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Attachment 6

Incidental Take Permit

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

January 27, 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*), and San Joaquin kit fox (*Vulpes macrotis mutica*)

Potentia-Viridi Battery Energy Storage System Project

Alameda County, California

January 2025

Levy Alameda, LLC

Submitted by:
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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*), and San Joaquin kit fox (*Vulpes macrotis mutica*) 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, and San Joaquin kit fox 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

1.5 Location of Project

The Project would be located in Alameda County, California within a portion of Assessor Parcel Number (APN) 99B-7890-002-04 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 acres leased area of APN 99B-7890-002-04, which currently consists of fallowed 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 ~~25~~ 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 ~~50~~ 48 ft x ~~30~~ 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

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
				Skid Steer Loaders	2	8
				Tractors/Loaders/ Backhoes	2	8
Site Grading and Civil Work	110	76	30,240	Graders	4	8
				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

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	40	20	0	Air Compressors	2	8
				Aerial Lifts	6	8
				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

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
Decommissioning	40	2	2,640	Concrete/Industrial Saws	2	8
				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, and San Joaquin kit fox 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.

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.

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, golden eagle, San Joaquin kit fox, and tricolored blackbird. 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 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 Funding

To compensate for direct impacts on habitat for California tiger salamander, Crotch's bumble bee, and 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 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

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 _____

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Chapter 7. References

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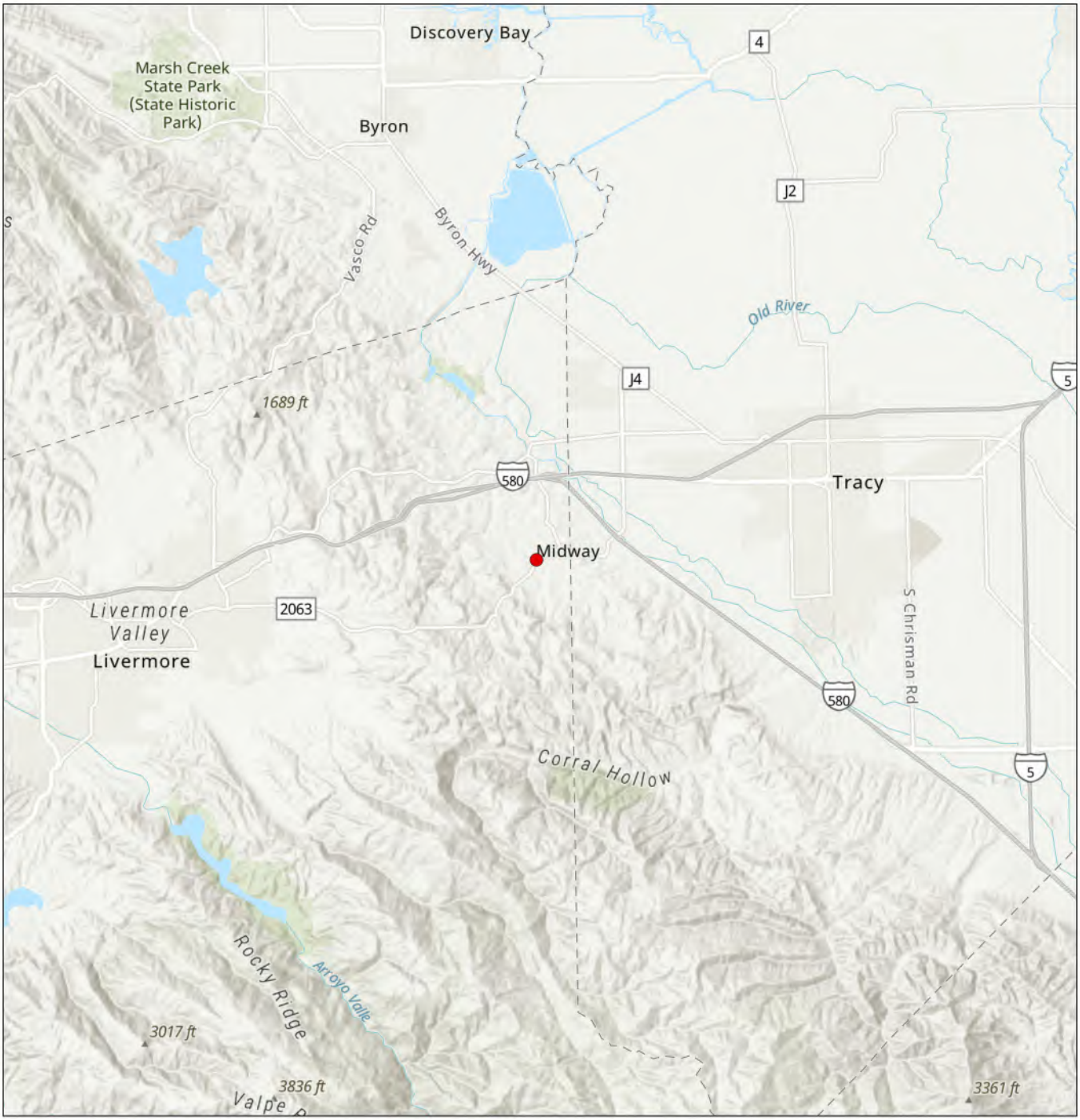
APPENDIX A – Figures



