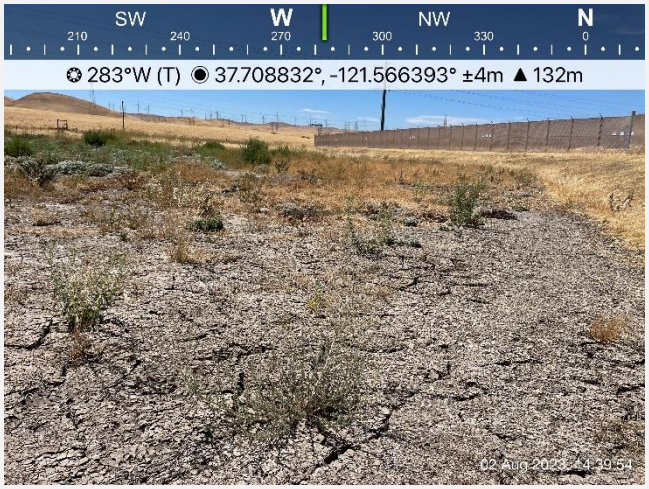

Photo 17. Grassland wash/swale microhabitat surrounding the big tarplant, near the southwest corner of the PG&E substation.

Photo 18. Similar grassland wash/swale microhabitat surrounding two additional big tarplants found on the Project site.

Appendix F

Special-Status Species Potential to Occur within the Project Study Area

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Plants				
Allium sharsmithiae	Sharsmith's onion	None/None/1B.3/No	Chaparral, Cismontane woodland; Rocky, Serpentinite/perennial bulbiferous herb/Mar–May/1,310–3,935	**Not expected to occur.** The site is outside of the species' known elevation range.
Amsinckia grandiflora	large-flowered fiddleneck	FE/SE/1B.1/No	Cismontane woodland, Valley and foothill grassland/annual herb/(Mar)Apr–May/885–1,800	**Not expected to occur.** The site is outside of the species' known elevation range.
Arctostaphylos manzanita ssp. *laevigata*	Contra Costa manzanita	None/None/1B.2/No	Chaparral (rocky)/perennial evergreen shrub/Jan–Mar (Apr)/ 1,410–3,605	**Not expected to occur.** The site is outside of the species' known elevation range.
Astragalus tener var. *tener*	alkali milk-vetch	None/None/1B.2/No	Playas, Valley and foothill grassland (adobe clay), Vernal pools; Alkaline/annual herb/Mar–June/5–195	**Not expected to occur.** The site is outside of the species' known elevation range.
Atriplex cordulata var. *cordulata*	heartscale	None/None/1B.2/No	Chenopod scrub, Meadows and seeps, Valley and foothill grassland (sandy); Alkaline (sometimes)/annual herb/Apr–Oct/0–1,835	**Low potential to occur.** Valley and foothill grassland is present but generally lacking sandy soils. No documented occurrences within 5 miles of the Project Study Area (PSA) (CDFW 2024).
Atriplex depressa	brittlescale	None/None/1B.2/No	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools; Alkaline, Clay/annual herb/Apr–Oct/5–1,045	**Moderate potential to occur.** Suitable valley and foothill grassland present with clay soils. The nearest documented occurrence is approximately 5 miles northwest of the PSA from 2003 (Occ. No. 28; CDFW 2024).
Atriplex minuscula	lesser saltscale	None/None/1B.1/No	Chenopod scrub, Playas, Valley and foothill grassland; Alkaline, Sandy/annual herb/May–Oct/50–655	**Low potential to occur.** Valley and foothill grassland is present but generally lacking sandy soils. No documented occurrences within 5 miles of the PSA (CDFW 2024).
Balsamorhiza macrolepis	big-scale balsamroot	None/None/1B.2/No	Chaparral, Cismontane woodland, Valley and foothill grassland; Serpentinite (sometimes)/perennial herb/Mar–June/150–5,100	**Low potential to occur.** Valley and foothill grassland present but lacks serpentine soils preferred by this species. No documented occurrences within 5 miles of the PSA (CDFW 2024).
Blepharizonia plumosa	big tarplant	None/None/1B.1/Yes	Valley and foothill grassland; Clay (usually)/annual herb/July–Oct/ 100–1,655	**Known to occur.** Three individuals were found on the PSA near the southwest corner of the PG&E substation during the rare plant survey on August 8, 2023. Suitable valley and foothill grassland with clay loam soils present. The nearest documented occurrence is approximately 0.25 mile east of the PSA from 2003 (Occ. No. 15; CDFW 2024).
Calochortus pulchellus	Mt. Diablo fairy-lantern	None/None/1B.2/No	Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland/perennial bulbiferous herb/Apr–June/100–2,755	**Low potential to occur.** Valley and foothill grassland present but lacks wooded and brushy slope microhabitat preferred by this species. No documented occurrences within 5 miles of the PSA (CDFW 2024).
Caulanthus lemmonii	Lemmon's jewelflower	None/None/1B.2/No	Pinyon and juniper woodland, Valley and foothill grassland/annual herb/Feb–May/260–5,180	**Moderate potential to occur.** Suitable valley and foothill grassland present. The nearest documented occurrence is approximately 3.5 miles south of the PSA, a historical record from 1938 (Occ. No. 35; CDFW 2024).
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	None/None/1B.1/Yes	Valley and foothill grassland (alkaline)/annual herb/May–Oct(Nov)/ 0–755	**Moderate potential to occur.** Suitable valley and foothill grassland present with clay soils. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Chlorogalum pomeridianum var. *minus*	dwarf soaproot	None/None/1B.2/No	Chaparral (serpentinite)/perennial bulbiferous herb/May–Aug/ 1,000–3,280	**Not expected to occur.** The site is outside of the species' known elevation range.
Chloropyron molle ssp. *hispidum*	hispid salty bird's-beak	None/None/1B.1/No	Meadows and seeps, Playas, Valley and foothill grassland; Alkaline/annual herb (hemiparasitic)/June–Sep/5–510	**Not expected to occur**. The site lacks damp alkaline soils preferred by this species. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Chloropyron palmatum	palmate-bracted bird's-beak	FE/SE/1B.1/Yes	Chenopod scrub, Valley and foothill grassland; Alkaline/annual herb (hemiparasitic)/May–Oct/15–510	**Low potential to occur.** Valley and foothill grassland is present but the Pescadero soils preferred by this species are only a minor component of the soils on the PSA. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Cirsium fontinale var. *campylon*	Mt. Hamilton thistle	None/None/1B.2/No	Chaparral, Cismontane woodland, Valley and foothill grassland; Seeps, Serpentinite/perennial herb/(Feb)Apr–Oct/330–2,915	**Not expected to occur.** The site lacks serpentine soils preferred by this species. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Deinandra bacigalupii	Livermore tarplant	None/SE/1B.1/Yes	Meadows and seeps (alkaline)/annual herb/June–Oct/490–605	**Not expected to occur.** The site lacks suitable meadow seep habitats preferred by this species. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Delphinium californicum ssp. *interius*	Hospital Canyon larkspur	None/None/1B.2/No	Chaparral (openings), Cismontane woodland (mesic), Coastal scrub/perennial herb/Apr–June/640–3,590	**Not expected to occur.** The site lacks suitable chaparral, woodland, or scrub habitat for this species. There are no documented occurences within 5 miles of the PSA (CDFW 2024).
Delphinium recurvatum	recurved larkspur	None/None/1B.2/Yes	Chenopod scrub, Cismontane woodland, Valley and foothill grassland; Alkaline/perennial herb/Mar–June/10–2,590	**Moderate potential to occur.** There is suitable valley and foothill grassland with alkaline soils present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Eryngium spinosepalum	spiny-sepaled button-celery	None/None/1B.2/No	Valley and foothill grassland, Vernal pools/annual/perennial herb/ Apr–June/260–3,195	**Moderate potential to occur**. There is suitable valley and foothill grassland present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Eschscholzia rhombipetala	diamond-petaled California poppy	None/None/1B.1/No	Valley and foothill grassland (alkaline, clay)/annual herb/Mar–Apr/ 0–3,195	**Moderate potential to occur.** There is suitable valley and foothill grassland with alkaline clay soils present. The nearest documented occurrence is approximately 3.4 miles south of the PSA from 2012 (Occ. No. 9; CDFW 2024).
Extriplex joaquinana	San Joaquin spearscale	None/None/1B.2/Yes	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland; Alkaline/annual herb/Apr–Oct/5–2,735	**Moderate potential to occur**. There is suitable valley and foothill grassland with alkaline soils present. The nearest documented occurrence is approximately 3.8 miles northwest of the PSA from 2015 (Occ. No. 117; CDFW 2024).
Fritillaria falcata	talus fritillary	None/None/1B.2/No	Chaparral, Cismontane woodland, Lower montane coniferous forest; Serpentinite, Talus (often)/perennial bulbiferous herb/Mar–May/ 985–5,000	**Not expected to occur.** The site is outside of the species' known elevation range.
Helianthella castanea	Diablo helianthella	None/None/1B.2/No	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland; Rocky (usually)/perennial herb/Mar–June/195–4,265	**Not expected to occur.** No suitable forest, woodland, or chaparral habitats present, and only a single small rocky outcrop area within the PSA. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Hesperolinon breweri	Brewer's western flax	None/None/1B.2/No	Chaparral, Cismontane woodland, Valley and foothill grassland; Serpentinite (usually)/annual herb/May–July/100–3,100	**Not expected to occur.** No suitable chaparral or woodland habitat present, and no serpentine soils. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Hibiscus lasiocarpos var. *occidentalis*	woolly rose-mallow	None/None/1B.2/No	Marshes and swamps (freshwater)/perennial rhizomatous herb (emergent)/June–Sep/0–395	**Not expected to occur.** No suitable freshwater marsh or swamp habitat present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Hoita strobilina	Loma Prieta hoita	None/None/1B.1/No	Chaparral, Cismontane woodland, Riparian woodland; Mesic, Serpentinite (usually)/perennial herb/May–July (Aug–Oct)/100–2,820	**Not expected to occur.** No suitable chaparral or woodland habitat present, and no serpentine soils. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Legenere limosa	legenere	None/None/1B.1/No	Vernal pools/annual herb/Apr–June/5–2,885	**Not expected to occur.** Vernal pools absent. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Leptosyne hamiltonii	Mt. Hamilton coreopsis	None/None/1B.2/No	Cismontane woodland (rocky)/annual herb/Mar–May/1,800–4,265	**Not expected to occur.** The site is outside of the species' known elevation range.
Lilaeopsis masonii	Mason's lilaeopsis	None/SR/1B.1/No	Marshes and swamps (brackish, freshwater), Riparian scrub/perennial rhizomatous herb/Apr–Nov/0–35	**Not expected to occur.** The site is outside of the species' known elevation range.
Limosella australis	Delta mudwort	None/None/2B.1/No	Marshes and swamps (brackish, freshwater), Riparian scrub; Streambanks (usually)/perennial stoloniferous herb/May–Aug/0–10	**Not expected to occur.** The site is outside of the species' known elevation range.
Madia radiata	showy golden madia	None/None/1B.1/No	Cismontane woodland, Valley and foothill grassland/annual herb/ Mar–May/80–3,985	**Moderate potential to occur.** Suitable valley and foothill grassland present with clay soils. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Malacothamnus hallii	Hall's bush-mallow	None/None/1B.2/No	Chaparral, Coastal scrub/perennial deciduous shrub/ (Apr)May–Sep(Oct)/35–2,490	**Not expected to occur.** No chaparral or coastal scrub habitat present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Navarretia nigelliformis ssp. *radians*	shining navarretia	None/None/1B.2/No	Cismontane woodland, Valley and foothill grassland, Vernal pools; Clay (sometimes)/annual herb/(Mar)Apr–July/215–3,280	**Moderate potential to occur.** Suitable valley and foothill grassland present with clay soils. The nearest documented occurrence is approximately 2.1 miles south of the PSA, a historical record from 1997 (Occ. No. 61; CDFW 2024).
Phacelia phacelioides	Mt. Diablo phacelia	None/None/1B.2/No	Chaparral, Cismontane woodland; Rocky/annual herb/Apr–May/ 1,640–4,490	**Not expected to occur.** The site is outside of the species' known elevation range.
Plagiobothrys glaber	hairless popcornflower	None/None/1A/No	Marshes and swamps (coastal salt), Meadows and seeps (alkaline)/annual herb/Mar–May/50–590	**Not expected to occur.** No suitable coastal salt or alkaline meadow habitat present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Puccinellia simplex	California alkali grass	None/None/1B.2/No	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools; Alkaline, Flats, Lake Margins, Vernally Mesic/annual herb/Mar–May/5–3,050	**Low potential to occur.** Valley and foothill grassland is present, but with limited mesic areas. The nearest documented occurrence is approximately 4.4 miles northwest of the PSA, a historical record from 1958 (Occ. No. 41; CDFW 2024).
Ravenella exigua	chaparral harebell	None/None/1B.2/No	Chaparral (rocky, usually serpentinite)/annual herb/May–June/ 900–4,100	**Not expected to occur.** The site is outside of the species' known elevation range.
Senecio aphanactis	chaparral ragwort	None/None/2B.2/No	Chaparral, Cismontane woodland, Coastal scrub; Alkaline (sometimes)/annual herb/Jan–Apr (May)/50–2,620	**Not expected to occur.** No suitable chaparral, woodland, or coastal scrub habitat present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Spergularia macrotheca var. *longistyla*	long-styled sand-spurrey	None/None/1B.2/No	Marshes and swamps, Meadows and seeps; Alkaline/perennial herb/Feb–May/0–835	**Not expected to occur**. No suitable marsh or meadow habitats present. The nearest documented occurrences are approximately 3.2 miles northwest and north of the PSA, both historical records (Occ. Nos. 5 and 6; CDFW 2024).
Trifolium hydrophilum	saline clover	None/None/1B.2/No	Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools/annual herb/Apr–June/0–985	**Low potential to occur.** Valley and foothill grassland is present, but with limited mesic areas. There are no documented occurences within 5 miles of the PSA (CDFW 2024).
Tropidocarpum capparideum	caper-fruited tropidocarpum	None/None/1B.1/No	Valley and foothill grassland (alkaline hills)/annual herb/Mar–Apr/ 5–1,490	**High potential to occur.** Suitable valley and foothill grassland with alkaline soils present. The nearest documented occurrence is 0.3 mile northeast, a historical record from 1933 (Occ. No. 3). Three additional historical records are within 5 miles of the PSA (Occ. Nos. 1, 4, 11). The nearest recent occurrence is approximately 3.0 miles northwest of the PSA from 2019 (Occ. No. 27; CDFW 2024).
Wildlife				
Invertebrates				
Bombus crotchii	Crotch bumble bee	None/SCE/—/No	Open grassland and scrub communities supporting suitable floral resources.	**Moderate potential to occur.** Grassland contains scattered floral resources and nesting substrates (bare/cracked ground, small rodent burrows, small rocky areas). There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Bombus occidentalis	western bumble bee	None/SCE/—/No	Once common and widespread, species has declined precipitously from central California to southern British Columbia, perhaps from disease	**Not expected to occur.** The PSA is outside of the currently known range for this species (CDFW 2023e), and the nearest documented occurrence, approximately 4 miles south of the PSA, is from 1951 (Occ. No. 232; CDFW 2024).
Branchinecta longiantenna	longhorn fairy shrimp	FE/None/—/Yes	Sandstone outcrop pools, alkaline grassland vernal pools, and pools within alkali sink and alkali scrub communities	**Not expected to occur.** Vernal pools absent. Documented occurrences are recorded in the Byron Hot Springs and Altamont quads to the northeast and east of the PSA, but specific locations are not available (CDFW 2024).
Branchinecta lynchi	vernal pool fairy shrimp	FT/None/—/Yes	Vernal pools, seasonally ponded areas within vernal swales, and ephemeral freshwater habitats	**Not expected to occur.** Vernal pools absent. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT/None/—/No	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus nigra* ssp. *caerulea*)	**Not expected to occur.** No blue elderberry host plants present in the PSA.
Lepidurus packardi	vernal pool tadpole shrimp	FE/None/—/No	Ephemeral freshwater habitats including alkaline pools, clay flats, vernal lakes, vernal pools, and vernal swales	**Not expected to occur.** Vernal pools absent. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Danaus plexippus plexippus pop. 1	monarch - California overwintering population	FC/None/—/No	Wind-protected tree groves with nectar sources and nearby water sources	**Not expected to occur.** No tree groves present on the PSA to provide shelter. There are no documented occurrences within 5 miles of the PSA (CDFW 2024), and there are no known overwintering sites in the vicinity (Xerces 2016).
Fishes				
Acipenser medirostris pop. 1	green sturgeon - southern DPS	FT/None/—/No	Spawns in deep pools in large, turbulent, freshwater rivers; adults live in oceanic waters, bays, and estuaries	**Not expected to occur.** No suitable aquatic habitat present.
Hypomesus transpacificus	Delta smelt	FT/SE/—/No	Sacramento–San Joaquin Delta; seasonally in Suisun Bay, Carquinez Strait, and San Pablo Bay	**Not expected to occur.** The PSA is outside of the known range for this species.
Oncorhynchus mykiss irideus pop. 11	steelhead - Central Valley DPS	FT/None/—/Yes	Coastal basins from Redwood Creek south to the Gualala River, inclusive; does not include summer-run steelhead	**Not expected to occur.** No suitable aquatic habitat present.
Spirinchus thaleichthys	longfin smelt	FC/ST/—/No	Aquatic, estuary	**Not expected to occur.** The PSA is outside of the known range for this species.
Thaleichthys pacificus	eulachon	FT/None/—/No	Found in Klamath River, Mad River, and Redwood Creek and in small numbers in Smith River and Humboldt Bay tributaries	**Not expected to occur.** No suitable aquatic habitat present.
Amphibians				
Ambystoma californiense pop. 1	California tiger salamander - central California DPS	FT/ST, WL/—/Yes	Annual grassland, valley–foothill hardwood, and valley–foothill riparian habitats; vernal pools, other ephemeral pools, and (uncommonly) along stream courses and man-made pools if predatory fishes are absent	**High potential to occur.** Abundant suitable grassland habitat with small mammal burrows present on the PSA with aquatic breeding habitat available within dispersal distance. The nearest documented occurrence is approximately 1.6 miles southwest of the PSA from 2012 (Occ. No. 1003); there are numerous other records within 5 miles of the PSA (CDFW 2024).
Rana boylii pop. 4	foothill yellow-legged frog - central coast DPS	FPT/SE/—/Yes	Rocky streams and rivers with open banks in forest, chaparral, and woodland	**Not expected to occur.** No suitable rocky stream habitat present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Rana draytonii	California red-legged frog	FT/SSC/—/Yes	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands	**High potential to occur.** Abundant suitable grassland habitat with small mammal burrows present on the PSA with aquatic breeding habitat available within dispersal distance. The nearest documented occurrences are approximately 1.5 miles east, south, and west of the PSA (Occ. Nos. 822 from 2001, 1079 from 2008, 1759 from 2012, and 44 from 1993); there are numerous other records within 5 miles of the PSA (CDFW 2024).
Spea hammondii	western spadefoot	None/SSC/—/No	Primarily grassland and vernal pools, but also in ephemeral wetlands that persist at least 3 weeks in chaparral, coastal scrub, valley–foothill woodlands, pastures, and other agriculture	**Low potential to occur.** Abundant suitable grassland habitat present, but there are no vernal pools or other ephemeral pools on the site. The nearest documented occurrence is approximately 3.6 miles southwest of the PSA from 2017 (Occ. No. 630; CDFW 2024).
Reptiles				
Anniella pulchra	northern California legless lizard	None/SSC/—/No	Coastal dunes, stabilized dunes, beaches, dry washes, valley–foothill, chaparral, and scrubs; pine, oak, and riparian woodlands; associated with sparse vegetation and sandy or loose, loamy soils	**Not expected to occur.** Valley-foothill grassland is abundant but PSA lacks moist sandy soils for burrowing. The nearest documented occurrences are approximately 4.2 miles south of the PSA from 2004 and 2000 (Occ. Nos. 11 and 128; CDFW 2024).
Arizona elegans occidentalis	California glossy snake	None/SSC/—/No	Arid scrub, rocky washes, grasslands, chaparral, open areas with loose soil	**Low potential to occur.** Abundant grassland habitat present but with limited loose soils available. The nearest documented occurrence is a historical record from 1984 that overlaps with the PSA (Occ. No. 6; CDFW 2024).

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Emys marmorata	western pond turtle	None/SSC/—/No	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter	**Low potential to occur.** Patterson Run provides low-quality habitat. There are two stock ponds that may provide suitable aquatic habitat but are approximately 0.3 mile from the PSA. Suitable upland habitat present throughout the PSA. The nearest documented occurrence is approximately 3.2 miles north of the PSA, a historical record from 1989 (Occ. No. 128; CDFW 2024).
Masticophis flagellum ruddocki	San Joaquin whipsnake	None/SSC/—/No	Open, dry, treeless areas including grassland and saltbush scrub	**Low potential to occur**. Abundant grassland present with small mammal burrows for refuge, but limited open ground for hunting. The nearest documented occurrence is approximately 0.4 mile northeast of the PSA, a historical record from 1996 (Occ. No. 61; CDFW 2024).
Masticophis lateralis euryxanthus	Alameda whipsnake	FT/ST/—/Yes	Open areas in chaparral and scrub habitat; also adjacent grassland, oak savanna, and woodland	**Not expected to occur.** No suitable chaparral or scrub habitat present. The nearest documented occurrence is approximately 4 miles south of the PSA, a historical record of unknown age (Occ. No. 119; CDFW 2024).
Phrynosoma blainvillii	coast horned lizard	None/SSC/—/No	Open areas of sandy soil in valleys, foothills, and semi-arid mountains including coastal scrub, chaparral, valley–foothill hardwood, conifer, riparian, pine–cypress, juniper, and annual grassland habitats	**Low potential to occur.** Grassland habitat is abundant but has limited open areas for sunning and limited loose soils available. The nearest documented occurrence is approximately 1.3 miles southeast of the PSA, a historical record from 1992 (Occ. No. 575; CDFW 2024).
Birds				
Agelaius tricolor (nesting colony)	tricolored blackbird	BCC/SSC, ST/—/Yes	Nests near freshwater, emergent wetland with cattails or tules, but also in Himalayan blackberry; forages in grasslands, woodland, and agriculture	**Not expected to nest, known to forage.** This species was observed during the field survey in January 2024. However, there is no suitable nesting habitat present on the PSA. There is low-quality nesting habitat at a stock pond approximately 0.5 mile west. Abundant grassland habitat for foraging present. The nearest documented occurrence is 1.8 miles east of the PSA, a historical record from 1998 (Occ. No. 418). Several other occurrences are recorded within 5 miles of the PSA, as recent as 2015 (CDFW 2024).
Ammodramus savannarum (nesting)	grasshopper sparrow	None/SSC/—/No	Nests and forages in moderately open grassland with tall forbs or scattered shrubs used for perches	**Low potential to nest or forage**. Open grassland is present but lacks suitable shrubs for perching. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Aquila chrysaetos (nesting and wintering)	golden eagle	None/FP, WL/—/Yes	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats	**Low potential to nest, moderate potential to winter/forage**. Transmission towers adjacent to the site provide low-quality nesting habitat. Abundant grassland foraging habitat present. The nearest documented occurrence is approximately 4.9 miles south of the PSA from 2014, a record of a nest in a tower (Occ. No. 323; CDFW 2024).
Asio flammeus (nesting)	short-eared owl	BCC/SSC/—/No	Grassland, prairies, dunes, meadows, irrigated lands, and saline and freshwater emergent wetlands	**Low potential to nest or forage.** Suitable grassland habitat present for nesting and foraging, but at the edge of known current breeding range in California. The nearest documented occurrence is approximately 2.6 miles south of the PSA, a historical record from 1995 (Occ. No. 15; CDFW 2024).
Athene cunicularia (burrow sites and some wintering sites)	burrowing owl	BCC/SSC/—/Yes	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	**Moderate potential to nest or forage**. Grassland habitat is abundant but has limited ground squirrel burrows and short grazed vegetation within the PSA. There are 3 documented occurrences adjacent or overlapping with the PSA, from 1982, 2002, and 2006 (Occ. Nos. 48, 468, and 1229). Multiple other documented occurrences are within 5 miles of the PSA, most recently from 2015 (Occ. No. 47; CDFW 2024).
Buteo swainsoni (nesting)	Swainson's hawk	None/ST/—/No	Nests in open woodland and savanna, riparian, and in isolated large trees; forages in nearby grasslands and agricultural areas such as wheat and alfalfa fields and pasture	**Low potential to nest or forage.** Open grassland with isolated trees available for foraging and nesting, but the PSA is at the edge of the nesting range of the

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
				species. The nearest documented occurrence is approximately 4.8 miles northeast of the PSA from 2003 (Occ. No. 1228; CDFW 2024).
Circus hudsonius (nesting)	northern harrier	BCC/SSC/—/No	Nests in open wetlands (marshy meadows, wet lightly grazed pastures, old fields, freshwater and brackish marshes); also in drier habitats (grassland and grain fields); forages in grassland, scrubs, rangelands, emergent wetlands, and other open habitats	**Moderate potential to nest or forage.** Suitable open grassland habitat present. The nearest documented occurrence is approximately 2.2 miles northeast of the PSA from 2001 (Occ. No. 49; CDFW 2024).
Elanus leucurus (nesting)	white-tailed kite	None/FP/—/No	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands	**Moderate potential to nest or forage.** Suitable open grassland habitat present with limited individual trees nearby. The nearest documented occurrence is approximately 3.7 miles south of the PSA, a historical record from 1996 (Occ. No. 152; CDFW 2024).
Gymnogyps californianus	California condor	FE/FP, SE/—/No	Nests in rock formations, deep caves, and occasionally in cavities in giant sequoia trees (Sequoiadendron giganteus); forages in relatively open habitats where large animal carcasses can be detected	**Not expected to nest or forage.** The PSA is outside of the known range for this species.
Haliaeetus leucocephalus (nesting and wintering)	bald eagle	FPD/FP, SE/—/No	Nests in forested areas adjacent to large bodies of water, including seacoasts, rivers, swamps, large lakes; winters near large bodies of water in lowlands and mountains	**Not expected to nest or forage.** No forested habitat or large water bodies in the PSA or vicinity. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Lanius ludovicianus (nesting)	loggerhead shrike	None/SSC/—/No	Nests and forages in open habitats with scattered shrubs, trees, or other perches	**Low potential to nest or forage.** Open grassland habitat is present for foraging, but PSA has limited perches and lacks scattered shrubs or brush for nesting. The nearest documented occurrence is approximately 3.9 miles west of the PSA from 2015 (Occ. No. 113; CDFW 2024).
Melospiza melodia ("Modesto" population)	song sparrow ("Modesto" population)	None/SSC/—/No	Nests and forages in emergent freshwater marsh, riparian forest, vegetated irrigation canals and levees, and newly planted valley oak (Quercus lobata) restoration sites	**Not expected to nest or forage.** No suitable riparian, marsh, or other wet habitats present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Vireo bellii pusillus (nesting)	least Bell's vireo	FE/SE/—/No	Nests and forages in low, dense riparian thickets along water or along dry parts of intermittent streams; forages in riparian and adjacent shrubland late in nesting season	**Not expected to nest or forage.** No high-quality riparian vegetation present on the PSA. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Mammals				
Antrozous pallidus	pallid bat	None/SSC/—/No	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees	**Low potential to occur.** Abundant grassland habitat present for foraging, but PSA has limited trees and nearby structures for roosting. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Corynorhinus townsendii	Townsend's big-eared bat	None/SSC/—/No	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, man-made structures, and tunnels	**Not expected to occur.** No suitable forest or riparian habitat for foraging, and no suitable structures or caves for roosting present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Eumops perotis californicus	western mastiff bat	None/SSC/—/No	Chaparral, coastal and desert scrub, coniferous and deciduous forest and woodland; roosts in crevices in rocky canyons and cliffs where the canyon or cliff is vertical or nearly vertical, trees, and tunnels	**Not expected to occur.** No suitable chaparral, scrub, or forest habitat for foraging, and no suitable cliffs for roosting present. There are no documented occurrences within 5 miles of the PSA (CDFW 2024).
Sylvilagus bachmani riparius	riparian brush rabbit	FE/SE/—/No	Dense thickets of wild rose, willows, and blackberries growing along the banks of San Joaquin and Stanislaus Rivers	**Not expected to occur.** The PSA is outside of the known range for this species.
Taxidea taxus	American badger	None/SSC/—/Yes	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	**High potential to occur.** Suitable dry open grassland present with evidence of friable soils and burrowing activity near Patterson Pass Road. The nearest documented occurrences are approximately 0.2 mile north (Occ. No. 520 from 2014) and south (Occ. No. 250, unknown date prior to 2004; CDFW 2024). Multiple other records are within 5 miles of the PSA, the most recent from 2015 (CDFW 2024).

Table E-1. Special-Status Species' Potential to Occur within the Project Study Area

Scientific Name	Common Name	Status (Federal/State/CRPR/ EACCS Coverage)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Vulpes macrotis mutica	San Joaquin kit fox	FE/ST/—/Yes	Grasslands and scrublands, including those that have been modified; oak woodland, alkali sink scrubland, vernal pool, and alkali meadow	**Moderate potential to occur.** Suitable open grassland present with evidence of friable soils and burrowing activity near Patterson Pass Road. The nearest documented occurrence is approximately 0.3 mile southwest of the PSA, a historical record from 1984 (Occ. No. 6; CDFW 2024). Multiple other historical records are within 5 miles of the PSA, all prior to 1992 (CDFW 2024).

Sources: CDFW 2024, 2023e; Xerces 2016.
Notes:
Federal Status
FC: Federally listed as a candidate species.
FE: Federally listed as endangered.
FT: Federally listed as threatened.
FPD: Federally listed as protected designation.
None: No federal status.
State Status
FP: State listed as fully protected.
SE: State listed as endangered.
SR: State listed as rare.
SSC: State species of special concern.
ST: State listed as threatened.
None: No state status
California Rare Plant Rank (CRPR) Status
1B: plants rare, threatened, or endangered in California and elsewhere.
2B: plants rare, threatened, or endangered in California but more common elsewhere.
Threat Rank
0.1: Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat).
0.2: Moderately threatened in California (20%–80% occurrences threatened/moderate degree and immediacy of threat).
0.3: Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known).
None: No conservation status.
East Alameda County Conservation Strategy (EACCS)
No: Not covered
Yes: Covered
Potential for Occurrence Ranks
Known to Occur: Known occurrences recorded within the PSA.
High Potential to Occur: The species has not been documented in the PSA but is known to occur in the vicinity and species habitat is present.
Moderate Potential to Occur: The species has not been documented in the vicinity, but the PSA is within the known range of the species, and habitat for the species is present.
Low Potential to Occur: The species has not been documented in the vicinity and the PSA is within the known range of the species, but habitat for the species is of low quality.
Not Expected to Occur: The PSA is outside the known range of the species, and habitat for the species is either absent or of low quality.

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References

Xerces (Xerces Society for Invertebrate Conservation). 2016. State of the Monarch Butterfly Overwintering Sites in California. Report prepared for the U.S. Fish and Wildlife Service. Portland, Oregon: Xerces Society for Invertebrate Conservation. June 2016.

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Appendix G

CRLF Habitat Assessment Datasheets

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by_____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 08/02/2023
(mm/dd/yyyy)

Site Assessment Biologists:

Fisher-Colton	Erin	Higney	Kelsey
(Last name)	**(first name)**	**(Last name)**	**(first name)**
(Last name)	**(first name)**	**(Last name)**	**(first name)**

Site Location: Mulqueeney Ranch; Alameda County, CA; 37.710245, -121.571128.
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Potentia-Viridi BESS
Brief description of proposed action:
Battery energy storage system and generation tie

1) Is this site within the current or historic range of the CRF (circle one)? YES☑ NO☐

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES☐ NO☑
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: N/A Maximum depth: N/A

Vegetation: emergent, overhanging, dominant species: N/A

Substrate: N/A

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: N/A
☐ ☐

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: 20 ft
Depth at bank full: 2 ft
Stream gradient: low

Are there pools (circle one)? YES ☐ NO ☑
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: Runs and glides. No cobbles, some downed logs and branches in the streambed.

Little slope present. Wide, relatively slow flows when filled.

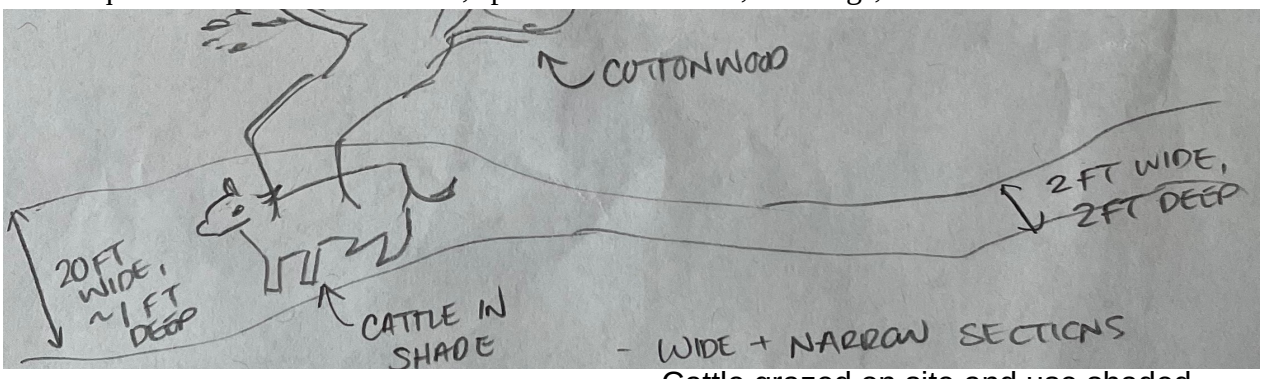
Vegetation: emergent, overhanging, dominant species: _____
Populus fremontii, Salix sp., Avena sp. upland grassland

Substrate: silt/clay

Bank description: Completely covered in grass (Avena fatua, Bromus sp.); 30-45 degree slope from OHWM.
Some banks deeply incised to streambed.

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: between March and May (variable)

Other aquatic habitat characteristics, species observations, drawings, or comments:



-Cattle grazed on site and use shaded streambed to rest.
-Dry in May, but was flowing in March.

Labeled as "Patterson Run"

Necessary Attachments:

1. All field notes and other supporting documents See BTR.
2. Site photographs See BTR Attachment E.
3. Maps with important habitat features and species location See BTR Attachment 1, Figure 3.

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by_____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 08/02/2023
(mm/dd/yyyy)

Site Assessment Biologists:

Fisher-Colton	Erin	Higney	Kelsey
(Last name)	**(first name)**	**(Last name)**	**(first name)**
(Last name)	**(first name)**	**(Last name)**	**(first name)**

Site Location: Mulqueeney Ranch; Alameda County, CA; 37.716578, -121.583643.
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Potentia-Viridi BESS
Brief description of proposed action:
Battery energy storage system and generation tie

1) Is this site within the current or historic range of the CRF (circle one)? YES☑ NO☐

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES☐ NO☑
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: 55 meters x 29 meters Maximum depth: ~1 meter

Vegetation: emergent, overhanging, dominant species:
Amaranthus albus, Distichlis spicata, Elymus sp., Bromus rubra, Festuca sp., Polypogon monspeliensis

Substrate: mud/silt

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: contained limited water on 8/2/23
☐ ☑

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: N/A
Depth at bank full: N/A
Stream gradient: N/A

Are there pools (circle one)? YES ☐ NO ☐
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: N/A

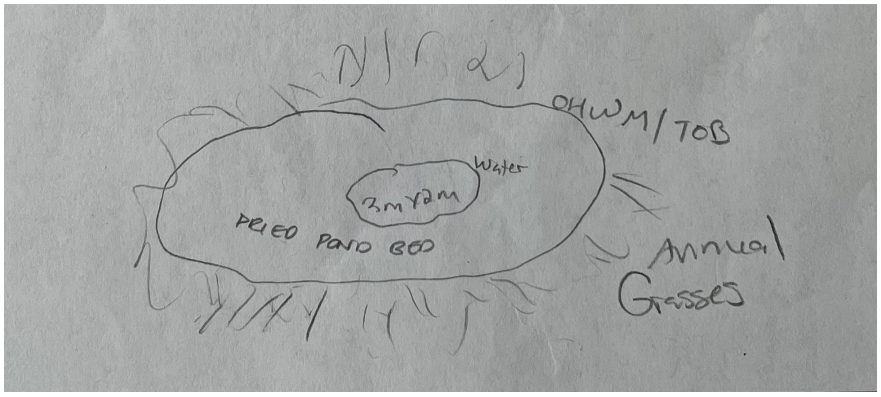
Vegetation: emergent, overhanging, dominant species: N/A

Substrate: N/A

Bank description: N/A

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: N/A

Other aquatic habitat characteristics, species observations, drawings, or comments:



Stock pond slightly west-northwest of Project site
This feature was full to OHWM in Mar 2023; water remaining in Aug 2023 ~3m x 2m

Necessary Attachments:

1. All field notes and other supporting documents See BTR.
2. Site photographs See BTR Attachment E.
3. Maps with important habitat features and species location See BTR Attachment 1, Figure 3.

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by_____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 08/02/2023
(mm/dd/yyyy)

Site Assessment Biologists:

Fisher-Colton	Erin	Higney	Kelsey
(Last name)	**(first name)**	**(Last name)**	**(first name)**
(Last name)	**(first name)**	**(Last name)**	**(first name)**

Site Location: Mulqueeney Ranch; Alameda County, CA; 37.711060, -121.584215.
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: Potentia-Viridi BESS
Brief description of proposed action:
Battery energy storage system and generation tie

1) Is this site within the current or historic range of the CRF (circle one)? YES☑ NO☐

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES☐ NO☑
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:

Size: 32 meters x 29 meters Maximum depth: ~2 meter

Vegetation: emergent, overhanging, dominant species:
Bulrush sp., closer to bank is Polypogon monspeliensis, Atriplex prostrata, Rumex crispus, Heliotrope curassavicum, Bolboschoenus maritimus

Substrate: mud/silt

Perennial or Ephemeral *(circle one).* If ephemeral, date it goes dry: well-filled in August 2023
☑ ☐

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: N/A
Depth at bank full: N/A
Stream gradient: N/A

Are there pools (circle one)? YES ☐ NO ☐
If yes,
Size of stream pools: _____
Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: N/A

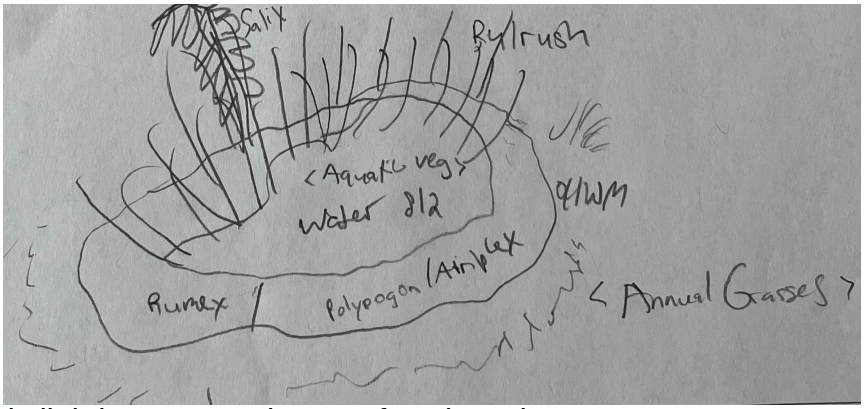
Vegetation: emergent, overhanging, dominant species: N/A

Substrate: N/A

Bank description: N/A

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: N/A

Other aquatic habitat characteristics, species observations, drawings, or comments:



Stock pond slightly west-southwest of Project site
This feature was full to OHWM in Mar 2023

Necessary Attachments:

1. All field notes and other supporting documents See BTR.
2. Site photographs See BTR Attachment E.
3. Maps with important habitat features and species location See BTR Attachment 1, Figure 3.

Appendix H

EACCS Mitigation Score Sheets

Appendix G.
Action Area (Impact) Mitigation Scoring Sheets

Table G-1 . Impact/Mitigation Scoring for big tarplant in the EACCS study area.