● Project Location

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Stantec

Notes
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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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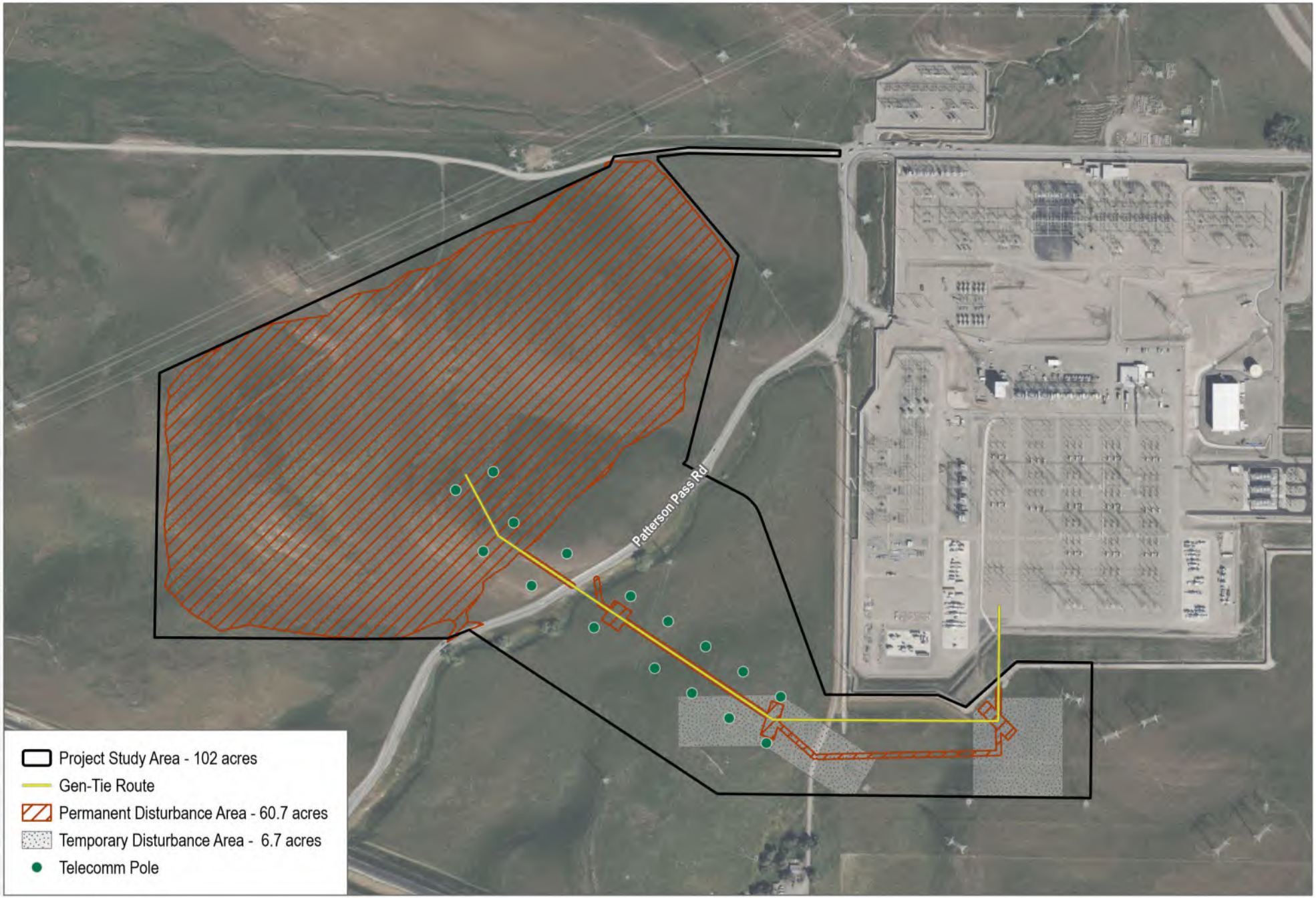