Big tarplant	**5**	**4**	**3**	**2**	**1**	**0**	**Score**
Conservation Zones	Inside CZ6 or CZ10	Inside CZ5 or CZ9	--	--	--	Other CZ	5
Elevation	Below 2,000 feet	--	--	--		Above 2,000 feet	5
Land covers impacted/ mitigated	Annual grassland, native grassland	--	--	--	--	All others	5
Soils present in impact area	Clay, Clay-loam	--	--	--	--	others	5
Within EBCNPS Priority Plant Protection Area	Yes	--	No	--	--	--	5
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							26
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-12. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix G.
Action Area (Impact) Mitigation Scoring Sheets

Table G-2. Impact/Mitigation Scoring for California red-legged frog in the EACCS study area.

California red-legged frog	5	4	3	2	1	0	Score
Closest suitable breeding habitat to site	On-site	< 1-mile	>1-mile but < 2-miles	--	--	Greater than 2-miles	3
Is there occupied habitat within 2-miles of site?	Yes	--	--	No	--	--	3
Aquatic land covers impacted/ mitigated	Wetland, Ponds, Stream/River	--	--	--	--	All others; none	5
Upland land covers impacted/ mitigated	Riparian, Grassland, Oak woodland, Rural residential	Chaparral/ Scrub	Conifer woodland	Cultivated ag, ruderal	--	All others; none	5
Elevation	Below 3,500 feet	--	--	--	--	Above 3,500 feet	5
Presence of ground squirrels or other burrowing mammals	On site	< 0.25-mile of site	> 0.25 but ≤ 0.5 miles	> 0. 5 but ≤ 1.0 miles	> 1.0 but ≤ 1.5 miles	> 1.5 miles	5
Presence of bullfrogs or non-native fish in aquatic resources on site	No	--	Low numbers and not all aquatic habitats are occupied	--	Yes, occurring in high numbers	--	0
Create a new barrier between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	3
Protect linkage between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	0
Inside East San Francisco Bay core recovery area	Yes					No	0
Inside designated Critical Habitat	Yes	--	--	--	--	No	5
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	0
Total Score							34
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-7. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix G.
Action Area (Impact) Mitigation Scoring Sheets

Table G-3. Impact/Mitigation Scoring for California tiger salamander in the EACCS study area.

California tiger salamander	5	4	3	2	1	0	Score
Closest suitable breeding habitat to site	On-site	Within 500 feet	Between 501 – 1,600 feet	Between 1,601 –2,050 feet	Between 2051–6,900 feet	Greater than 6,900 feet	3
Is there occupied habitat within 6,900 feet of site?	Yes	--	--	No	--	--	2
Aquatic land covers impacted/ mitigated	Wetland, Ponds	--	Stream/River	--	--	All others; none	0
Upland land covers impacted/ mitigated	Grassland, Oak woodland, Rural residential	Chaparral/ Scrub	Riparian	Conifer woodland	ruderal without refugia habitat	All others; none	5
Elevation	Below 3,700 feet	--	--	--	--	Above 3,700 feet	5
Presence of ground squirrels/pocket gophers	On site	Within 1,350 feet of site	Between >1,351 but <2,650 feet	Between >2,651 bu <5,300 feet	Between >5,301 but <7,900 feet	> 7,901 feet from site	5
Presence of bullfrogs or non-native fish in aquatic resources on site	No	--	Low number; not all aquatic habitats occupied	--	Yes, occurring in high numbers	--	0
Create a new barrier between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	3
Protect linkage between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	0
Inside designated Critical Habitat	Yes	--	--	--	--	No	0
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							24
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-8. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix G.
Action Area (Impact) Mitigation Scoring Sheets

Table G-4. Impact/Mitigation Scoring for golden eagle in the EACCS study area.

Golden eagle	**5**	**4**	**3**	**2**	**1**	**0**	**Score**
Presence of golden eagle nest within 1.0-mile of site	Yes	--	--	--	--	No	0
Land covers impacted/ Mitigated	Grassland, Oak woodland	Chaparral and scrub, ruderal	Cultivated ag	Rural residential, Conifer woodland	--	All others	5
Presence of ground squirrels	On site	Within 0.25-mile of site	> 0.25 but ≤ 1.0 mile	≥ 1 mile	--	--	5
Wind turbines within 0.5-mile of site	No	--	--	--	Yes	On-site	0
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							11
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-10. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix G.
Action Area (Impact) Mitigation Scoring Sheets

Table G-5. Impact/Mitigation Scoring for San Joaquin kit fox and America badger in the EACCS study area.

San Joaquin kit fox/American badger	**5**	**4**	**3**	**2**	**1**	**0**	**Score**
Impact/ Mitigation occurs in:	CZ5CZ6/CZ7/ CZ9/CZ10	--	—CZ4 or CZ13	--	—CZ2, CZ3, CZ11, CZ12	--	5
Land covers impacted/ mitigated	Grassland, Rural residential	Chaparral/ Scrub	Oak woodland, Cultivated Ag	Seasonal wetlands, Orchard	, ruderal	All others	5
Average Slope	0-5%	> 5 but < 10%	≥ 10 but < 25%	≥25%	--	All others	4
Presence of ground squirrels	On site	Within 0.25-mile of site	Within 0.5-mile of site	--	--	Further away	5
Linkages and movement	Creation or removal of potential linkage across barrier (e.g. culvert under freeway)	Land adjacent to potential linkage on both sides of barrier (e.g., culvert under freeway)	Land adjacent to potential linkage on one side of barrier (e.g., culvert under freeway)	Land not adjacent to key linkage for species.	--	--	2
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							22
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-11. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix G.
Action Area (Impact) Mitigation Scoring Sheets

Table G-6. Impact/Mitigation Scoring for tricolored blackbird in the EACCS study ar ea.

Tricolored blackbird	**5**	**4**	**3**	**2**	**1**	**0**	**Score**
Documented tricolored blackbird nest colony within 0.5-mile of site during previous 3-years.	Yes	--	--	--	--	No	1
Acres of emergent vegetation that could support nesting TRBL	>5	3-5	1-3	0.25 – 1	<0.25	0	0
Acres of foraging habitat within 2-miles colony site	>1000	501-1000	251-500	100-250	<100	0	1
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	0
Total Score							2
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-10. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix I
Wetland Delineation Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Potentia-Viridi BESS Facility Project City/County: Tracy/Alameda County Sampling Date: 01/18/24

Applicant/Owner: Levy Alameda LLC State: CA Sampling Point: SP-01-UPL

Investigator(s): Mikaela Bissell & Erin-Colton Fisher Section, Township, Range: Section 31; Township 2S; Range 4E

Landform (hillslope, terrace, etc.): Plains Local relief (concave, convex, none): None Slope (%): 0%

Subregion (LRR): MLRA 17 Subregion C Lat: 37.708653° Long: -121.566808° Datum: WGS84

Soil Map Unit Name: Linee clay loam, 3 to 15, percent slopes NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Sampling testing did not hit two-parameter criteria

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 1^m)			
1. Marrubium vulgare	15%	Y	FACU
2. Croton setiger	25%	Y	UPL
3. Grindelia sp.	5%	N	FACW
4. Unknown #1 (1) - Remarks	5%	N	
5. Unknown #2 (2) - Remarks	1%	N	
6.			
7.			
8.			
	51% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.	0%		
	_____ = Total Cover		

% Bare Ground in Herb Stratum 49% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species 15	x 4 = 60
UPL species 25	x 5 = 125
Column Totals: 40 (A)	185 (B)

Prevalence Index = B/A = 4,63

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:

(1) Unable to key species during the time of survey, species was dead

(2) Senescent grasses

SOIL

Sampling Point: SP-01-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

No redox was observed when digging pits. Saturated soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

C9: Aerial imagery does not display 5 or more years of saturation.

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Potentia-Viridi BESS Facility Project City/County: Tracy/Alameda County Sampling Date: 01/18/24

Applicant/Owner: Levy Alameda LLC State: CA Sampling Point: SP-02-UPL

Investigator(s): Mikaela Bissell & Erin-Colton Fisher Section, Township, Range: Section 31; Township 2S; Range 4E

Landform (hillslope, terrace, etc.): Plains Local relief (concave, convex, none): None Slope (%): 0%

Subregion (LRR): MLRA 17 Subregion C Lat: 37.708809° Long: -121.566562° Datum: WGS84

Soil Map Unit Name: Linne clay loam, 3 to 15 percent slopes NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

Sampling testing did not hit two-parameter criteria

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot size: 1^m)			
1. Grindelia sp.	20%	Y	FACW
2. Croton setiger	15%	Y	UPL
3. Holocarpha virgata	5%	N	UPL
4.			
5.			
6.			
7.			
8.			
	40% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.	0%		
	_____ = Total Cover		

% Bare Ground in Herb Stratum 60% % Cover of Biotic Crust 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species 20%	x 2 = 40
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species 15%	x 5 = 75
Column Totals: 35 (A)	115 (B)

Prevalence Index = B/A = 3.29

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:

SOIL

Sampling Point: SP-02-UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

No redox was observed when digging pits. Saturated soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

C9: Aerial imagery does not display 5 or more years of saturation.

Remarks:

Potentia Viridi

OHWM DATA SHEET

Project: BESS Facility Date: 04/08/24 Feature ID: EPH-01

Investigator(s): MRB & ECE Transect ID: T-01

Site Location:

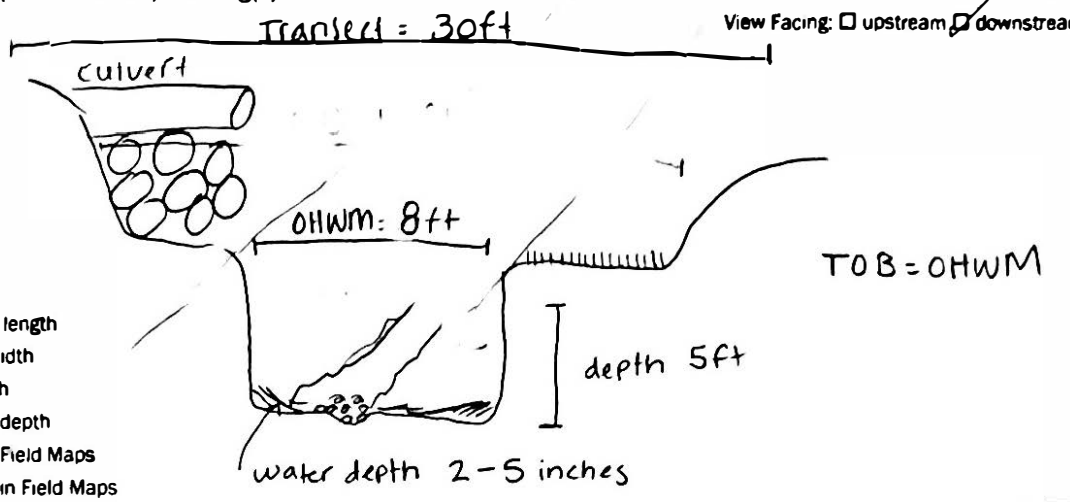
Alameda County, northwest portion of site

Stream Flow: ☒ Ephemeral ☐ Intermittent ☐ Perennial ☐ Controlled/Other

Transect (cross-section) drawing(s):

View Facing: S

View Facing: ☐ upstream ☒ downstream



- ☒ Transect length
- ☒ OHWM width
- ☒ TOB width
- ☒ Channel depth
- ☒ Photo in Field Maps
- ☐ Mapped in Field Maps

OHWM Indicators (at OHWM; primary indicators indicated with *)

- ☐ Natural line impressed on the bank
- ☒ Shelving
- ☐ Changes in the character of soil (texture)*
- ☐ Destruction of terrestrial vegetation
- ☐ Presence of litter and debris
- ☐ Wracking
- ☒ Vegetation matted down, bent, or absent
- ☐ Sediment sorting
- ☐ Leaf litter disturbed or washed away
- ☐ Scour
- ☐ Deposition
- ☐ Bed and banks
- ☐ Water staining
- ☒ Change in plant community and/or cover*

☐ Break in Slope at OHWM*: ☒ Sharp (>60°) ☐ Moderate (30-60°) ☐ Gentle (<30°)

Soil Texture

	Clay/Silt (%)	Sand (%)	Gravel (%)	Cobbles (%)	Boulders (%)
Above OHWM	30	30	10	5	25
Below OHWM	70	20	10	-	-

Vegetation Cover

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	0	15	5	80
Below OHWM	0	0	5	95

Veg Stage: ☐ Early (herbs & seedlings) ☒ Mid (herbs, shrubs, saplings) ☐ Late (herbs, shrubs, mature trees)

Upland Species:	*Bank Species:*	*Emergent Species:*
Silybum marianum Centaurea solstitialis Centaurea calcitrapa Senescent grasses Brassica sp. Erodium cicutarium	Senescent grasses	None

OHWM DATA SHEET

Condition/Disturbances/Anthropogenic Influences (e.g., erosion, grazing, culverts, etc.):

culvert @ Roadside

Hydrology:		**Riparian:**
☒ Flowing water	Min. depth: 2 inches	☒ No
☐ Standing water	Max. depth: 5 inches	☐ Yes ☐ Continuous ☐ Intermittent
☐ Saturated	Avg. depth:	
☐ Dry		

Checklist of resources used to evaluate OHWM:

☒ Aerial photography	☒ Vegetation maps	☐ Other:
☒ GPS unit	☒ Geologic/soil maps	
☐ Rainfall data	☐ Gage data	
☐ Topographic maps	☐ LiDAR	

Other drawings (aerial view):

None

Connectivity notes:

None

Other forms related to this feature: ☐ Yes ☒ No

- ☐ Terrace, fringe, or floodplain wetland (wetland datasheet)
- ☐ Low flow channel or other representative section (OHWM datasheet)

APPENDIX C – Mitigation Property Biological Resources Report

BIOLOGICAL RESOURCES ASSESSMENT REPORT

Potentia Viridi Battery Energy Storage System Project Mitigation Site

Alameda County, California

Prepared by:
Westervelt Ecological Services
Western Region
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Sacramento, CA 95864
T: (916) 646-3644

wesmitigation.com

January 2025

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Table of Contents

List of Tables

List of Appendices

List of Figures

1. Introduction

1.1. Introduction

Levy Alameda, LLC, a wholly owned subsidiary of Obra Maestra Renewables, LLC is in the process of developing a battery storage facility (project) in Alameda County, California. Westervelt Ecological Services (WES) has teamed with Levy Alameda, LLC to help provide mitigation for their project. WES has identified an approximate 213 acre area (mitigation site) that would be suitable mitigation for the project. The final mitigation site acreage will be based on permitting requirements as identified in project permits. This Biological Resources Assessment detailed the species and habitat that are present in the mitigation site.

1.2. Study Area Location

The proposed mitigation site is located in Alameda County (Figure 1, all figures are located in Appendix A) and consists of a portion of the approximately 4,869-acre Mulqueeney Ranch (Ranch, Figure 2). The Ranch is located immediately southwest of the Altamont Pass Wind Farm substation along the north and south sides of Patterson Pass Road within the Altamont Hills, approximately 6 miles east of the City of Livermore, Alameda and San Joaquin counties, California. More specifically, the mitigation site occurs in Sections 31 and 36, Township 2 South, Ranges 3 and 4East, and Mount Diablo Base & Meridian on the Midway U.S. Geological Survey 7.5-minute topographical quadrangle map (Figure 3). Approximate center coordinates of the mitigation site in decimal degrees of the World Geodetic System 1984 (WGS84) are: Latitude: 37.715336°, Longitude: -121.590078°.

1.3. Study Objective

The primary objective of this study was to assess the biological resources and resource value of the mitigation site and to determine the presence, or presumed absence, of sensitive biological resources (i.e., special-status species and sensitive plant communities or habitats) occurring within the mitigation site.

Reconnaissance-level field surveys were conducted to:

- provide a description of the biological resources and natural communities present within the mitigation site;
- compile species lists descriptive of plant communities;
- locate special-status plant species or habitat suitable for such species; and
- determine wildlife use and current habitat values for wildlife, including special-status species.

1.4. Definitions

Several terms relating to the biological resources used in the report are described briefly below.

COMMUNITY- A community is an assemblage of populations of plants, animals, bacteria, and fungi that live in an environment and interact with one another, forming a distinctive living system with its own composition, structure, environmental relationships, development, and functions (Whittaker 1975).

HABITAT- Habitat is the place or type of site where a plant or animal naturally or normally lives and grows.

SENSITIVE NATURAL COMMUNITY - Sensitive natural communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special-status plants or their habitat. A sensitive community has particularly high ecological value or functions and are considered important because their degradation or destruction could threaten populations of dependent plant and wildlife species and significantly reduce the regional distribution and viability of the community. As the number and extent of sensitive natural communities continue to diminish, the endangerment status of dependent special-status (i.e., rare, threatened, or endangered) species could become more precarious, and populations of currently stable species (i.e., non-special-status species) could become rare. Loss of sensitive natural communities can also eliminate or reduce important ecosystem functions, such as water filtration by wetlands and bank stabilization by riparian forests or wetlands.

SPECIAL-STATUS SPECIES - For the purposes of this assessment, special-status species were defined as being species that are legally protected or otherwise regulated or tracked by federal or state resource agencies. Special-status species are species, subspecies, or varieties that fall into one or more of these categories.

- Listed as threatened or endangered under the federal Endangered Species Act (ESA).
- Proposed or candidates for listing under the ESA.
- Listed as threatened or endangered under the California Endangered Species Act (CESA).
- Candidates for listing under the CESA.
- California species of special concern.
- California Fully Protected Species.
- Plants ranked as “rare, threatened, or endangered in California” (California Rare Plant Rank [CRPR] 1B and 2).
- Plants listed as rare under the Native Plant Protection Act.

WILDLIFE - For the purposes of this document wildlife includes mammals, birds, reptiles, amphibians, fish, and invertebrates.

WETLANDS - For the purposes of this document wetlands are defined as transitional areas between aquatic habitats and upland habitats and generally includes habitats such as marshes and swamps. Under the U.S. Army Corps of Engineers jurisdiction wetlands general must possess the following three mandatory criteria: 1) A prevalence or dominance of hydrophytes (water-loving plants); 2) Hydric soils (e.g., water-logged soils); and 3) Wetland hydrology (i.e., soils that are inundated or saturated to the surface for extended periods during the growing season).

The remainder of this report discusses the methods and results of the 2024 special-status species and sensitive habitat assessment at the mitigation site.

2. Methods

The assessment of the mitigation site for biological resources included both desktop background information gathering and analysis and a summary of previously conducted biological surveys and mapping as described below.

2.1. Desktop Analysis

The desktop analysis portion of this assessment included reviewing existing databases and other publicly available information on biological and related resources, as well as current and historical aerial photographs and topographic maps. The following information was reviewed as part of the desktop analysis:

- A species records search of California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB; CDFW 2024) using a 5-mile radius centered on the mitigation site (Figure 4);
- Information available on rare plants on the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants Database (CNPS 2024) and the Jepson eFlora (Jepson Flora Project 2024);
- Soils information from the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2024);
- EcoAtlas (CWMW 2024);
- Biogeographic Information and Observation System (BIOS) (CDFW 2024);
- aerial imagery available on Google Earth (1985 through 2024); and
- topographic maps.

2.2. Field Surveys

Since 2019, Helm Biological Consulting (HBC 2019, 2021, 2022, 2023a and 2023b) and WES (2024) staff have visited the mitigation site and larger Ranch to survey for California tiger salamander (CTS, *Ambystoma californiese*) and California red-legged frog (CRLF, *Rana draytonii*), assessed the general site conditions, making notes on land cover, hydrology, soils, dominant vegetation, and observed wildlife.

Specific surveys methods are described below for each.

2.2.1. Community Mapping

All landcovers were mapped, including aquatic resources (Figure 5). However, a formal aquatic resources delineation study was not conducted.

2.2.2. Special-status Species

A list of special-status plant and wildlife species with potential to occur in the mitigation site (Table 2) was developed from the Desktop Analysis (see above). This list was used to focus the site investigation on the special-status species and associated plant communities/habitats with potential to be present at the mitigation site. Survey methods are described below for plants and wildlife.

2.2.2.1. Botanical Resources

Botanical surveys concentrated on nonnative invasive plants during the late summer and fall of 2023 (HBC 2023b). Specific special-status plant species surveys were not conducted. The entire mitigation site was surveyed by foot or by an all-terrain vehicle. All plants observed were identified to the taxonomic level necessary to determine rarity status using The Jepson Manual: Vascular Plants of California, 2nd Edition (Baldwin et al. 2012) and internet resources such as CNPS (2024) and Calflora (2022). Scientific nomenclature follows The Jepson Manual (Baldwin et al. 2012) and updates published online by the Jepson Flora Project, Jepson Online Interchange (University of California, Berkeley 2024). Common names followed Calflora (2022). Species not readily identifiable in the field were collected and later identified using The Jepson Manual (Baldwin et al. 2012). A list of all plant species encountered during the botanical field survey was compiled. Each plant was assigned a wetland indicator status using The National Wetland Plant List: 2016 Update of Wetland Ratings (NWPL) (Lichvar et al. 2016) as follows:

- OBL - Obligate wetland plants. Almost always occurs in wetlands;
- FACW - Facultative wetland plants. Usually occurs in wetlands, but may occur in non-wetlands;
- FAC - Facultative plants. Occurs in wetlands and non-wetlands;
- FACU - Facultative upland plants. Usually occurs in non-wetlands, but may occur in wetlands;
- UPL - Obligate upland plants. Almost never occurs in wetlands; and
- NL – Not listed.

In addition, every plant was categorized as native or nonnative (introduced) based on Calflora (2022). All nonnative plant species were further evaluated for any invasive status using California Invasive Plant Council (Cal-IPC 2022) ratings as follows:

- High - These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically;
- Moderate - These species have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread; and
- Limited - These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

A list of all plant species encountered during the botanical field survey is included in Appendix B. A rare plant survey in the mitigation site will occur in Spring 2025.

2.2.2.2. Wildlife

All wildlife species observed were identified based on WES Staffs' knowledge and following field guides: Reid (2006) for mammals, Peterson (2020) for birds, Stebbins (2018) for reptiles and amphibians, and Gross et al. (2020) for insects. Common and scientific names of birds followed the Working Group on Avian Nomenclature of the International Ornithologists' Union's. Common and scientific names for reptiles and amphibians followed nomenclature of Nafis (2022) California Herps (www.californiaherps.com). Common and scientific names of mammals followed the American Society of Mammologists. All wildlife species, or sign (scat, prints, etc.), observed onsite were recorded in field notes.

A list of all wildlife species observed during the wildlife survey is included in Appendix C.

2.2.2.3. Special-Status Species Habitat Assessment

For species that were not identifiable at the time of the field survey, plant communities were assessed for potential to support the targeted species. The habitat assessed was based on habitat suitability comparisons with reported occupied habitats. The following definitions were utilized:

- None – Species distribution is restricted by substantive habitat requirements which do not occur onsite; therefore, no further survey or study is necessary to determine likely presence or presumed absence of this species;
- Not Probable/Likely – Species distribution is restricted by substantive habitat requirements which are negligible onsite; therefore, it is assumed that no further survey or study is necessary to determine likely presence or presumed absence of this species;
- Low – The species has a Low probability of occurrence within the mitigation site;
- Moderate – The species has a Moderate probability of occurrence within the mitigation site;
- High – The species has a High probability of occurrence within the mitigation site;
- Present – Species or species sign were observed onsite or historically has been documented within the mitigation site;
- Critical Habitat – The mitigation site is located within a USFWS-designated critical habitat unit; and
- Unknown – There is not presently sufficient information on substantive habitat requirements of the species or other data to determine its potential for occurrence within the mitigation site.

2.3. Wildlife, Habitat Connectivity, and Conservation Opportunities

The mitigation site was evaluated for its overall conservation value under existing conditions by reviewing several datasets including:

- CDFW's Biogeographic Information and Observation System (BIOS6 version 6.24.1120);
- CDFW's Areas of Conservation Emphasis (ACE); and
- California Essential Habitat Connectivity Project "Essential Connectivity Areas" and "Natural Landscape Block".

CDFW's ACE is an effort to gather spatial data on wildlife, vegetation, and habitats from across California and then combine this information into maps to inform conservation of biodiversity, habitat connectivity, and climate change resiliency (CDFW 2019).

The California Essential Habitat consists of a statewide network of relatively intact blocks of land connected by essential connectivity areas (Spencer et al. 2010). The purpose of the Natural Landscape Block is to focus attention on large areas important to maintaining ecological integrity at the broadest scale (Spencer et al. 2010).

3. Results

3.1. Environmental Setting

3.1.1. Overview

The mitigation site straddles the Western Pacific Railroad and consists of fairly steep rolling hills covered with grass and herbs with stock ponds occurring within the low-lying drainages and some grassy plains to the northeast.

3.1.2. Climate

The mitigation site has a Mediterranean climate characterized by warm dry summers and cool wet winters. Average high temperatures range from the mid-50s in winter to the mid-80s in summer, while average low temperatures range from the mid-30s to the upper 50s. Rainfall in the Ranch area averages about 15 inches per year, with most of it coming during the winter months. Temperatures typically remain mild year-round due to its location on the east side of California's Central Valley. Summers tend to be sunny and dry, with occasional breezes from the nearby mountains providing some relief from the heat. Winters are typically wet and cool, with air temperatures often dropping below freezing at night. However, snow is rare. (Best Places 2024)

3.1.3. Topography and Hydrology

Topography within the mitigation site varies from relatively flat plains around 500-foot elevations above mean sea level (amsl) near the eastern edge to fairly steep hilly terrain above 600 foot elevation amsl along the western edge. In general, the mitigation site is sloped to the northeast. The raised Western Pacific Railroad bed transverses the mitigation site from the northwest corner to the southeast corner. Several drainages occur in the mitigation site (Figure 5). Most of these drainage headwaters occur to the off site to the west and transverse the mitigation site in a eastern direction. At least one stock pond has been constructed within each of the major drainages. All aquatic features are shown in Figure 5[1].

The steep terrain allows for a lot of surface area and the clayey soil restricts (see Soils section below) the amount of ground water recharge creating a lot of storm runoff into the drainages during and shortly after rain events. As previously mentioned, most of the major drainages have stock ponds constructed to detain this storm runoff water for watering livestock. Additionally, the huge watersheds that occur, mostly offsite, allow some ground water recharge which eventually moves downslope and discharges from the various seeps/springs located at the hill toe slopes or within the drainages.

3.1.4. Geology and Soils

The geology within the mitigation site area (Figure 7) is composed of Upper Cretaceous aged marine sedimentary and metasedimentary rocks consisting of sandstone, shale, and conglomerate (KU) as well as Miocene aged marine sedimentary rocks consisting of moderately

[1] Please note a formal wetland delineation has not been completed on the mitigation site, these acreages have not been field verified.

to well consolidated sandstone, shale, siltstone, conglomerate, and breccia (M), and Quaternary aged nonmarine sedimentary rocks consisting of loosely considated sandstone, shale, and gravel deposits from the Pleistocene epoch (QPc) (Jennings et al. 1977).

Soils within the mitigation site are diverse but generally consist of clays to clay loams textures within eight soil series types and four mixed soil series complex types:

- Altamont clays;
- Diablo clays;
- Linne clays; and
- Pescadero clay loam (Figure 8 and Table 1).

Table 1. Natural Resource Conservation Service Soil Mapping Units occurring within the Mitigation Site

Map Unit Symbol	Soil Unit
Alameda County	
AmE2	Altamont clay, moderately deep, 30 to 45 percent slopes
ArD	Altamont rocky clay, moderately deep, 7 to 30 percent slopes
DbD	Diablo clay, 15 to 30 percent slopes, MLRA 15
DbE2	Diablo clay, 30 to 45 percent slopes, eroded
DbC	Diablo clay, 7 to 15 percent slopes
LaC	Linne clay loam, 3 to 15 percent slopes
LaD	Linne clay loam, 15 to 30 percent slopes, MLRA 15
Pd	Pescadero clay loam, 0 to 6 percent slopes, MLRA 14

3.1.5. Land Cover

The landcover on the mitigation site is dominated by annual grasslands, with seeps/springs, stock ponds, swales and other wetlands associated with the various drainages (Figure 5).

3.1.5.1. Annual Grassland

Annual grasslands within the mitigation site are characterized by the dominance of non-native but naturalized annual grassland species with a subcomponent of native and nonnative forbs. The annual grassland habitat dominates the mitigation site landscape occurring on the well-drained uplands.

Vegetation. Dominant grasses observed include wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*), hare barley (*Hordeum murinum* ssp*. leporinum*), and soft brome (*Bromus hordeaceus*). Dominant forbs include common fiddleneck (*Amsinckia intermedia*), field bind weed (*Convolvulus arvensis*), dove weed (*Croton setiger*), and filaree (*Erodium* ssp.).

As the grassland habitats in the mitigation site approach drainages, stock ponds, and other aquatic features the vegetation composition changes to a greater percentage of hydrophytes ("water-loving" plants) including Italian ryegrass (*Festuca perennis*), Mediterranean barely (*Hordeum marinum* ssp. *gussoneanum*), and annual bluegrass (*Poa annua*) for the grasses and narrowleaf

plantain (*Plantago laceolota*), few-seeded bitter-cress (*Cardamine oligosperma*), clovers *(Trifolium* ssp.) and tall annual willow herb (*Epilobium branchycarpum*) representing the forbs.

In addition, annual grassland habitats near roads, neighboring parcels, or other areas of disturbance (e.g., stock pond berms) tend to have a higher percentage of weedy nonnatives including thistles such as yellow starthistle (*Centaurea solstistialis*), Italian thistle (*Carduus pycnocephalus*), milk thistle (*Silybum marianum*), and bull thistle (*Cirsium vulgare*).

Wildlife. Annual grasslands provide breeding habitat for a variety of grassland birds. Among those observed during field surveys include western meadowlark (*Sturnella neglecta*), lark sparrow (*Chondestes grammacus*), and savannah sparrow (*Passerculus sandwichensis*). Annual grasslands also provide foraging habitat for many bird species that breed in adjacent habitats.

Annual grasslands provide important habitat for many mammal species, particularly small rodents and their larger predators. Mammals or their signs (i.e., scat, tracks, dens) observed in the annual grasslands onsite include black-tailed hare (*Lepus californicus*), California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), California deer mouse (*Peromyscus maniculatus*), California vole (*Microtis californicus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis marsupialis*), and coyote (*Canis latrans*).

Representative photographs of the habitats occurring onsite are provided in Appendix D.

3.1.5.2. Drainages

Drainages are characterized by seasonally flowing waterways that convey storm water. These drainages are general U-shaped in cross-section with earthen bed and banks. The drainages onsite are ephemeral in nature and flow only during and shortly after storm events. Most of the drainages are fairly narrow (1-4 wide) and shallow (1 to 4 deep) (Figure 5).

Vegetation. The vegetation composition of the drainages depends on slope and soil thickness. Steeper slopes sections of the drainage support many of the same species associated with the grasslands but favor those with root systems that can withstand the fast-flowing water for short periods. Those sections of the drainages that are flat and/or near the onsite stock ponds and seep habitats tend to support more hydrophytes especially grasses such as Italian ryegrass, Mediterranean barely, and annual bluegrass. Portions of these drainages have thin soils or eroded bedrock support a sparse assemblages of plant species varying from nonhydrophytes to hydrophytes depending on slope.

Wildlife. Due to their ephemeral nature. The drainages do not offer much habitat for wildlife except for their hydrologic contributions to stock ponds and wetland habitats (e.g., seep, swale, etc.) (See below).

3.1.5.3. Stock Ponds

Stock ponds are characterized by human-constructed ponds generally within drainageways to capture seasonal water for livestock. In the mitigation site and Ranch, several of these stock ponds have been constructed below seep/spring habitats (see Seep/Spring section below). Stock ponds associated with seep/spring habitats are perennial ponded with maximum depths of three to five

feet (Figure 5). The stock ponds without hydrologic inputs from seep/spring habitat are seasonally ponded and may not pond at all, or only for brief periods, during droughts.

Vegetation. Stock ponds associated with seep/spring habitats in the mitigation site generally have patches of emergent narrowleaf cattail (*Typha angustifolia*) with the submerged stonewort (*Chara* sp.) with occasional blooms of fishnet algae (*Hydrodictyon* sp.) and free-floating smaller duckweed (*Lemna minor*) and mosquito fern (*Azolla filiculoides*). The vegetation along the stock ponds edges are highly variable in cover, and to a lesser extent composition, depending on hydrology (drought and flood conditions) and livestock intensity. During drought conditions, the edges of the stock ponds are sparsely vegetated and during high livestock use, denuded of vegetation. Overall, the stock ponds within the mitigation site are dominated by hydrophytes including brass buttons (*Cotula coronopifolia*), tall flat sedge (*Cyperus eragrostis*), willow herbs (*Epilobium* ssp.), rushes *(Juncus* ssp.), purple sandspurry (*Spergularia rubra*), Italian ryegrass, Mediterranean barely, and annual bluegrass.

Wildlife. The stock ponds onsite offer excellent habitat for California tiger salamander (*Ambystoma californiense*) and California red-legged frogs (*Rana draytonii*). Although they are perennial in nature the lack predators such as fish and American bull frog (*Lithobates catesbeianus*) and support abundance food sources in the form of aquatic invertebrates.

While not all of these species have been observed within the mitigation site, the emerging insects provide forage for swallows (Tree swallow [*Tachycineta bicolor*], violet-green swallow [*Tachycineta thalassina*], northern rough-winged swallow [*Stelgidopteryx serripennis*], barn swallow [*Hirundo rustica*], cliff swallow [*Petrochelidon pyrrhonota*]) and flycatchers (western kingbird, ash-throated flycatcher [*Myiarchus cinerascens*], and black phoebe [*Sayornis nigricans*]) as well as bats. A variety of bird species forage at the edge of these ponds including shorebirds (e.g., killdeer [*Charadrius vociferus*] and greater yellowlegs [*Tringa melanoleuca*]) and various wading birds (great blue heron [*Ardea herodias*], great egret [*Ardea alba*]). Mallards (*Anas platyrhynchos*) and the occasional American wigeon (*Mareca americana*) forage through the algae for food items.

3.1.5.4. Seeps /Springs

Seep/Spring habitats are characterized by ground water that flows or seeps from the ground. In the mitigation site seeps/springs are associated with the drainageways where thinner soils prevail allowing subsurface storm water flows to daylight near bedrock sources.

Vegetation. Seeps/springs within the mitigation site are dominated by hydrophytes consisting of grasses and forbs including willow herbs, streamside monkey flower (*Erythranthe guttata*), Italian ryegrass, common spikerush (*Eleocharis macrostachya*), rabbits foot grass (*Polypogon monspeliensis*), and toad rush (*Juncus bufonius*) with occasional patches of saltgrass (*Distichilis spicata*) and curly dock (*Rumex crispus*).

Wildlife. Because of the small size and depth of water within this habitat, wildlife use is limited. Wildlife species observed in this habitat include greater yellow legs (*Tringa melanoleuca*), killdeer (*Charadrius vociferus),* black phoebe (*Sayornis nigricans*), Brewer's blackbird (*Euphagus cyanocephalus*), European starling (*Sturnus vulgaris*), and mourning dove (*Zenaida macroura*).

While not observed, other wildlife including racoon, Virginia opossum, grey fox (*Urocyon cinereoargenteus*) and coyote probably visit this habitat to forage or drink during the summer and fall.

3.1.5.5. Wetland

Wetland habitat is characterized by small depressional areas within the grassland habitat that have impervious subsurface soils (i.e., clays, hardpan [duripan] or bedrock) that seasonally inundate from stormwater flows from upslope ephemeral drainages. Three wetlands occur within the mitigation site. Two are located in the southeast corner and have been inadvertently created from the construction of the adjacent elevated Western Pacific Railroad bed that detains storm water flows. The third wetland is associated with the largest and more intermittent drainage located in the northwest corner. This wetland has resulted from stormwater restrictions from flowing through the undersized passage at bottom of the railroad berm.

Vegetation. The two southern located wetland habitats onsite were dominated by hyssop loosestrife (*Lythrum hyssopifolia*), Italian ryegrass, Mediterranean barely, common knotweed (*Polygonum aviculare*), and toad rush (*Juncus bufonius*) with some curly dock (*Rumex crispus*). The larger wetland located in the northwest corner is dominated by hydrophytic grasses and forbs similar to the seep/spring habitats discussed above.

Wildlife. Wildlife use within the largest wetland would be similar to that of the Seep/Spring habitat and offers temporary migration habitat for CRLF. Due to the ephemeral nature of the two smaller wetlands, only short-lived residence invertebrates and transitory migrating vertebrates utilize this habitat. Large numbers of crustaceans live in this habitat including seed shrimp (*Ostracods*), copepods *(Copepoda*), and water fleas (*Cladocerans*) and other aquatic invertebrates (e.g., water mites [*Hydroacarina*], flat worms [microturbularians], springtails [*Collembolla*]). These species are food for a variety of amphibians including Sierran tree frog larvae, western toad larvae, and young CRLF's who also use this habitat for dispersal.

3.1.5.6. Swale

Swale habitat is associated with the drainages onsite and are general continuations or sections of ephemeral drainages that lack a defined bed and bank due to erosional forces of flowing water. Swales are generally broad, shallow, slightly sloped water conveyance habitats.

Vegetation. Swales are generally vegetaion by dense cover of hydrophytic grasses consisting of Italian ryegrass, Mediterranean barely, and annual bluegrass. Forbs are subdominant and generally consisted of toad rush (*Juncus bufonius*) with some curly dock (*Rumex crispus*).

Wildlife. Wildlife use was similar to the ephemeral drainage habitats described above.

Representative photographs of habitats and species occurring within the mitigation site and Ranch occur in Appendix D.

3.2. Special-status Species

The results of the habitat assessment are summarized below in Table 2, which provides the status of the species, its range, general habitat requirements, and a brief discussion on its potential to occur within the mitigation site.

Table 2. Special-status Species with a Potential to Occur within the Mitigation Site

Common Name Scientific Name	Federal Status	State Status	CNPS	Range	General Habitat	Potential To Occur Onsite
Wildlife						
California tiger salamander *Ambystoma californiense*	FT	ST	-	Occurs from Yolo County to Kern County in the Central Valley, up to 2,000 feet elevation in the Sierra Nevada foothills	In winter, breeds in vernal pools and seasonal wetlands with a minimum 10-week inundation period. In summer, occupies grassland habitat, primarily in small mammal burrows.	**Present.** CTS larvae have been observed in numerous stock ponds in the mitigation site**.**
California red-legged frog *Rana draytonii*	FT	-	-	Occurs Sonoma and Butte counties in the north to Riverside to the south.	In habits ponds, marshes, and creeks with still water for breeding. Riparian and upland habitat with dense vegetation and open areas for cover, aestivation, food and basking.	**Present.** Adults, juveniles, and larvae have been documented in the mitigation site.
Foothill yellow legged frog Central Coast DPS *Rana boylii pop. 4*	FT	CE	-	Occurs in the East Bay and south of Sac Francisco Bay in the Coast Ranges to San Benito and Monterey Counties.	Inhabits moderate to high gradient streams in woodland, forest, mixed chaparral, and wet meadow habitats with rock and gravel substrate and low overhanging vegetation along the edge; usually found near riffles with rocks and sunny banks nearby	**None.** Suitable habitat for this species (streams in woodlands, chaparral) is not present.
Western spadefoot *Spea hammondii*	FT	SSC	-	Species is found throughout the Central Valley and coastal lowlands from Shasta County in Northern California to Baja California in Mexico, at elevations ranging from sea level to 4,500 feet	In winter, breeds in vernal pools and seasonal wetlands with a minimum 3-week inundation period. In summer, aestivates in grassland habitat, in soil crevices, and rodent burrows	**Low.** Although suitable habitat is present, this species would have been detected during CTS and CRLF surveys if present.