SOURCE: Bing Maps 2023

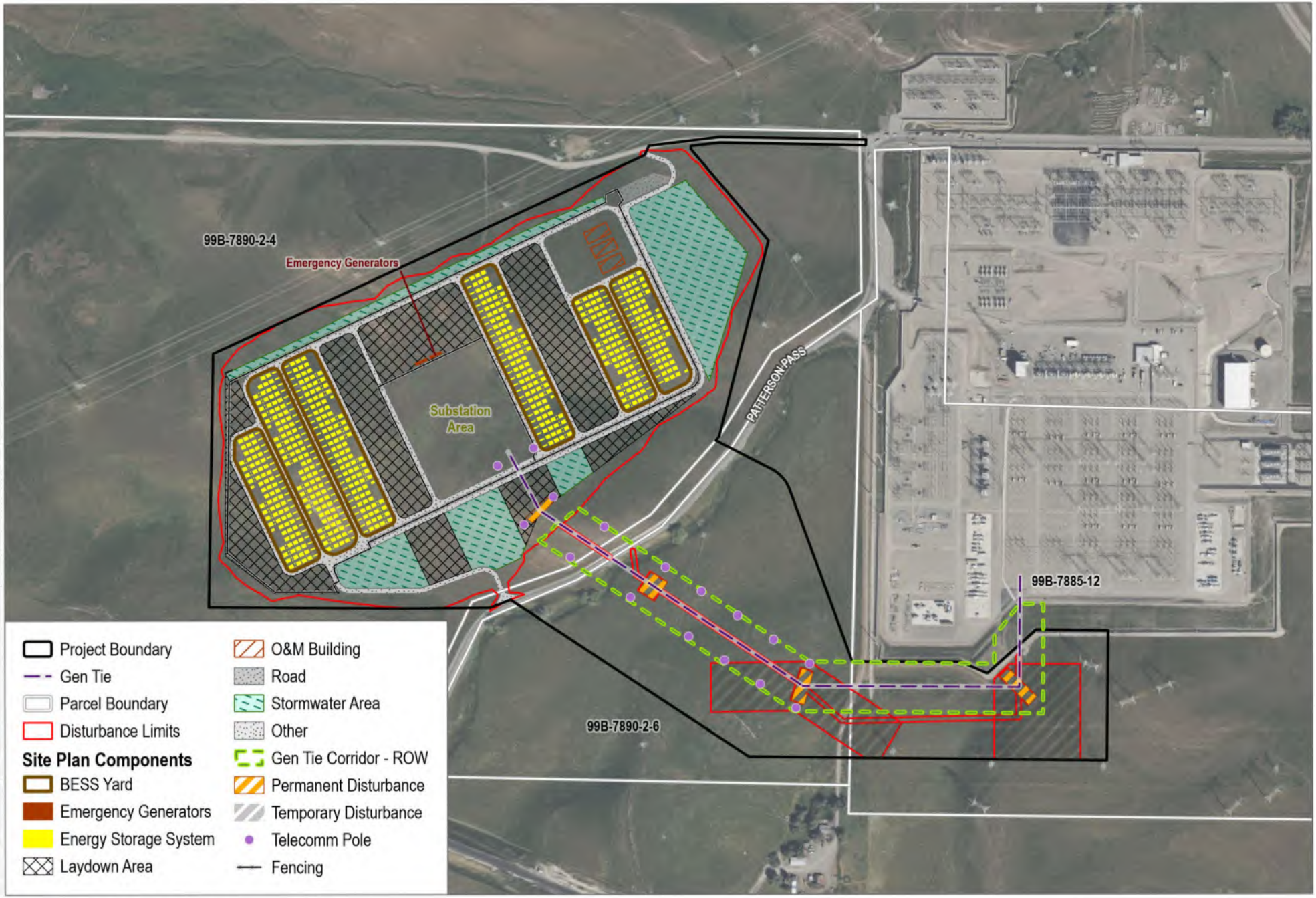
0 70 140 Meters

0 250 500 Feet

FIGURE 2-3

Project Site Aerial

Potentia-Viridi BESS Project



SOURCE: Bing Maps 2023, County of Alameda 2022

DUDEK

0 260 520 Feet

FIGURE 2-X

Project Components

Potentia-Viridi BESS Project

Project Site

Delineated Feature

EPH-01

0 250 500 Feet

(At original document size of 8.5x11)
1:7,000

N

Stantec

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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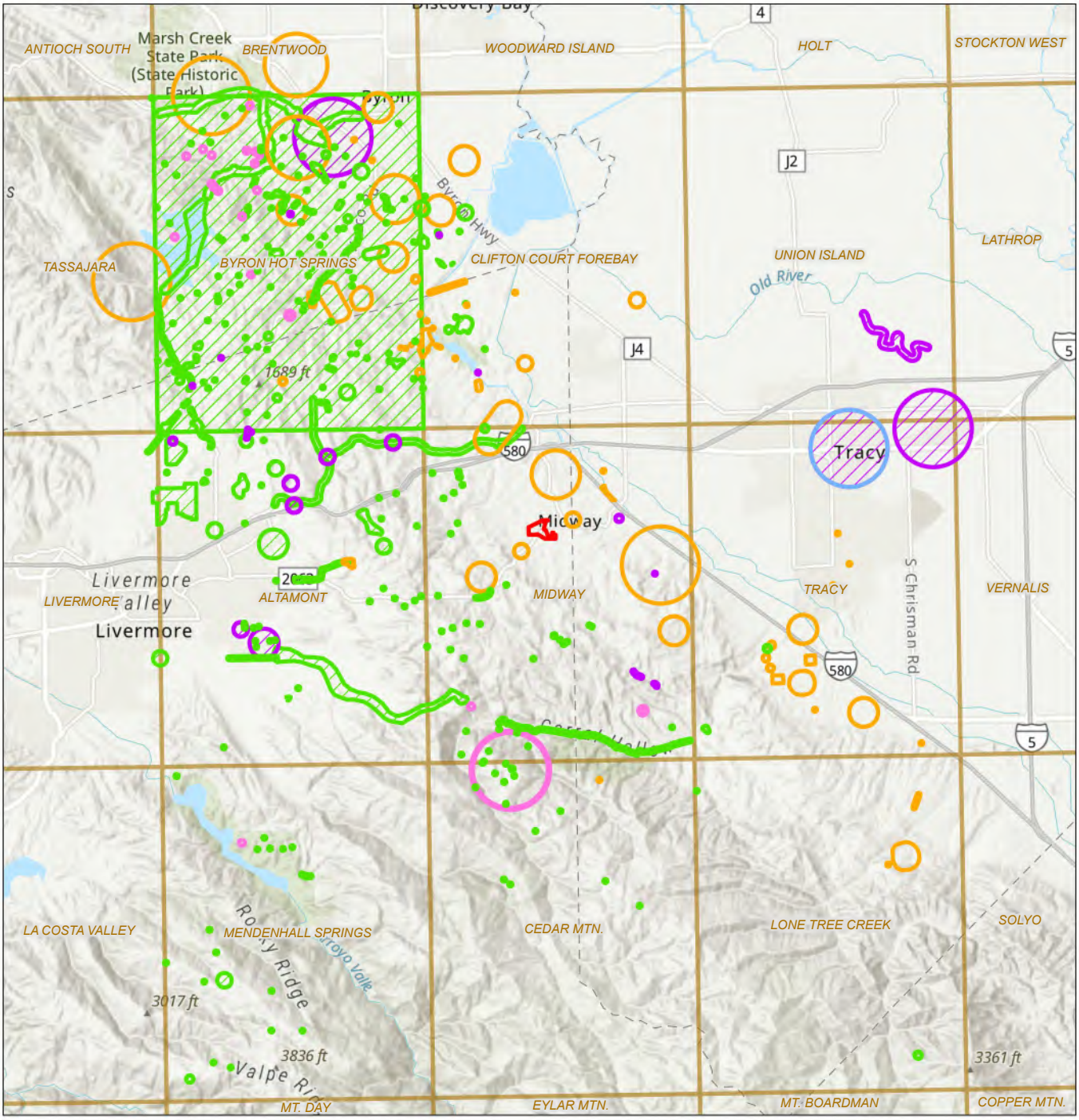

Project Site

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

(At original document size of 8.5x11)
1:250,000

N

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 2024-07-03
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

APPENDIX C – Mitigation Property Biological Resources Report

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-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.							

BIOLOGICAL RESOURCES ASSESSMENT REPORT

Potentia Viridi Battery Energy Storage System Project Mitigation Site

Alameda County, California

Prepared by:
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January 2025

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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