Golden eagle *Aquila chrysaetos*	-	FP	-	Winter range spans most of California; breeding range excludes the Central Valley floor	Forages in a variety of open habitats, including grassland, pasture, and cropland; Nests primarily on cliffs, rock outcrops, and in large trees	**Present.** This species has been observed foraging just outside the western edge of the mitigation site. However, no nesting habitat is present in the mitigation site.
Swainson's hawk *Buteo swainsoni*	-	ST	-	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley; the state's highest nesting densities occur near Davis and Woodland, Yolo County.	Nests in oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain fields.	**Moderate**. The mitigation site provides suitable foraging habitat however this species has not been observed.
Northern harrier *Circus hudsonius*	-	SSC	-	Found throughout California, breeding range covers northeastern plateau, northern coast, Central Valley, central coast, and portion of the southern coast and southern deserts. Non-breeding season found in most lowland areas of California.	Breeding and foraging includes treeless habitats with adequate prey, cover, and perches. Suitable habitat includes freshwater marshes, brackish and saltwater marshes, wet meadows, margins of lakes, rivers, and streams, grasslands, weed fields, croplands, and desert sinks.	**Present**. Although this species has been observed foraging in the mitigation site, nesting has not been verified.
White tailed kite *Elanus leucurus*	-	FP	-	Occurs from west coast and Gulf Coast south to Mexico, Central American and eastern South America	Found in grasslands, open woodlands, savannas, marshes and cultivated fields.	**Moderate**. The mitigation site provides suitable foraging habitat however this species has not been observed.
Tricolored blackbird *Agelaius tricolor*	-	ST	-	Year-round residents throughout the Central Valley and the central and southern coasts, with additional scattered locations throughout California. Breeding occurs in the foothills of the Sierra Nevada south to Kern County, the	Nests colonially in large, dense stands of freshwater marsh, riparian scrub, and other shrubs and herbs; forages in grasslands and agricultural fields.	**Moderate.** Suitable foraging habitat is present in the mitigation site. This species has been observed foraging in mitigation site .

				coastal slopes from Sonoma County to the Mexican border, and sporadically in the Modoc Plateau		
Loggerhead shrike *Lanius ludovicianus*	-	SSC	-	Occurs throughout California, except for the northwest, heavily forested higher mountains and higher areas of deserts.	Open habitats, including pastures, old orchards, cemeteries, golf courses, agricultural fields, riparian areas, and woodlands. In Central Valley, associated with grasslands, irrigated pasture, and grain and hay fields. Nests in trees and shrubs	**Present.** This species has been observed foraging on the mitigation site. Although nesting has not been verified.
Grasshopper sparrow *Ammodramus savannarum*	-	SSC	-	Occurs across North America and ranges from southern Canada to Ecuador.	Grassland, hayfields, prairies. Breeds in rather dry fields and prairies, especially those with fairly tall grass and weeds and a few scattered shrubs. Also nests in overgrown pastures and hayfields, and sometimes in fields of other crops	**Low.** Although the mitigation site has abundant annual grasslands that support potential breeding and foraging habitat for this species, it is associated more with fields (pastures and hayfields) and would have been observed during surveys if present.
Short eared owl *Asio flammeus*	-	SSC	-	Circumpolar from the Arctic to the North Temperate Zone, and is also found in Hawaii and much of South America. It is partially migratory, moving south in winter from the northern parts of its range.	Forages in grassland habitats and nests on the ground in prairie, tundra, savanna, meadow, and grassland habitats. Species will also nest and forage in shrubby habitats with grasses understory and in wheat fields.	**Low.** Although this species prefers tall grass or grasslike plants areas for nesting and foraging which occurs on site, it general prefers flat terrain which is more limited onsite. Additionally, this species would have been observed during the

						numerous surveys, if present.
Burrowing owl *Athene cunicularia*	-	Candidate	-	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas; rare along south coast.	Open, dry annual or perennial grasslands, deserts, and scrublands characterized with low vegetation, usually on gently sloping terrain.	**Present**. This species has been observed being flushed from burrows within the mitigation site.
Longhorn fairy shrimp *Branchinecta longiantenna*	FE	-	-	Occurs in five locations from Contra Costa County in the north to San Luis Obispo County in the south.	Found in clear, freshwater vernal pools, claypan pools or freshwater depressions in sandstone. Generally, prefers alkaline pools.	**Not likely.** No vernal pools, alkaline pools, or rock outcrop pools are present within the mitigation site.
Vernal pool fairy shrimp *Branchinecta lynchi*	FE	-	-	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains	Inhabits small, clear-water sandstone depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**Low.** No vernal pools are present within the mitigation site. However, the seasonally inundated wetlands and the more ephemeral stock ponds within the mitigation site could provide suitable habitat.
Crotch's bumble bee *Bombus crotchii*	--	CE	G2 S2	Occurs throughout the Pacific Coast, Western Desert, and adjacent foothills throughout most of the state's southwestern region.	Inhabits grasslands and shrublands.	**Moderate.** Potential habitat for this species occurs onsite. However, this species has not been observed on the mitigation site.
Western bumble bee *Bombus occidentalis*	-	Candidate	-	Occurs in the Sierra Nevada and central coast of California north through British Columbia to Alaska and east to Idaho, Montana, western Nebraska, western North Dakota, western South Dakota, Wyoming, Utah, Colorado, northern Arizona, New Mexico and southwest Saskatchewan	Colonial ground nester in a wide variety of habitats generally in close proximity to nectar plants.	**Low.** Potential habitat for this species occurs onsite. However, the mitigation site is outside of the current known range and this species has not been observed on the mitigation site.

Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	-	-	Occurs in the Central Valley from Shasta County in the north through Madera County in the south.	Host plant is the elderberry shrub *(Sambucus spp.),* a shrub that grows in riparian areas and foothill oak woodlands.	**None.** The host plant is not present.
San Joaquin kit fox *Vulpes macrotis mutica*	FE	ST	-	Occurs in San Joaquin Valley extending from south Kern County north to Contra Costa, Alameda, and San Joaquin counties on the western side of the valley and to Stanislaus County on the eastern side.	Occurs in the desert and grasslands of the San Joaquin Valley, preferable areas with minimal shrubs and grasses.	**Moderate**. Current assessments by USFWS have assessed this part of the species range as having a "very low" condition and have determined there is no current population in this part of the range, though individuals may periodically disperse this far north. Nonetheless, suitable habitat is present and although the mitigation site is located at the northern distribution of the species range future occupation is possible.
Western mastiff bat *Eumops perotis californicus*	-	SSC	-	Uncommon resident in southeastern San Joaquin Valley and the Coastal Ranges specifically residing between Monterey County to Southern California and from the California coast east to the Colorado Desert.	Typically roosts in crevices in cliffs and rocky outcrops, in colonies of fewer than 100 individuals. May also roost in bridges, caves and buildings that allow sufficient height and clearance for dropping into flight. There is at least one record of this species roosting in an untrimmed palm tree. Forages in a variety of grassland, shrub, and wooded habitats, including riparian and	**Low.** No cliffs or rocky outcrops are present. However, this species may forage within the mitigation site.

					urban areas, although most commonly in open, arid lands.	
American badger *Taxidea taxus*	-	SSC	-	Uncommon solitary species that is widely distributed throughout the state except in the northern North Coast area from below sea level to over 12,000 ft	Prefers drier open shrub, forest, and herbaceous habitats with friable soils. Home range typically varies in size between 5 and 1,800 acres but can become much larger during breeding season as males locate receptive females. Natal dens are constructed in dry, sandy soil with sparse overstory	**High.** Suitable habitat is present and this species is known to occur on adjacent properties. However, this species has not been observed in the mitigation site.
Pallid bat *Antrozous pallidus*	-	SSC	-	Occurs throughout California except for the high Sierra Nevada from Shasta to Kern Counties to northern Mendocino County.	Deserts, grasslands, shrublands, woodlands, and forests; most common in open, dry habitats; typically roosts in rock crevices, also in tree hollows, bridges, and buildings, in colonies ranging from 1 to more than 200 individuals	**Low.** No cliffs or rocky outcrops are present. However, this species may forage in the mitigation site.
Townsend's big eared bat *Corynorhinus townsendii*	-	SSC	-	Occurs throughout the west and is distributed from the southern portion of British Columbia south along the Pacific coast to central Mexico and east into the Great Plains, with isolated populations occurring in the central and eastern United States.	Habitat associations include coniferous forests, mixed meso-phytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Typically found in areas with caves and cave-like roosting habitat, with population centers occurring in areas dominated by exposed, cavity forming rock and/or historic mining districts	**Low.** No roosting habitat is present in the vicinity. However, this species may forage in the mitigation site.

Northern California legless lizard *Anniella pulchra*	-	SSC	-	Occurs from the southern edge of the San Joaquin River in Contra Costa County south to Ventura County.	Inhabits sparsely vegetated area of bean dunes, chaparral, pine oak woodland, desert scrub, sandy washes and stream terraces.	**None.** Suitable habitat for this species (sandy or loose soils) is not present**.**
California glossy snake *Arizona elegans occidentalis*	-	SSC	-	Occurs from the eastern part of San Francisco Bay Area south to northwestern Baja.	Scrub, rocky washes, grasslands and chaparral, prefers open areas with loose soil for burrowing.	**None.** Suitable habitat for this species (sandy or loose soils) is not present**.**
San Joaquin coachwhip *Masticophis flagellum ruddocki*	-	SSC	-	Endemic to California, ranging from Kern County north to portions of Alameda County.	Dry, treeless areas with little to no cover, including valley grassland and saltbush scrub. Mammal burrows used for overwintering.	**Moderate.** Habitat is generally suitable though the species has not been observed in the mitigation site.
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT	ST	-	Occurs in Alameda and Contra Costa counties.	Found in northern coastal scrub and chaparral habitat. May also occur in grasslands, open woodlands, rocky slopes near scrub and chaparral.	**Not likely.** This species is associated with chapparal habitats which do not occur onsite.
Northwestern pond turtle *Actinemys marmorata*	PT	SSC	-	North of San Francisco Bay area and north Central Valley	Found in ponds, streams, lakes, rivers, creeks, marshes and irrigation ditches with abundant vegetation.	**Low.** Not observed during previous surveys of ponds. No suitable nesting habitat (friable soils) occurs in the mitigation site.
Coast horned lizard *Phrynosoma blainvillii*	-	SSC	-	From Baja California west of the Sierra Nevada, north to Bay Area and Shasta	Open areas with sandy soils and low vegetation in valleys, foothills, and semiarid mountain.	**Not likely.** Sandy soils are not present onsite and native ant colonies were not detected during surveys.
Plants						
Caper fruited tropidocarpum *Tropidocarpum capparideum*	-	-	1B.1	Alameda, Contra Costa, Monterey, San Joaquin and San Luis Obispo Counties	Occurs at elevations of at 5 – 1,495 feet amsl and is associated with valley and foothill grasslands.	**Low.** Although potential habitat occurs onsite, the mitigation site occurs just outside of the species known range.

Large flowered fiddleneck *Amsinckia grandiflora*	-	-	1B.1	Alameda, Contra Costa, and San Joaquin counties	Occurs at elevations of 885 – 1,805 feet amsl; associated with cismonstane woodland and valley/foothill grasslands.	**Moderate.** Potential habitat occurs onsite.
Brittlescale *Atriplex depressa*	-	-	1B.2	Alameda, Colusa, Contra Costa, Fresno, Glenn, Kings, Merced, Solano, Tulare and Yolo counties	Occurs at elevations of 5 – 1,050 feet amsl; associated with chenopod scrub, meadows, seeps, playas, valley and foothill grassland.	**Not likely.** Saline and alkaline habitats are generally lacking onsite.
Lesser saltscale *Atriplex minuscula*	-	-	1B.1	Alameda, Butte, Fresno, Kern, Kings, Madera, Merced, Stanislaus, Tulare counties	Occurs at elevations of 50 – 655 feet amsl; associated with chenopod scrub, playas, valley and foothill grassland.	**Not likely.** Saline and alkaline habitats are generally lacking onsite.
Big tarplant *Blepharizonia plumosa*	-	-	1B.1	Alameda, Contra Costa, San Joaquim, Solano, Stanislaus counties	Occurs at elevations of 100 – 1,655 feet amsl; associated with clay areas of valley and foothill grassland.	**Moderate.** Potential habitat occurs onsite.
Lemmon's jewelflower *Caulanthus lemmonii*	-	-	1B.2	Alameda, Fresno, Kern, Kings, Merced, Monterey, San Joaquin, San Luis Obispo, Santa Barbara, Stanislaus, Ventura counties	Occurs at elevations of 260 – 5,185 feet amsl; associated with pinyon and juniper woodland and valley and foothill grasslands.	**Not likely.** The mitigation site occurs just outside of the species most northern distribution of its range.
Congdon's tarplant *Centromadia parryi ssp. congdonii*	-	-	1B.1	Alameda, Contra Costa, Monterey, San Luis Obispo, San Mater, Santa Clara, Santa Cruz, Solano counties	Occurs at elevations of 0 – 775 feet amsl; associated with valley and foothill grassland (alkaline).	**Not likely.** Associated with moist areas within nearly level alkaline grasslands that are absent onsite.
Hospital Canyon larkspur *Delphinium californicum ssp. interius*	-	-	1B.2	Alameda, Contra Costa, Merced, Monterey, San Benito, San Joaquin, Santa Clara, Stanislaus counties	Occurs at elevations of 640 – 3,595 feet amsl; associated with chaparral, cismonstane woodland, and coastal scrub.	**Not likely.** Associated with woody habitats that are absent onsite.
Diamond petaled California poppy *Eschscholzia rhombipetala*	-	-	1B.1	Alameda, Colusa, Contra Costa, Kern, San Joaquin, San Luis Obispo, Stanislaus counties	Occurs at elevations of 0 – 3,200 feet amsl; associated with valley and foothill grassland (alkaline, clay).	**Low- Moderate.** Although alkaline soils are generally absent, clay soils within annual

						grasslands habitats are plentiful onsite.
San Joaquin spearscale *Extriplex joaquinana*	-	-	1B.2	Alameda, Colusa, Contra Costa, Fresno, Glenn, Merced, Napa, Sacramento, San Benito, San Joaquin, San Luis Obispo, Solano, Yolo counties	Occurs at elevations of 5 – 2,740 feet amsl; associated with chenopod scrub, meadows and seeps, playas, valley and foothill grassland.	**Not likely.** Alkaline soils are generally absent onsite.
Brewer's wester flax *Hesperolinon breweri*	-	-	1B.2	Alameda, Contra Costa, Napa, Solano counties	Occurs at elevations of 100 – 3,100 feet amsl; associated with chaparral, cismontane woodland and valley and foothill grasslands.	**Moderate.** Annual grasslands habitats are plentiful onsite.
California alkali grass *Puccinellia simplex*	-	-	1B.2	Alameda, Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Kings, Lake, Los Angeles, Madera, Merced, Napa, San Bernadino, San Luis Obispo, Santa Clara, Santa Cruz, Solano, Stanislaus, Tulare, Yolo counties	Occurs at elevations of 5 – 3,050 feet amsl; associated with chenopod scrub, meadows and seeps, valley and foothill grasslands, vernal pools.	**Not likely.** Alkaline soils are generally absent onsite.
Chaparral harebell *Ravenella exigua*	-	-	1B.2	Alameda, Contra Costa, Fresno, Merced, San Benito, Santa Clara, Stanislaus counties	Occurs at elevations of 900 – 4,100 feet amsl; associated with chaparral habitat.	**Not Likely.** Chapparal habitat is absent in the mitigation site.
Showy golden madia *Madia radiata*	-	-	1B.1	Contra Costa, Fresno, Kern, Kings, Monterey, San Benito, San Joaquin, San Luis Obispo, Santa Barbara, Stanislaus counties	Occurs at elevations of 80 – 3,985 feet amsl; associated with cismontane woodland, valley and foothill grassland.	**Moderate.** Potential habitat is present in the mitigation site.
Shining navarretia *Navarretia nigelliformis ssp. radians*	-	-	1B.2	Butte, Contra Costa, Colusa, Fresno, Madera, Merced, Monterey, San Benito, San Joaquin, San Luis Obispo, and Tulare counties.	Occurs at elevations of 213 – 3,281 feet amsl; associated with cismontane woodland, valley and foothill grassland, vernal pools, swales, and clay flats.	**Low.** This species generally occurs in vernal pools or other similar seasonal wetlands which are generally absent in the mitigation site.

Long-styled sand spurrey *Spergularia macrotheca var. longistyla*	-	-	1B.2	Alameda, Contra Costa, Napa, Solano counties	Occurs at elevations of 0 – 835 feet amsl; associated with meadows, seeps, marshes and swamps.	**Moderate.** Suitable habitat (wetlands, including seeps) occurs in the mitigation site.

Definitions: *Federal Status* – FE = federally endangered, FT = federally threatened, FC = federal candidate; *State Status* – SE = state endangered, ST= state threatened, SSC= species of special concern, FP= fully protected. *CNPS Rare Plant Rank* - 1B = Rank 1B species: rare, threatened, or endangered in California and elsewhere, 1B.1 – seriously threatened in California, 1B.2 – Moderately threatened in California, 1B.3 – Not very threatened in California,

3.2.1. Special-Status Plants

Although no special-status plant species were observed onsite during surveys, there are six special-status plants known that have a moderate potential to occur in the mitigation site:

- Large flowered fiddleneck;
- Big tarplant;
- Diamond petaled California poppy;
- Brewer's wester flax;
- Showy golden madia; and
- Long-styled sand spurrey.

Though, all these species are considered rare, threatened, or endangered in California and elsewhere under CNPS 1.B ranking; none are listed as threatened or endangered under state or federal Endangered Species Acts. Because species focused special-status plants surveys have not yet been conducted; the presence, or presumed absence, of the above plant species and other special-status plants that are not known to occur within the vicinity of the mitigation site is largely unknown.

3.2.2. Special-status Wildlife

A total of five of the 28 special-status wildlife species listed in Table 2 were observed in the mitigation site (Figure 6) and include:

- California tiger salamander;
- California red-legged frog;
- Northern harrier;
- Loggerhead shrike; and
- Burrowing owl.

Two special status species, golden eagle and tricolored blackbird have been observed foraging just outside the boundary of the mitigation site (Figure 6).

An additional seven special-status wildlife species have at least moderate potential occur on the mitigation site and include:

- Swainson's hawk;
- White tailed kite;
- Crotch's bumble bee;
- San Joaquin kit fox;
- American badger; and
- San Joaquin coachwhip.

The presence or potential of the above-mentioned species are briefly discussed below.

3.2.2.1. California Tiger Salamander

California tiger salamander larvae were observed in SP-18, SP-19 and SP-21 in 2019 (Figure 6). CTS larvae were also observed in SP-16 in 2023 (Figure 6).

3.2.2.2. California Red-Legged Frog

Adult and immature CRLF have utilized various features throughout the mitigation site. CRLF were observed in SP-16 in 2014, SP-19 in 2024, SP-20 in 2023, and W-1[2] in 2023 and 2024

In addition, the mitigation site is within designated critical habitat for CRLF (Figure 9).

3.2.2.3. Golden Eagle

Golden eagles are viewed nearly every year during the winter and early spring season foraging on California ground squirrels and black tailed hares, and other wildlife prey (Figure 6). However, no suitable nesting habitat occurs within the mitigation site.

3.2.2.4. Tricolored Blackbird

Tricolored black birds are consistently observed year after year, foraging within the mitigation site. However, there is currently no nesting habitat within the mitigation site.

3.2.2.5. Northern Harrier

Although nesting has not been documented within the mitigation site, Northern harriers are consistently observed foraging over the stock ponds and annual grasslands within the mitigation site.

3.2.2.6. Loggerhead Shrike

Loggerhead shrikes have been documented foraging in the mitigation site. However, nesting of this species onsite has not been verified.

3.2.2.7. Burrowing Owl

Burrowing owls have been consistently observed within the mitigation site. Typically, individuals are observed after being flushed from burrows within the mitigation site. In particular, burrowing owls have been seen near SP-16 frequently during site visits (Figure 5). Individuals have been observed throughout the year; however, no nesting surveys have occurred.

3.2.2.8. Swainson's Hawk

Although Swainson's hawk has not been observed within the mitigation site, there is suitable foraging habitat present. Additionally, although nesting habitat for this species is absent in the mitigation site, numerous appropriate trees for nesting occur within the adjacent Ranch.

3.2.2.9. White Tailed Kite

Similar to Swainson's hawk, nesting habitat for white tailed kite is absent within the mitigation site; however, suitable foraging is abundant onsite and suitable nesting habitat (trees) occurs within the adjacent Ranch.

[2] This feature was not identified and surveyed until 2023.

3.2.2.10. Crotch's Bumble Bee

Suitable habitat is abundant onsite for Crotch's bumble bee. Although this species has not been observed onsite, species-specific surveys have not been conducted.

3.2.2.11. San Joaquin Kit Fox

Although this species has not been detected within the mitigation site, no species-specific surveys have been conducted for SJKF. Given that this species is generally nocturnal and highly secretive and it would not be surprising if this species was to be present onsite because suitable habitat is present.