Westervelt ECOLOGICAL SERVICES

Figure 1
Vicinity Map
January 16, 2025

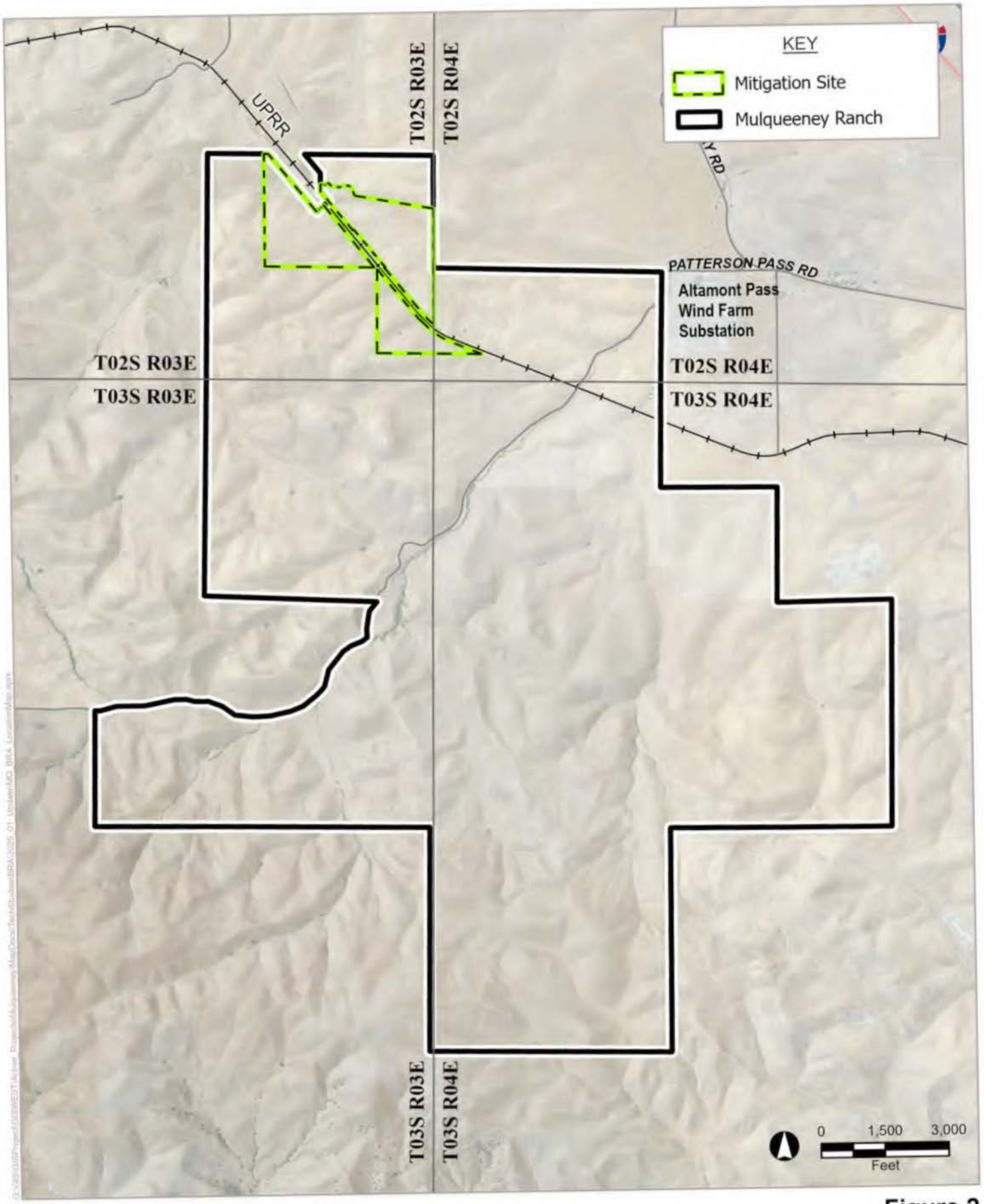


Figure 2
Project Location
January 15, 2025

Westervelt ECOLOGICAL SERVICES

USGS 7.5' Quadrangle: MIDWAY, 1980

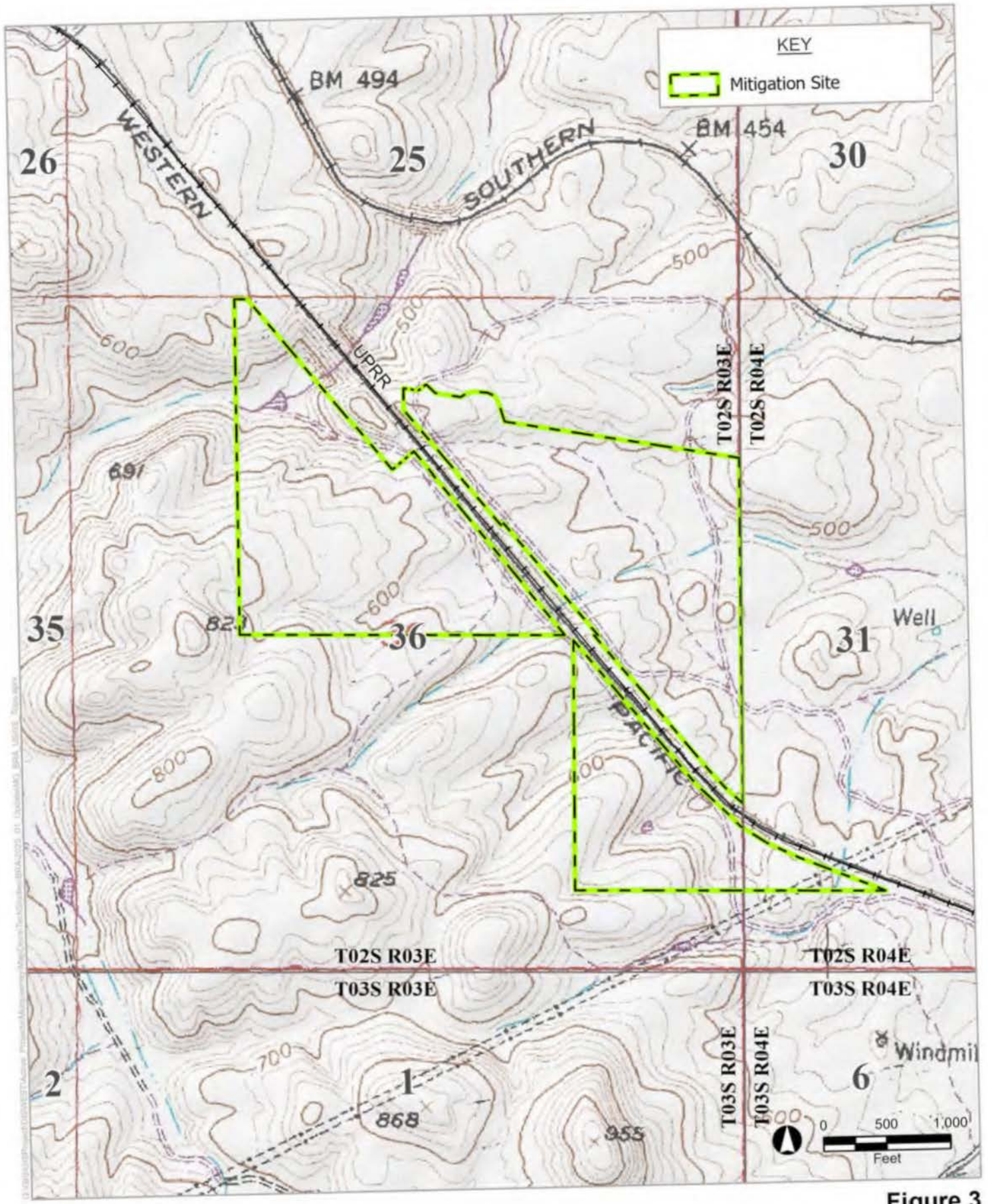


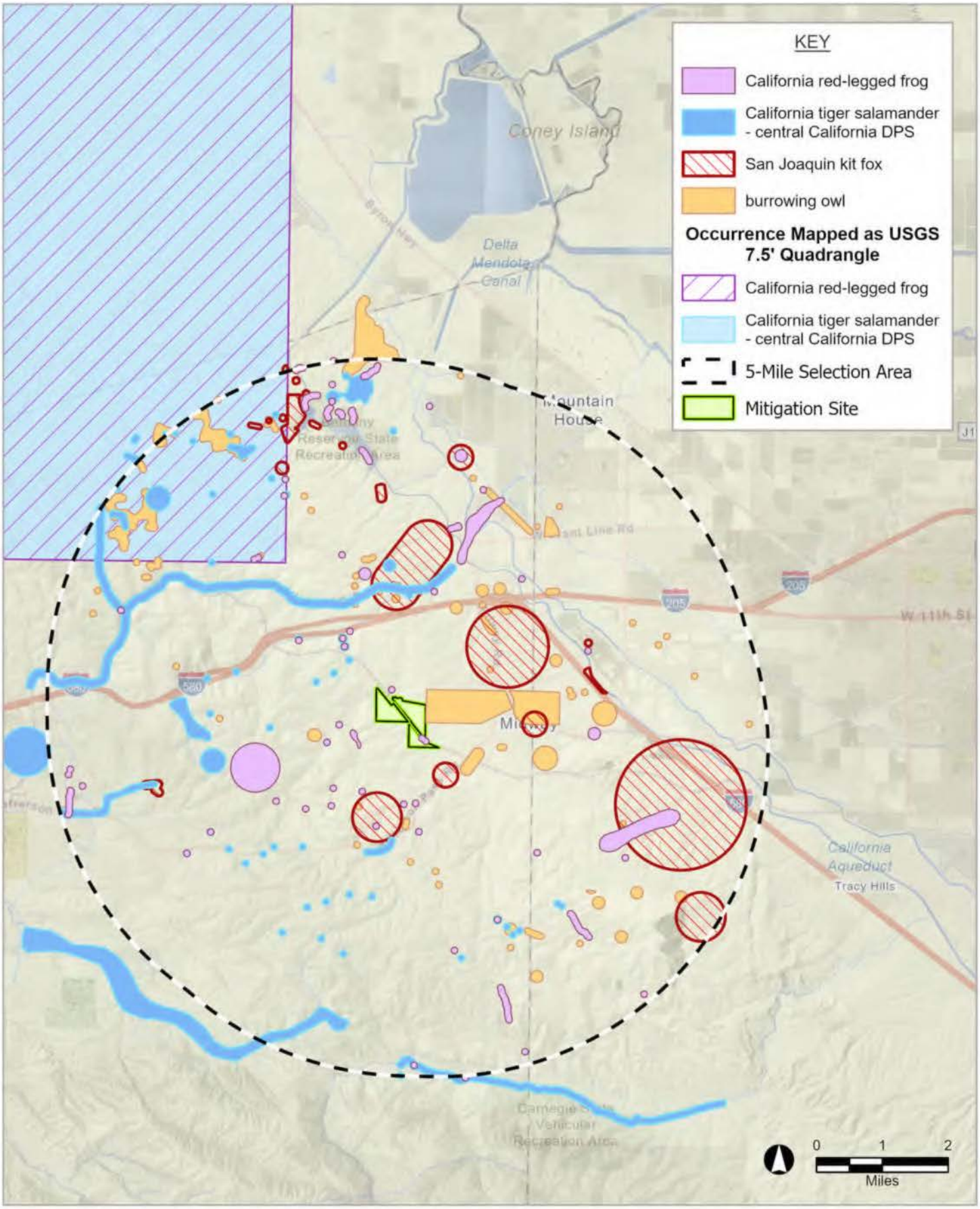
Figure 3

USGS Topographic Quadrangle

January 16, 2025

Westervelt ECOLOGICAL SERVICES

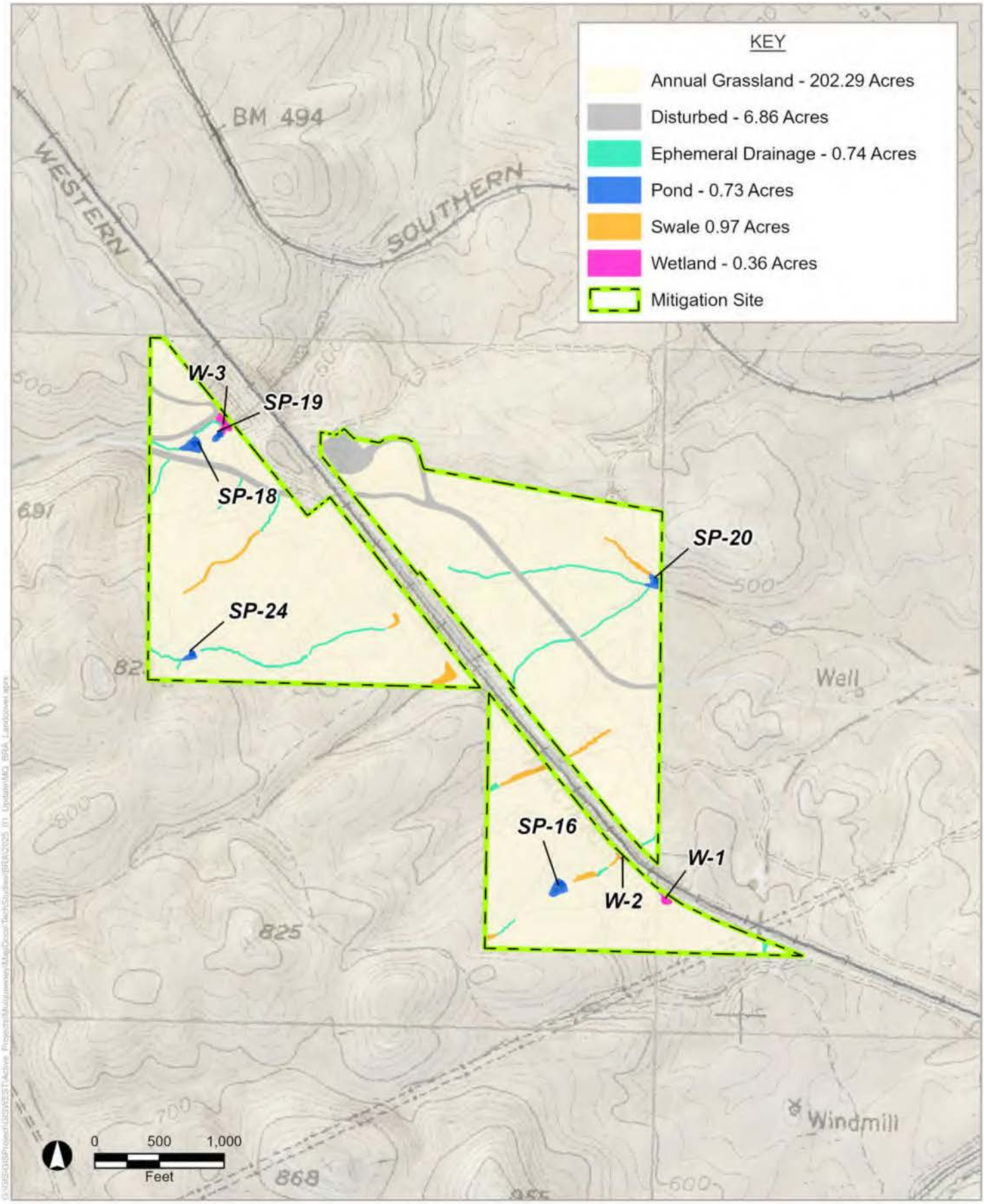