3.2.2.12. American Badger

Although the American badger has not been observed onsite, there are huge populations of California ground squirrels, which are its preferred prey in this area of California. In addition, this species has a fairy large home range and could easily move on to the mitigation site, if it is currently not present.

3.2.2.13. San Joaquin Coachwhip

Although this species has not been observed within the mitigation site, species specific surveys have not been conducted to date. However, the potential for this species to occur is based on the presence of suitable habitat and nearby species presence.

3.2.3. Critical Habitat

Although the mitigation site supports a plethora of special-status species, the mitigation site occurs only within critical habitat for the California red-legged frog (Figure 9).

3.3. Wildlife, Habitat Connectivity, and Conservation Opportunities

The mitigation site and larger Mulqueeney Ranch provide habitat for many common wildlife species (i.e., non-special status), which include amphibians, reptiles, birds, and small to moderate-sized mammals. Generally, the mitigation site is situated in a transitional area between the Great Central Valley and the Coast Range, specifically the Diablo Range. This area is dominated by annual grasslands interspersed with ephemeral and intermittent drainages, some of which support riparian vegetation, seasonal wetlands, and ponds constructed to support cattle grazing. A list of all wildlife species observed on or adjacent to the mitigation site is included as Appendix C.

The mitigation site was evaluated for its overall conservation value under existing conditions by reviewing several datasets within CDFW's Biogeographic Information and Observation System (BIOS; BIOS6 version 6.24.1120). A discussion of the relevant conservation datasets in relation to the mitigation site is provided below.

The mitigation site is situated in area identified by the California Essential Habitat Connectivity Project as being part of a "Natural Landscape Block", which consists of a statewide network of relatively intact blocks of land connected by essential connectivity areas (Spencer et al. 2010). The purpose of the Natural Landscape Block is to focus attention on large areas important to maintaining ecological integrity at the broadest scale (Spencer et al. 2010). The northwestern

most half of the mitigation site also falls within Mountain House-Brushy Peak Essential Connectivity Area, which joins natural landscape blocks on either side of the Altamont Pass.

CDFW's ACE is an effort to gather spatial data on wildlife, vegetation, and habitats from across California and then combine this information into maps to inform conservation of biodiversity, habitat connectivity, and climate change resiliency (CDFW 2019). The mitigation site is situated in an area identified in the ACE Terrestrial Connectivity dataset as having "Conservation Planning Linkages – Rank 4" and is immediate west of an area ranked as having "Irreplaceable and Essential Corridors – Rank 5".

Other ACE data layers show the mitigation site occurring in an area identified as having a high value (Rank 5) for *Statewide Terrestrial Rare Species Richness* and moderately high value (Rank 4) for *Aquatic Amphibian Irreplaceability*.

Habitat in the area surrounding the mitigation site provide suitable habitat for various special status species. CTS breeding has been documented in ponds located on the nearby conserved Jess Ranch and Haera Conservation Bank (Figure 10). Additionally, in 2019 CTS were observed by WES staff in stock ponds located on the Ranch, within 1 mile of the mitigation site (Figure 6). Additional surveys on these ponds have not been completed since 2019. WES staff have observed CRLF in a seep just north of the mitigation site in 2019 and 2023. This seep is hydrologically connected to the mitigation by one of the ephemeral drainages. Tricolored blackbird and golden eagles have been seen foraging in various locations of the Ranch.

The proposed mitigation site is directly adjacent to the Shell N20 Mitigation Site, which is expected to be approved by USFWS and CDFW in early 2025. The Shell N20 Mitigation Site connects the Jess Ranch, a Contra Costa Water District conservation easement, and Haera Wildlife Conservation Bank. Permanent protection of the mitigation site would increase the amount of conserved habitat and preserving connectivity to the conserved habitat.

The conservation of the mitigation site would contribute to regional conservation efforts by helping maintain and improve wildlife connectivity in the Diablo Range, from north to south, and protect areas deemed of statewide importance for terrestrial and aquatic species.

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APPENDICES

APPENDIX A
Figures

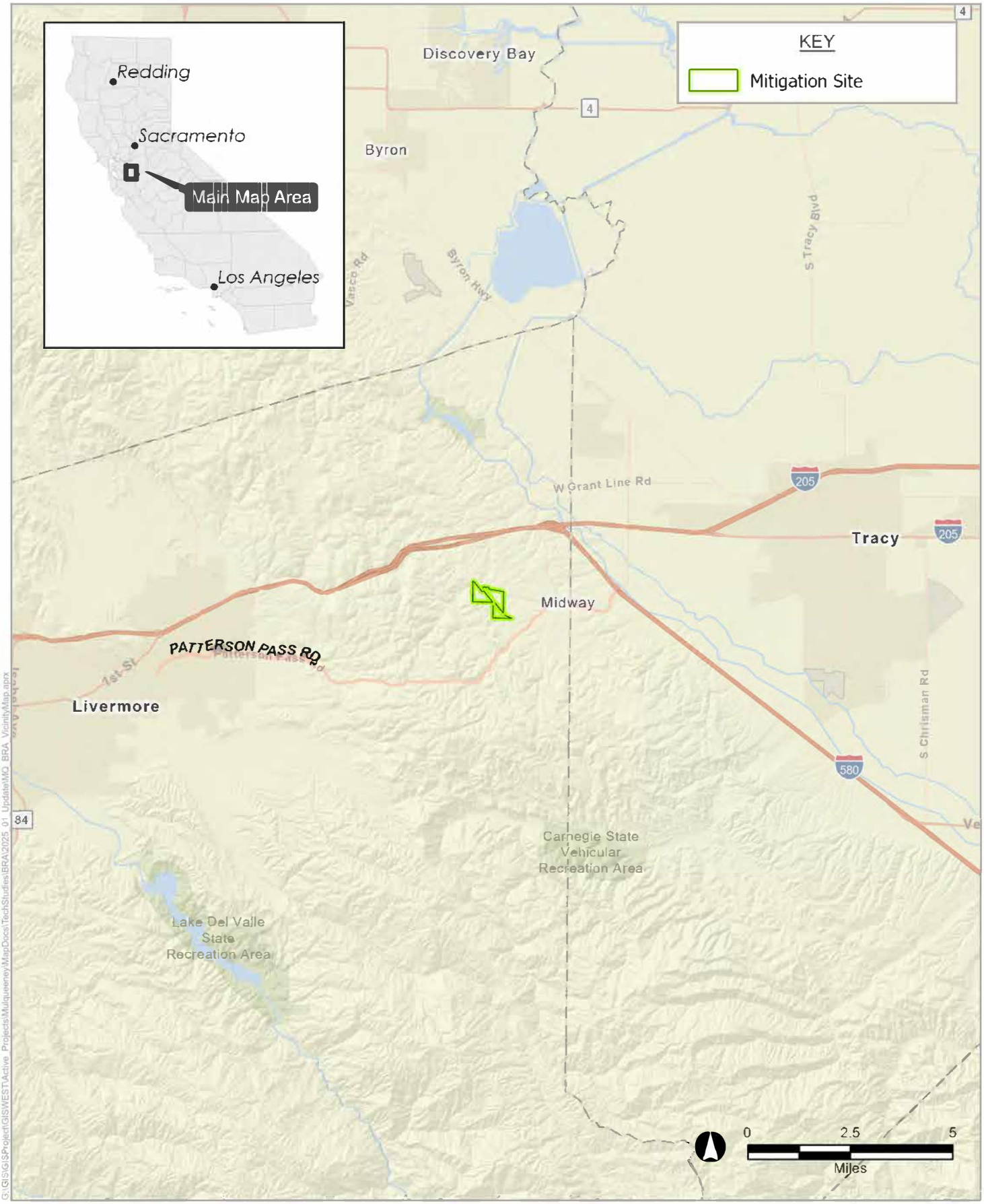

Figure 1
Vicinity Map
January 16, 2025

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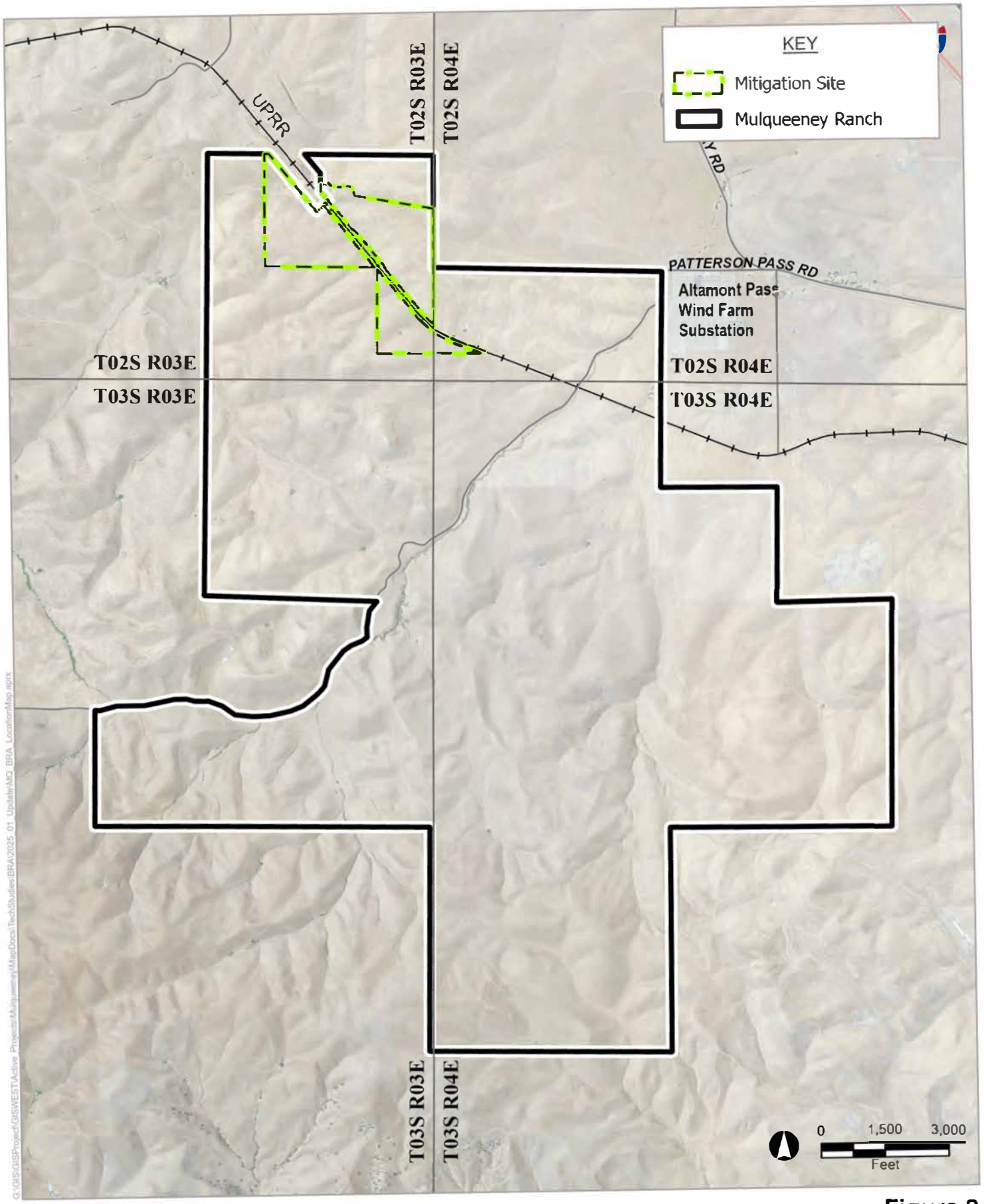

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USGS 7.5' Quadrangle: MIDWAY, 1980

Figure 2
Project Location
January 15, 2025

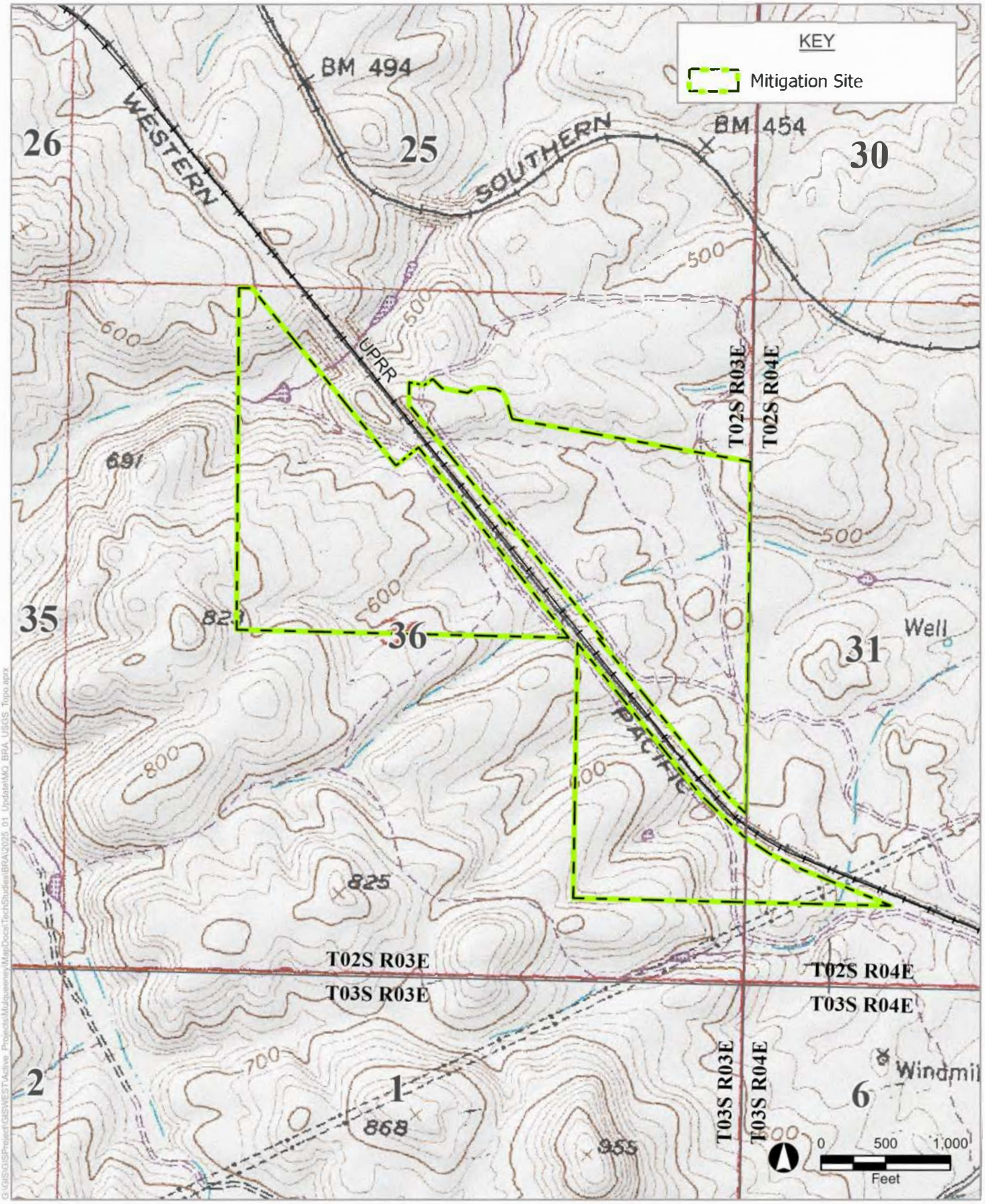

Figure 3

USGS Topographic Quadrangle

January 16, 2025

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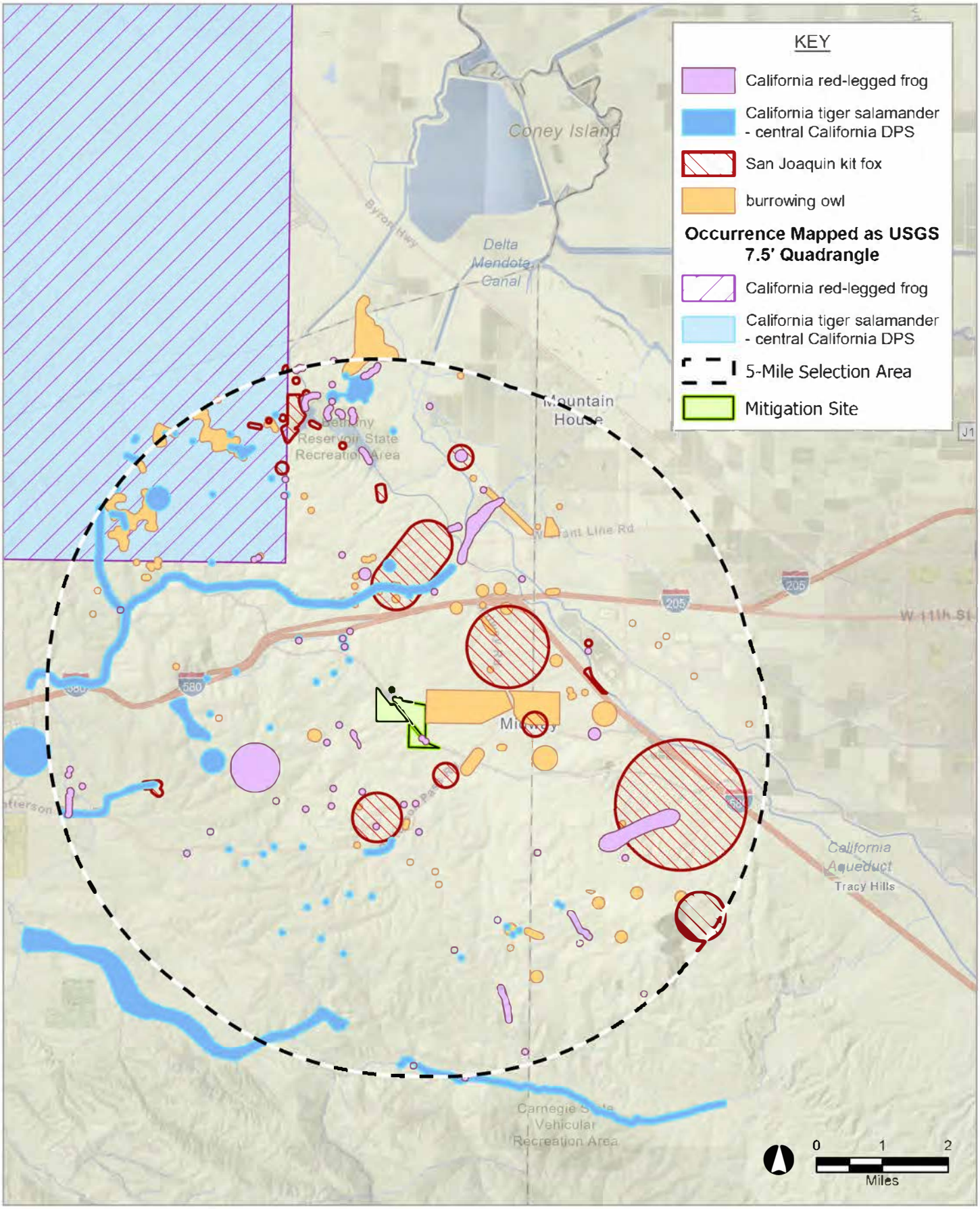
USGS 7.5' Quadrangle: MIDWAY, 1980



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Source: California Department of Fish and Wildlife, California Natural Diversity Database