USGS 7.5' Quadrangle: MIDWAY, 1980



Westervelt ECOLOGICAL SERVICES

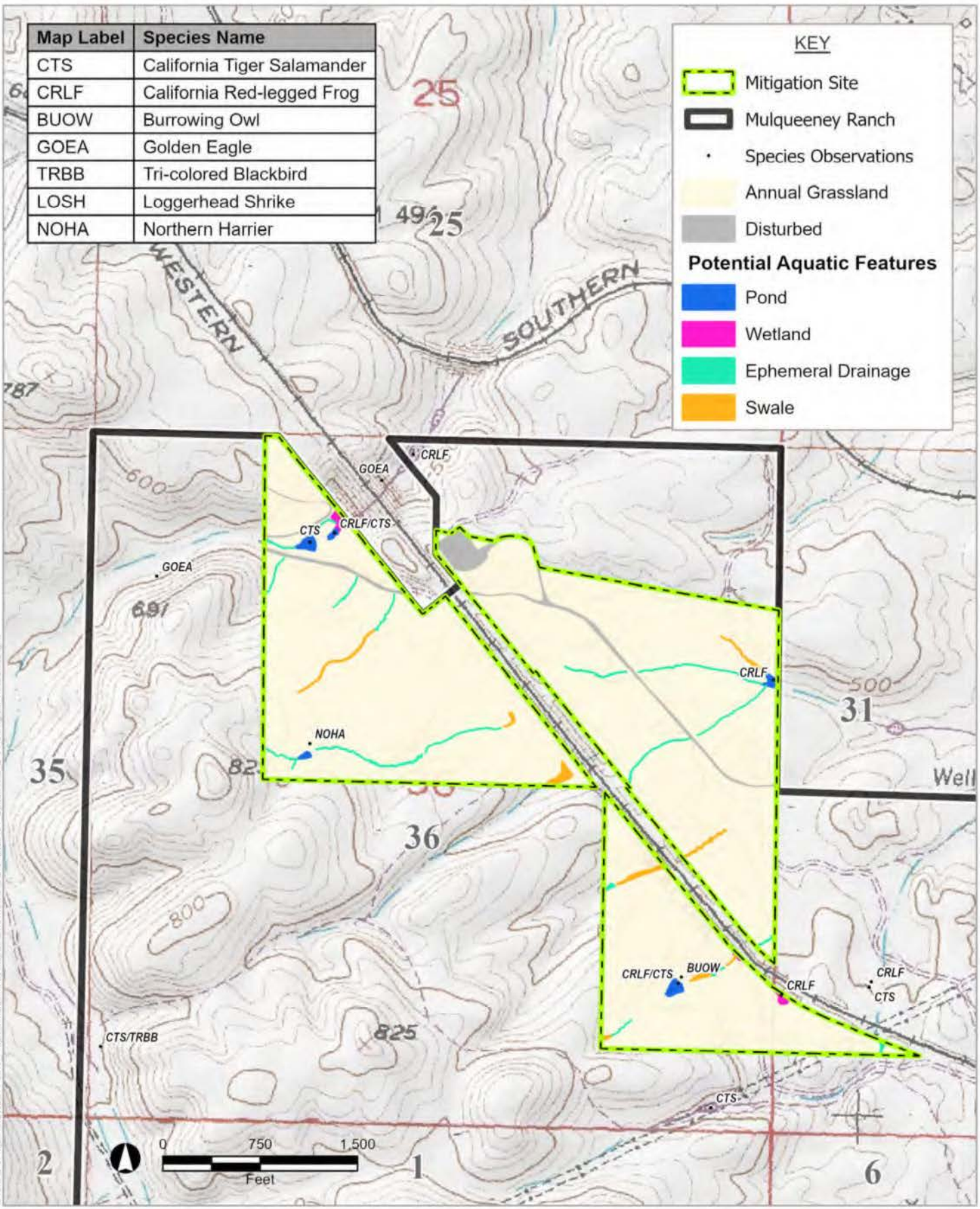
Source: California Department of Fish and Wildlife, California Natural Diversity Database

Figure 4
CNDDB Occurrences
January 16, 2025



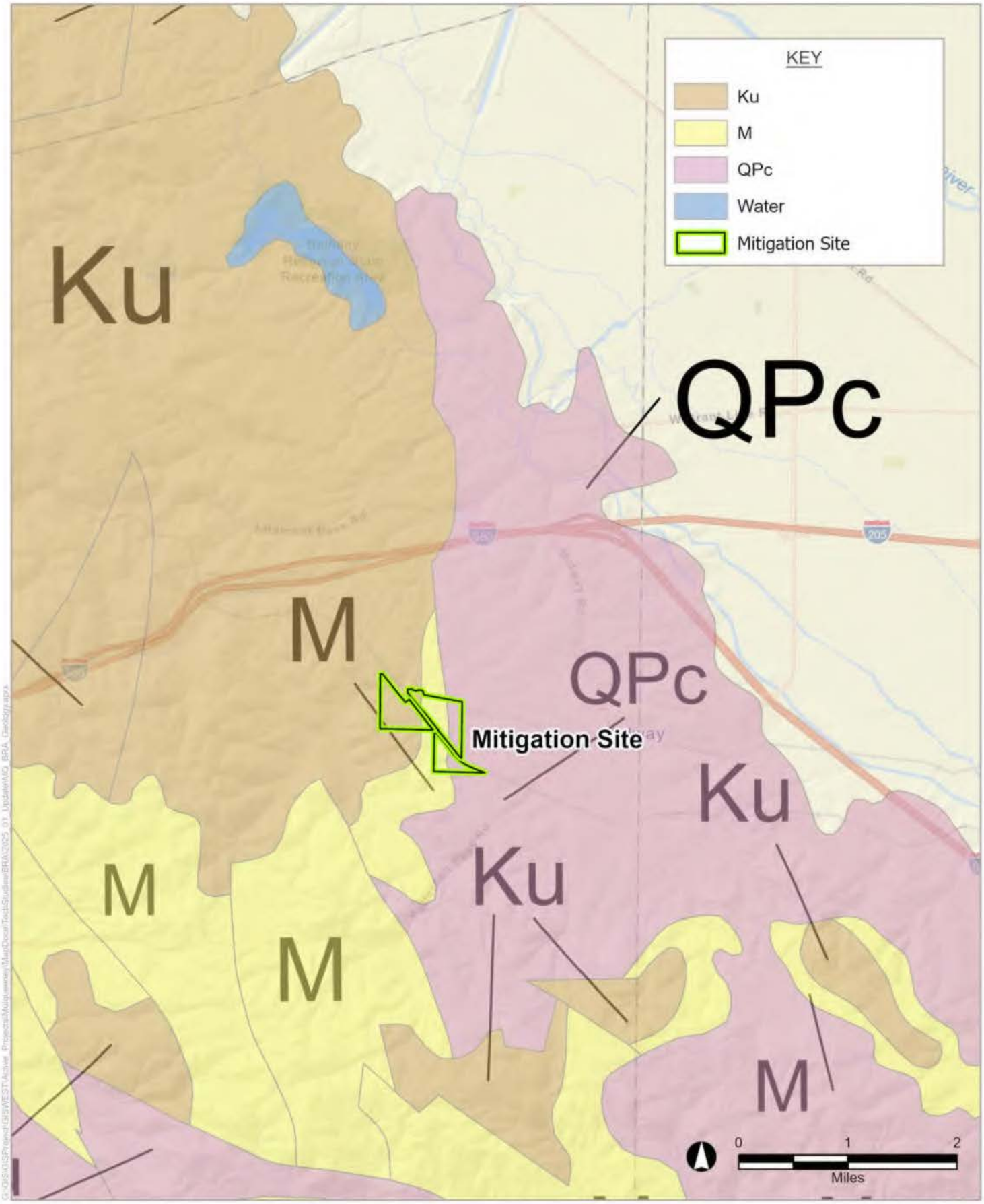
Westervelt ECOLOGICAL SERVICES

Figure 5
Landcover
January 16, 2025



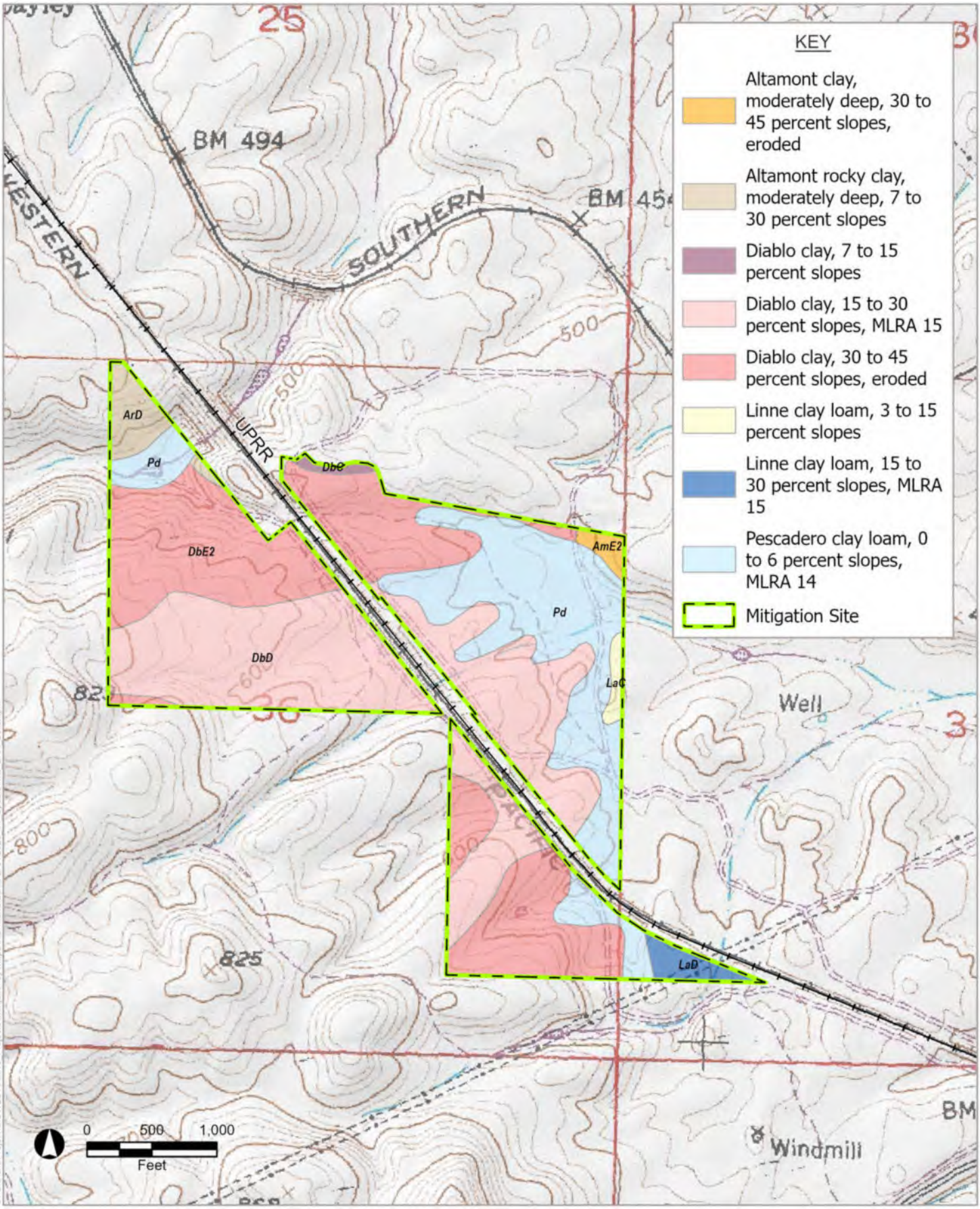
Westervelt ECOLOGICAL SERVICES

Figure 6
Biological Resources
January 21, 2025



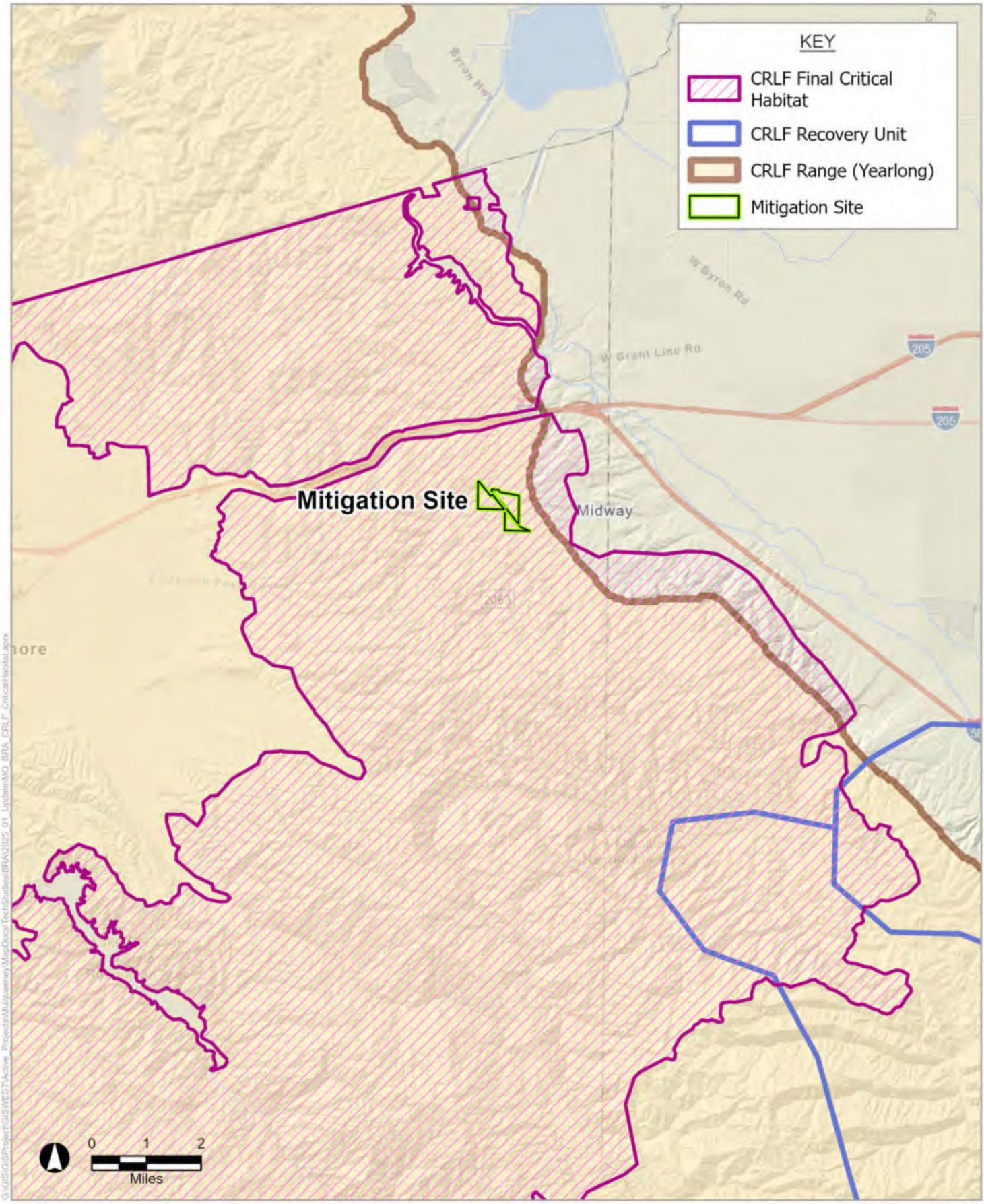
Westervelt ECOLOGICAL SERVICES