Figure 4

CNDDB Occurrences

January 16, 2025

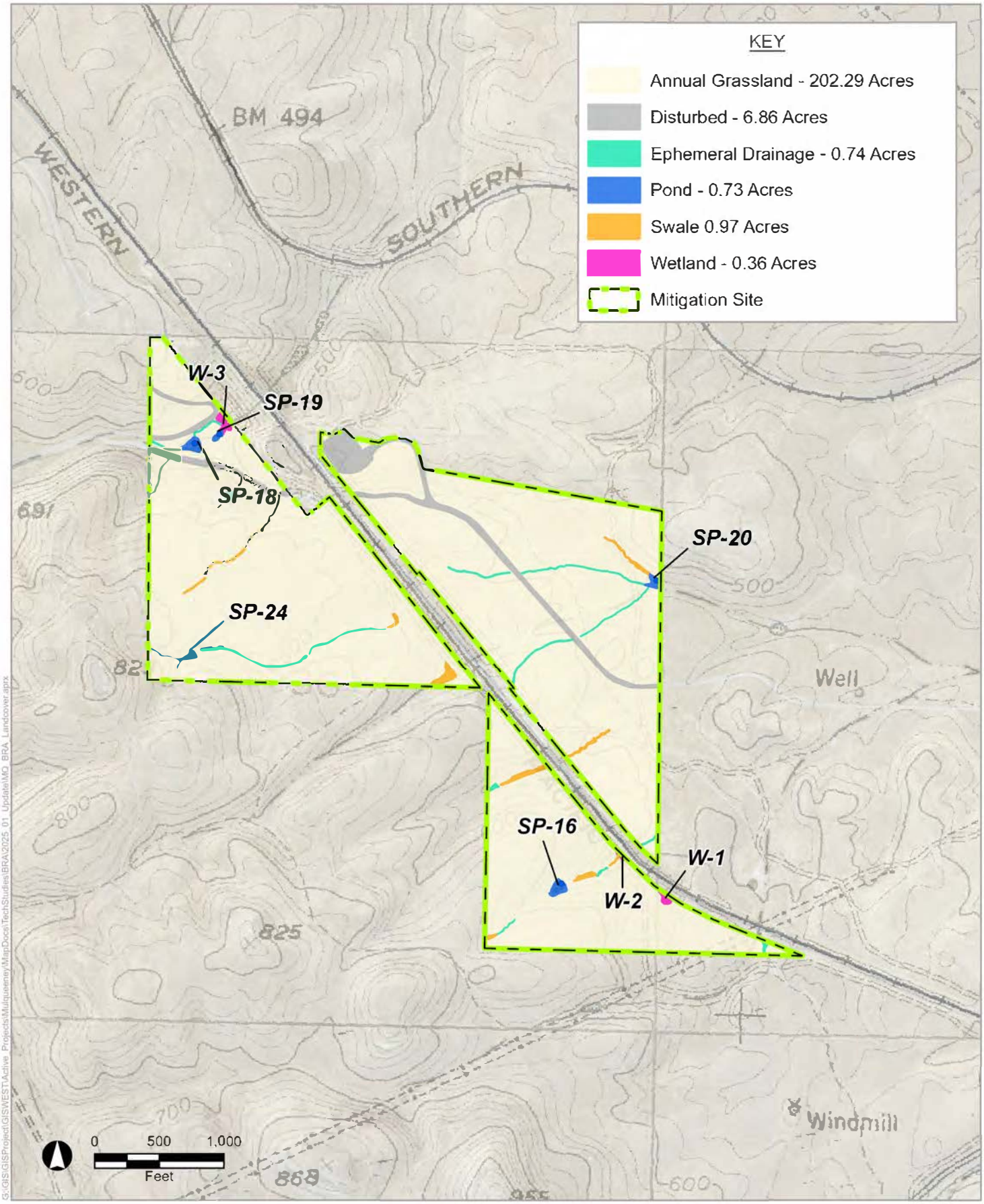

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Figure 5
Landcover
January 16, 2025

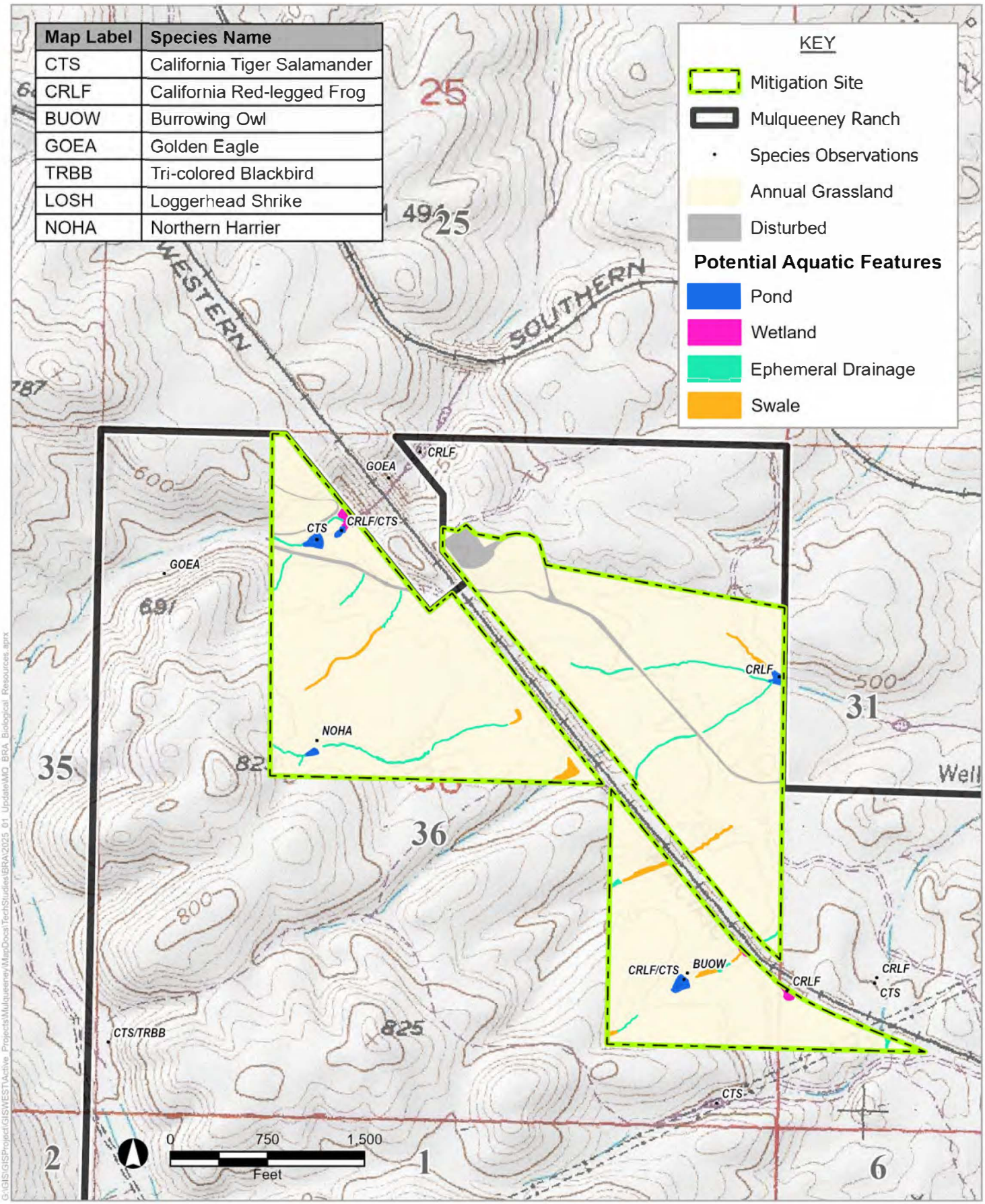

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Figure 6
Biological Resources
January 21, 2025

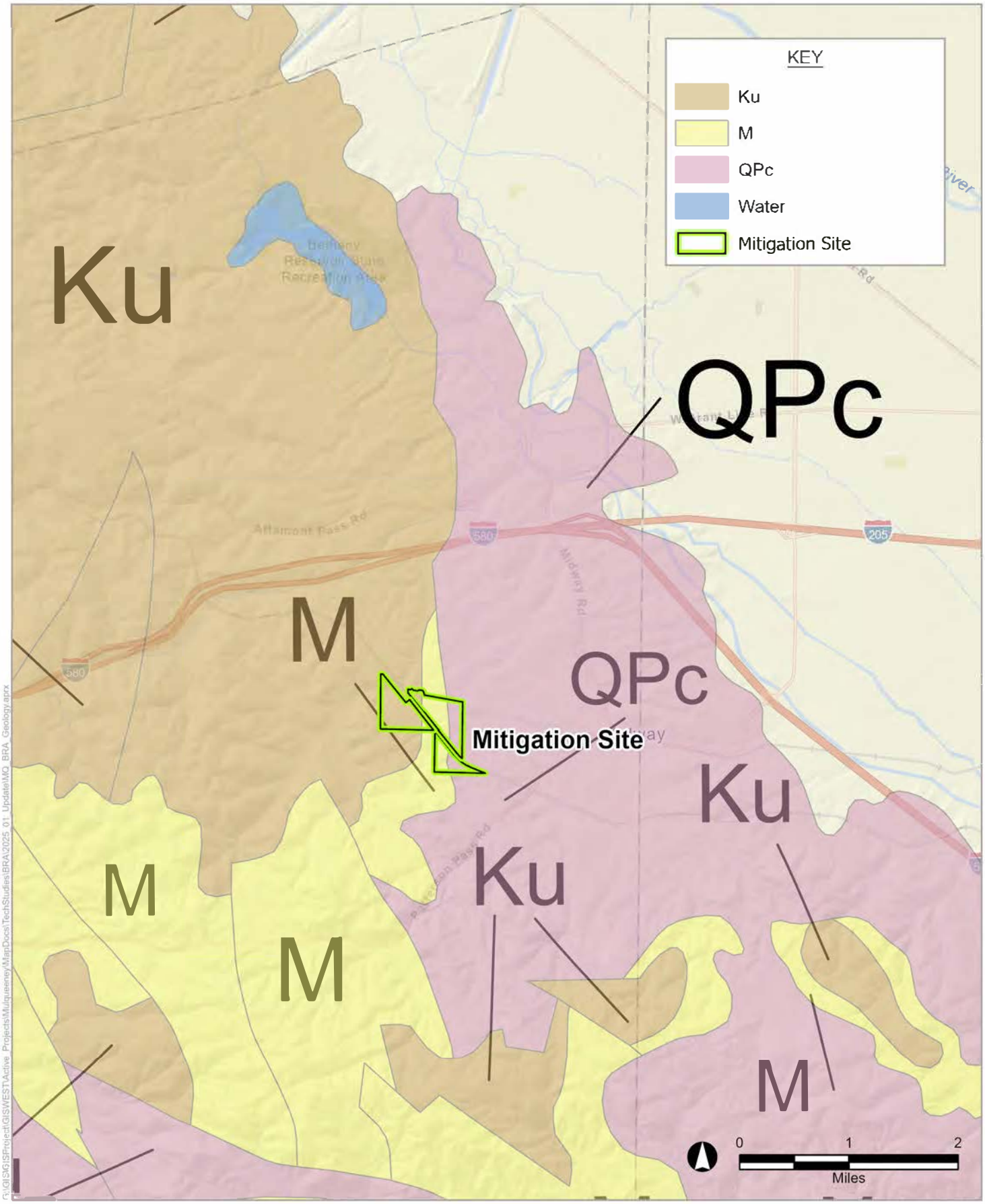


Figure 7
Geology
January 16, 2025

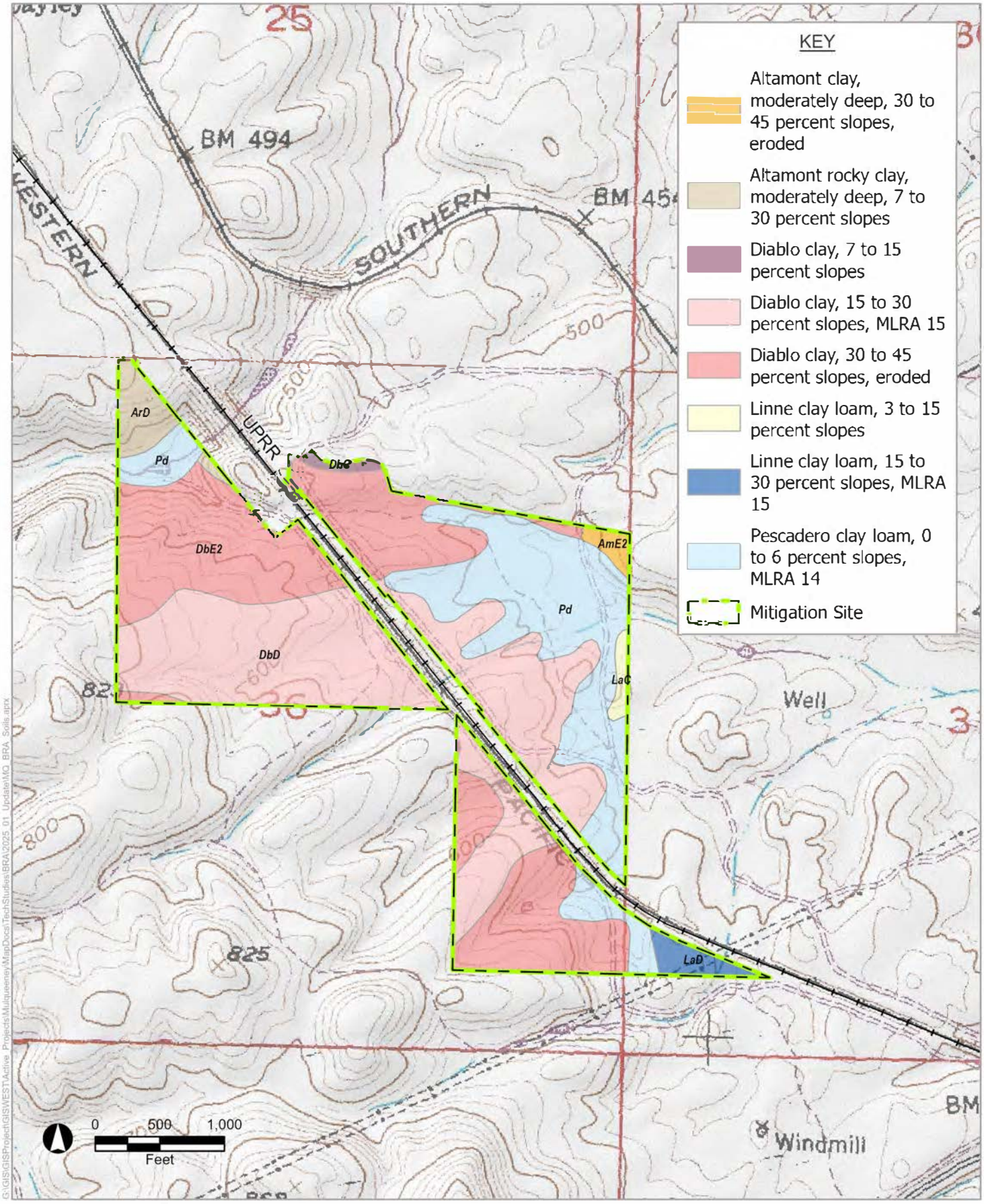
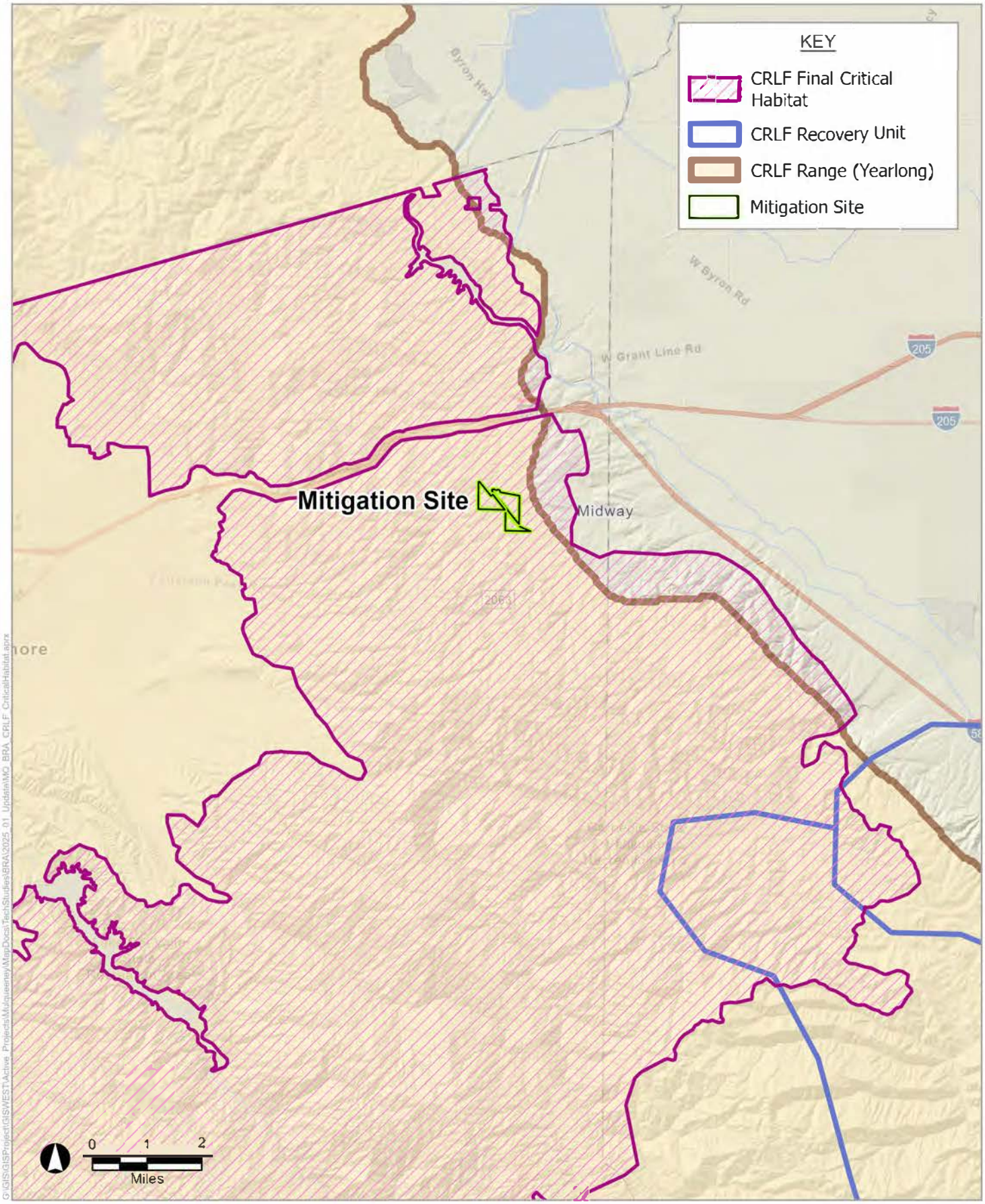


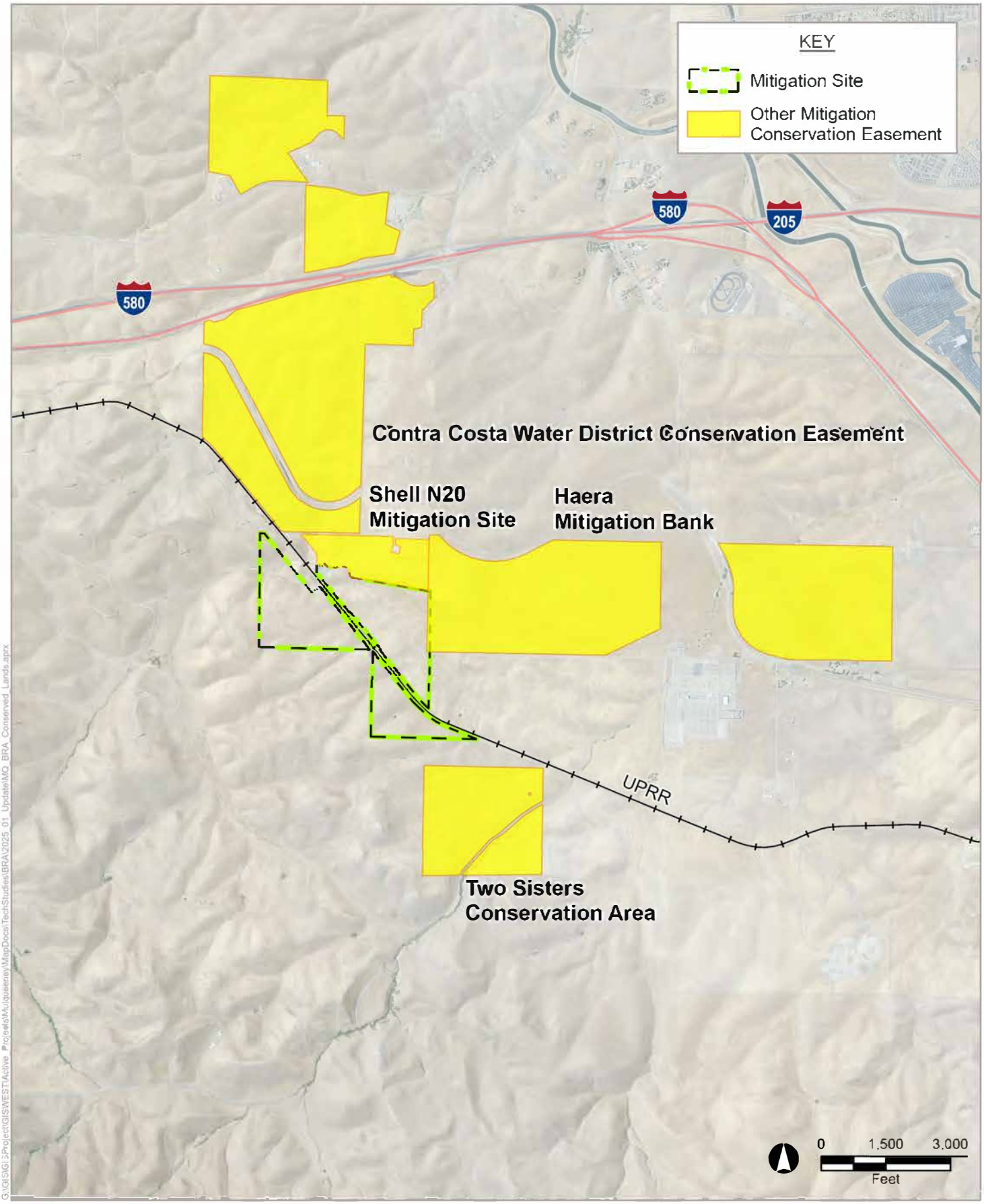
Figure 8
Soils
January 14, 2025

Westervelt
ECOLOGICAL SERVICES



Source: U.S. Fish and Wildlife Service

Figure 9
CRLF Critical Habitat
January 14, 2025



Westervelt ECOLOGICAL SERVICES

USGS 7.5' Quadrangle: MIDWAY, 1980

Figure 10
Conservation Easements
January 14, 2025

APPENDIX B

Plant Species List

Table 1. Vascular Plant Species Observed at the Mitigation Site

Plant Species Names		Wetland Indicator Status	Cal-IPC Rating	Hal	
Scientific Name	Common Name			Annual Grassland	Stockpond
*Agrostis stolonifera**	Creeping bentgrass, Redtop	FACW	L		X
*Aira caryophyllea**	Silver hairgrass	FACU		X	
Alisma triviale (*A. plantago-aquatica*)	Northern water plantain	OBL			X
*Amaranthus albus**	Pigweed amaranth	FACU		X	
Amsinckia intermedia	Common fiddleneck	NL		X	
*Anthemis cotula**	Mayweed	FACU		X	
*Avena barbata**	Slender oats	NL	M	X	X
Azolla filiculoides	American water fern, mosquito fern	OBL			X
*Brassica nigra**	Black mustard	NL	M	X	
*Bromus diandrus**	Ripgut brome, Ripgut grass	NL	M	X	X
*Bromus hordeaceus**	Soft brome	FACU	L	X	X
Calandrinia menziesii	Red maids	FACU		X	
Callitriche marginata	California water starwort	OBL			X
*Capsella bursa-pastoris**	Shepard's purse	FACU		X	
Cardamine oligosperma	Few-seeded bitter-cress	FAC		X	
*Carduus pycnocephalus**	Italian thistle	NL	M	X	X
Castilleja densiflora?+	Dense flower owl's clover	NL		X	
Castilleja exserta+	Purple owl's clover	NL		X	
*Centaurea melitensis**	Tocalote	NL	M		
*Centaurea solstitialis**	Yellow star-thistle	NL	H	X	X
*Cerastium glomeratum**	Mouse-ear chick-weed	UPL		X	
Chara sp.	Stonewort	OBL			X
*Chenopodium album**	Goosefoot	FACU		X	
Chlorogalum angustifolium+	Narrow leaved soaproot	NL		X	
*Cichorium intybus**	Chicory	FACU		X	
*Cirsium vulgare**	Bull thistle	FACU	M	X	X
Clarkia purpurea+	Purple clarkia	NL		X	
*Convolvulus arvensis**	Field bindweed	NL		X	
*Cotula coronopifolia**	Brass buttons	OBL	L		X
Crassula aquatica	Aquatic pygmy weed	OBL			X
Croton setiger	Dove weed	NL		X	X
*Crypsis schoenoides**	Swampgrass, swamp timothy	FACW			X
*Cynodon dactylon**	Bermuda grass	FACU	M	X	X
Cyperus eragrostis	Tall flatsedge, Umbrella-sedge	FACW			X
Deschampsia danthonioides	Annual hairgrass, silverhair grass	FACW			X
Distichlis spicata	Salt grass	FAC		X	
Downingia pulchella	Flatface downingia	OBL			X
*Echinochloa crus-galli**	Watergrass	FACW			X
Eleocharis macrostachya	Common spike rush	OBL			X
*Elymus caput-medusae**	Medusa-head grass	NL	H	X	
Epilobium branchycarpum	Tall annual willow herb	FAC		X	X

Epilobium ciliatum	Slender willow herb	FACW			X
Erigeron canadensis	Canada horseweed	FACU		X	X
Eriogonum fasciculatum+	California buckwheat	NL		X	
*Erodium botrys**	Broad leaf filaree	FACU		X	
*Erodium cicutarium**	Red-stem filaree	NL	L	X	
*Erodium moschatum**	White stemmed filaree	NL		X	
Erythranthe guttata (*Mimulus guttatus*)	Streamside monkey flower	OBL			X
Eschscholzia californica	California poppy	NL		X	
*Festuca bromoides**	Six-weeks grass	FACU		X	
Festuca microstachya	Small fescue	NL		X	
*Festuca myuros**	Foxtail grass	FACU	M	X	
*Festuca perennis**	Italian ryegrass	FAC	M	X	X
*Geranium dissectum**	Cut leaved geranium	NL	L	X	
Grindelia camporum	Great valley gumweed	FACW			X
Heliotropium curassavicum	Heliotrope	FACU		X	
*Hirschfeldia incana**	Short podded mustard	NL	M	X	X
Hordeum marinum ssp. *gussoneanum**	Mediterranean barley	FAC	M	X	X
Hordeum murinum ssp. *leporinum**	Hare barley	FACU	M	X	
Hydrodictyon sp	Fishnet algae	OBL			X
Juncus balticus	Baltic rush	FACW			X
Juncus bufonius	Toad rush	FACW			X
Juncus xiphioides	Iris leaved rush	OBL			X
*Lactuca serriola**	Prickly wild lettuce	FACU		X	
Lemna minor	Smaller duckweed	OBL			X
Lupinus bicolor	Bicolored lupine	NL		X	
Lupinus pachylobus?+	Big pod lupine	NL		X	
Lupinus succulentus	Succulent lupine	NL		X	
Lysimachia arvensis+*	Scarlet pimpernel	FAC		X	X
*Lythrum hyssopifolia**	Hyssop loosestrife	OBL	L		X
*Malva parviflora**	Cheeseweed mallow	NL		X	
Malvella leprosa+	Alkali mallow	FACU		X	
Matricaria discoidea	Pineapple weed	FACU		X	
*Medicago polymorpha**	Bur clover	FACU	L	X	
*Melilotus indicus**	Sourclover	FACU			X
*Mollugo verticillata**	Green carpetweed	FACU		X	
Nasturtium officinale+	Watercress	OBL			X
*Paspalum dilatatum**	Dallis grass	FAC			X
Plagiobothrys nothofulvus	Rusty haired popcorn flower	FAC		X	
*Plantago lanceolata**	Narrow leaf plantain	FAC		X	X
*Poa annua**	Annual bluegrass	FAC		X	X
*Polygonum aviculare**	Common knotweed	FAC			X
*Polypogon monspeliensis**	Rabbitsfoot grass	FACW	L		X
*Pseudognaphalium luteoalbum**	Jersey cudweed	FAC			X
Ranunculus aquatilis	White water buttercup	OBL			X
*Ranunculus muricatus**	Spinyfruit buttercup	FACW			X
*Raphanus sativus**	Wild radish	NL	L	X	
*Rumex crispus**	Curly dock	FAC	L		X

Salix sp.	Willow	FACW			X
*Silybum marianum**	Milk thistle	NL	L	X	X
*Spergularia rubra**	Purple sandspurry	FAC			X
Stuckenia pectinata (Potomogeton pectinatus)	Sago pondweed	OBL			X
*Trifolium dubium**	Shamrock	UPL		X	
*Trifolium hirtum**	Rose clover	UPL	L	X	
Triphysaria eriantha+	Butter 'n' eggs	NL		X	
Triteleia hyacinthina+	White brodiaea	FAC		X	
*Typha angustifolia**	Narrowleaf cattail	OBL			X
Urtica dioica	Stinging nettle	FAC			X
Veronica anagallis-aquatica+*	Water speedwell	OBL			X
Veronica peregrina	Neckweed	FAC			X
Vicia sativa	Common vetch	FACU		X	
*Vicia villosa**	Hairy or winter vetch	NL		X	
Xanthium strumarium	Cocklebur	FAC			X

* = non native , + = observed on the Ranch but outside the Mitigation Site

APPENDIX C

Wildlife Species List

Table 4. List of Wildlife Observed within the Mitigation Site and Mulqueeney Ranch

Common Name	Scientific Name
Mammals	
Audubon's cottontail	*Sylvilagus audubonii*
Black-tailed jackrabbit	*Lepus californicus*
Botta's pocket gopher	*Thomomys bottae+*
California ground squirrel	*Otospermophilus beecheyi*
Coyote	*Canis latrans*
Gray fox*	*Urocyon cinereoargenteus+*
Raccoon	*Procyon lotor+*
Virginia opossum	*Didelphis virginiana+*
Birds	
American cliff swallow	*Petrochelidon pyrrhonota*
American crow	*Corvus brachyrhynchos*
American kestrel	*Falco sparverius*
American wigeon*	*Mareca americana*
Bald eagle*	*Haliaeetus leucocephalus*
Barn swallow	*Hirundo rustica*
Black phoebe	*Sayornis nigricans*
Brewer's blackbird	*Euphagus cyanocephalus*
Bufflehead	*Bucephala albeola*
Canada goose	*Branta canadensis*
Common starling	*Sturnus vulgaris*
Golden eagle	*Aquila chrysaetos*
Great blue heron	*Ardea herodias*
Great egret	*Ardea alba*
Greater yellowlegs	*Tringa melanoleuca*
Horned lark	*Eremophila alpestris*
Killdeer	*Charadrius vociferus*
Loggerhead shrike	*Lanius ludovicianus*
Mallard	*Anas platyrhynchos*
Mourning dove	*Zenaida macroura*
Northern harrier	*Circus hudsonius*
Northern raven	*Corvus corax*
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius phoeniceus*
Savannah sparrow	*Passerculus sandwichensis*
Tricolored blackbird	*Agelaius tricolor*
Turkey vulture	*Cathartes aura*
Western burrowing owl	*Athene cunicularia hypugaea*
Western kingbird	*Tyrannus verticalis*
Western meadowlark	*Sturnella neglecta*
Reptiles	
Northern Pacific rattlesnake*	*Crotalus oreganus oreganus*

Northwestern fence lizard	*Sceloporus occidentalis occidentalis*
Amphibians	
California red-legged frog	*Rana draytonii*
California tiger salamander	*Ambystoma californiense*
California toad	*Anaxyrus boreas halophilus*
Sierran treefrog	*Pseudacris sierra*

+ = sign (tracks, burrows, etc.)

* = Observed outside of Mitigation Site

APPENDIX D

Representative Photographs

Photo 1 (S): Stock pond where BUOW are present in adjacent burrows located in the mitigation site.

Photo 2 (W): Stock pond within the mitigation site where CTS larvae and adult CRLF have been observed.

Photo 3 (N): Drainage in the mitigation area.

Photo 4: CRLF found in a stock pond in the mitigation site.

Photo 5: CRLF found in drainage in the mitigation site.

Photo Point 6: CTS larvae detected during aquatic surveys in the mitigation site.

Photo Point 7: CTS larvae detected during aquatic surveys in the mitigation site.

Photo Point 8: Bald Eagle (*Haliaeetus leucocephalus)* observed in the mitigation site.

Photo Point 9: Burrowing Owl (*Athene cunicularia)* observed in the mitigation site.

Westervelt
ECOLOGICAL SERVICES

REGIONAL LOCATIONS

Rocky Mountain Region

625 Park Point Drive, Suite 265
Golden, Colorado 80401
T: (303) 927-0037

Southeastern Region

ALABAMA
MAIN OFFICE
2128 Moores Mill Road, Suite B
Auburn, Alabama 36830
T: (334) 821-1999

FLORIDA
1400 Village Square Blvd., Suite #3-135
Tallahassee, Florida 32312
T: (850) 661-4292

TENNESSEE
220 Bridge Street
Franklin, Tennessee 37064
T: (615) 807-2194

Western Region

3636 American River Drive, Suite 120
Sacramento, California 95864
T: (916) 646-3644

Appendix D - EACCS Mitigation Scoring Sheets

Appendix E. Continued

Table E-4. Impact/Mitigation Scoring for California tiger salamander in the EACCS study area.

California tiger salamander	5	4	3	2	1	0	Score
Closest suitable breeding habitat to site	On-site	Within 500 feet	Between 501 – 1,600 feet	Between 1,601 –2,050 feet	Between 2051–6,900 feet	Greater than 6,900 feet	3
Is there occupied habitat within 6,900 feet of site?	Yes	--	--	No	--	--	2
Aquatic land covers impacted/ mitigated	Wetland, Ponds	--	Stream/River	--	--	All others; none	0
Upland land covers impacted/ mitigated	Grassland, Oak woodland, Rural residential	Chaparral/ Scrub	Riparian	Conifer woodland	ruderal without refugia habitat	All others; none	5
Elevation	Below 3,700 feet	--	--	--	--	Above 3,700 feet	5
Presence of ground squirrels/pocket gophers	On site	Within 1,350 feet of site	Between >1,351 but <2,650 feet	Between >2,651 bu <5,300 feet	Between >5,301 but <7,900 feet	> 7,901 feet from site	5
Presence of bullfrogs or non-native fish in aquatic resources on site	No	--	Low number; not all aquatic habitats occupied	--	Yes, occurring in high numbers	--	0
Create a new barrier between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	3
Protect linkage between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	0
Inside designated Critical Habitat	Yes	--	--	--	--	No	0
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							24
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-8. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix E. Continued

Table E-11. Impact/Mitigation Scoring for San Joaquin kit fox and America badger in the EACCS study area.

San Joaquin kit fox/American badger	5	4	3	2	1	0	Score
Impact/ Mitigation occurs in:	CZ5CZ6/CZ7/ CZ9/CZ10	--	—CZ4 or CZ13	--	—CZ2, CZ3, CZ11, CZ12	--	5
Land covers impacted/ mitigated	Grassland, Rural residential	Chaparral/ Scrub	Oak woodland, Cultivated Ag	Seasonal wetlands, Orchard	, ruderal	All others	5
Average Slope	0-5%	> 5 but < 10%	≥ 10 but < 25%	≥25%	--	All others	4
Presence of ground squirrels	On site	Within 0.25-mile of site	Within 0.5-mile of site	--	--	Further away	5
Linkages and movement	Creation or removal of potential linkage across barrier (e.g. culvert under freeway)	Land adjacent to potential linkage on both sides of barrier (e.g., culvert under freeway)	Land adjacent to potential linkage on one side of barrier (e.g., culvert under freeway)	Land not adjacent to key linkage for species.	--	--	2
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							22
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-11. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix E. Continued

Table E-9. Impact/Mitigation Scoring for burrowing owl in the EACCS study area.

Burrowing owl	**5**	**4**	**3**	**2**	**1**	**0**	**Score**
Nearest known burrowing owl nest location to the impact site (within last 3 years)	On-site	Within 0.5-mile of site	> 0.5 but < 2.0 miles	--	> 2.0but ≤ 7.5 miles	> 7.5 miles	0
Wind turbines within 0.5-mile of site	No	--	--	--	Yes	On-site	5
Land covers impacted/ mitigated	Grassland, ruderal	Cultivated ag	Oak woodland	Rural residential	--	All others	5
Presence of ground squirrels	On-site	Within 0.25-mile of site	> 0.25 but ≤ 1.0 mile	≥ 1 mile	--	--	5
Average height of grass on impacted area	Less than 8-inches	9-24 inches	--	25-36 inches	--	Greater than 36 inches	4
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	1
Total Score							20
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-10. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix E. Continued

Table E-4. Impact/Mitigation Scoring for California tiger salamander in the EACCS study area.

California tiger salamander	5	4	3	2	1	0	Score
Closest suitable breeding habitat to site	On-site	Within 500 feet	Between 501 – 1,600 feet	Between 1,601 –2,050 feet	Between 2051–6,900 feet	Greater than 6,900 feet	5
Is there occupied habitat within 6,900 feet of site?	Yes	--	--	No	--	--	5
Aquatic land covers impacted/ mitigated	Wetland, Ponds	--	Stream/River	--	--	All others; none	5
Upland land covers impacted/ mitigated	Grassland, Oak woodland, Rural residential	Chaparral/ Scrub	Riparian	Conifer woodland	ruderal without refugia habitat	All others; none	5
Elevation	Below 3,700 feet	--	--	--	--	Above 3,700 feet	5
Presence of ground squirrels/pocket gophers	On site	Within 1,350 feet of site	Between >1,351 but <2,650 feet	Between >2,651 bu <5,300 feet	Between >5,301 but <7,900 feet	> 7,901 feet from site	5
Presence of bullfrogs or non-native fish in aquatic resources on site	No	--	Low number; not all aquatic habitats occupied	--	Yes, occurring in high numbers	--	0
Create a new barrier between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	0
Protect linkage between breeding and upland habitat	Documented breeding location	--	Potential breeding location	--	--	No	5
Inside designated Critical Habitat	Yes	--	--	--	--	No	0
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	5
Total Score							40
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-8. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix E. Continued

Table E-11. Impact/Mitigation Scoring for San Joaquin kit fox and America badger in the EACCS study area.

San Joaquin kit fox/American badger	**5**	**4**	**3**	**2**	**1**	**0**	**Score**
Impact/ Mitigation occurs in:	CZ5CZ6/CZ7/ CZ9/CZ10	--	—CZ4 or CZ13	--	—CZ2, CZ3, CZ11, CZ12	--	5
Land covers impacted/ mitigated	Grassland, Rural residential	Chaparral/ Scrub	Oak woodland, Cultivated Ag	Seasonal wetlands, Orchard	, ruderal	All others	5
Average Slope	0-5%	> 5 but < 10%	≥ 10 but < 25%	≥25%	--	All others	4
Presence of ground squirrels	On site	Within 0.25-mile of site	Within 0.5-mile of site	--	--	Further away	5
Linkages and movement	Creation or removal of potential linkage across barrier (e.g. culvert under freeway)	Land adjacent to potential linkage on both sides of barrier (e.g., culvert under freeway)	Land adjacent to potential linkage on one side of barrier (e.g., culvert under freeway)	Land not adjacent to key linkage for species.	--	--	3
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	5
Total Score							27
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-11. Habitat quality of the impact site and the mitigation site would be scored using this table.							

Appendix E. Continued

Table E-9. Impact/Mitigation Scoring for burrowing owl in the EACCS study area.

Burrowing owl	**5**	**4**	**3**	**2**	**1**	**0**	**Score**
Nearest known burrowing owl nest location to the impact site (within last 3 years)	On-site	Within 0.5-mile of site	> 0.5 but < 2.0 miles	--	> 2.0but ≤ 7.5 miles	> 7.5 miles	0
Wind turbines within 0.5-mile of site	No	--	--	--	Yes	On-site	5
Land covers impacted/ mitigated	Grassland, ruderal	Cultivated ag	Oak woodland	Rural residential	--	All others	5
Presence of ground squirrels	On-site	Within 0.25-mile of site	> 0.25 but ≤ 1.0 mile	≥ 1 mile	--	--	5
Average height of grass on impacted area	Less than 8-inches	9-24 inches	--	25-36 inches	--	Greater than 36 inches	4
On parcels with an approved management plan for this species.	Yes	--	--	--	No	--	5
Total Score							24
Note: The ratio of mitigation to impact depends on the location of the mitigation. The acres of mitigation for a given project would be determined using the ratios shown in Table 3-10. Habitat quality of the impact site and the mitigation site would be scored using this table.							