Figure 7
Geology
January 16, 2025



Westervelt ECOLOGICAL SERVICES

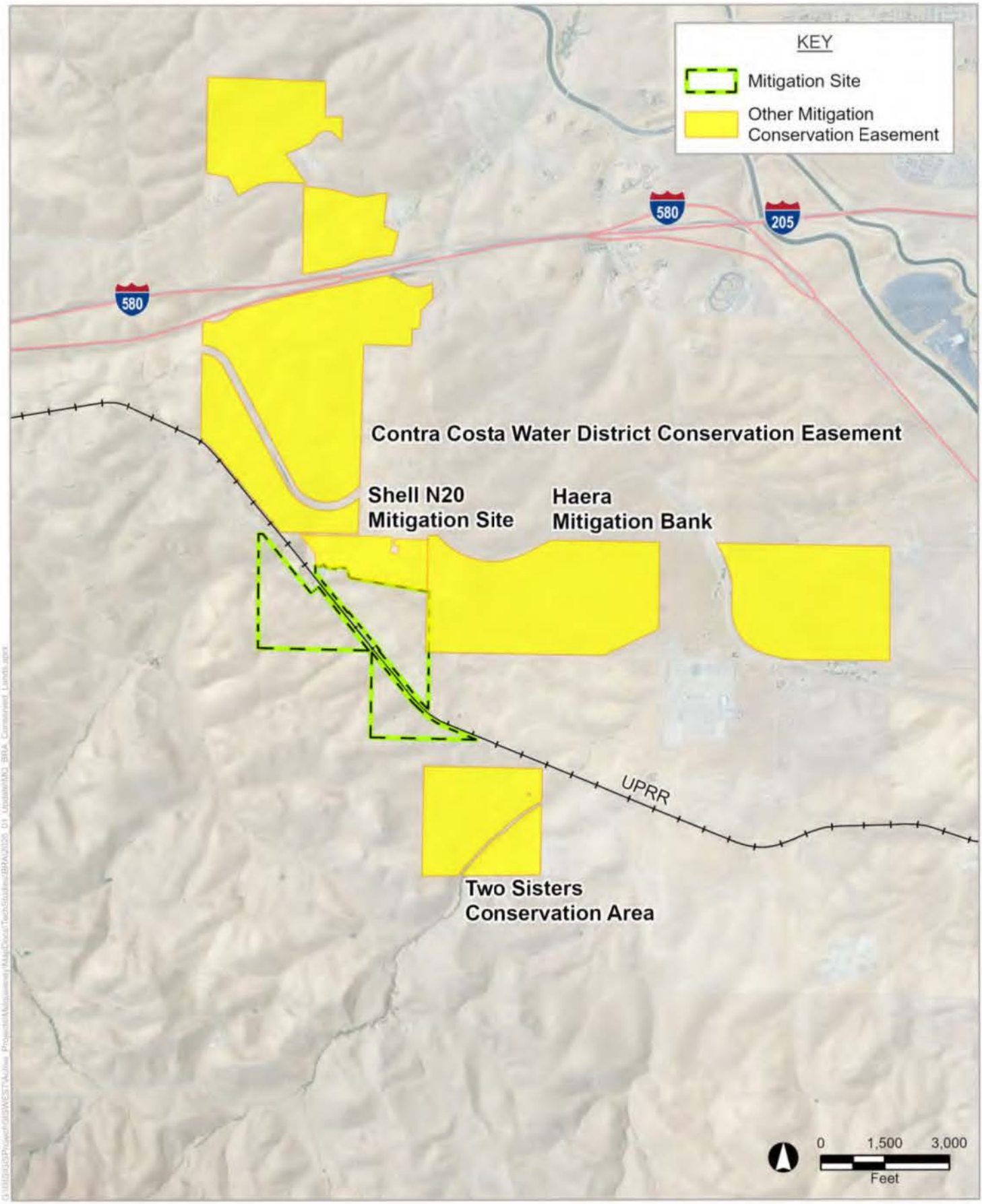
Figure 8
Soils
January 14, 2025



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	
				Annual Grassland	Stockpond
Scientific Name	**Common Name**				
*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.

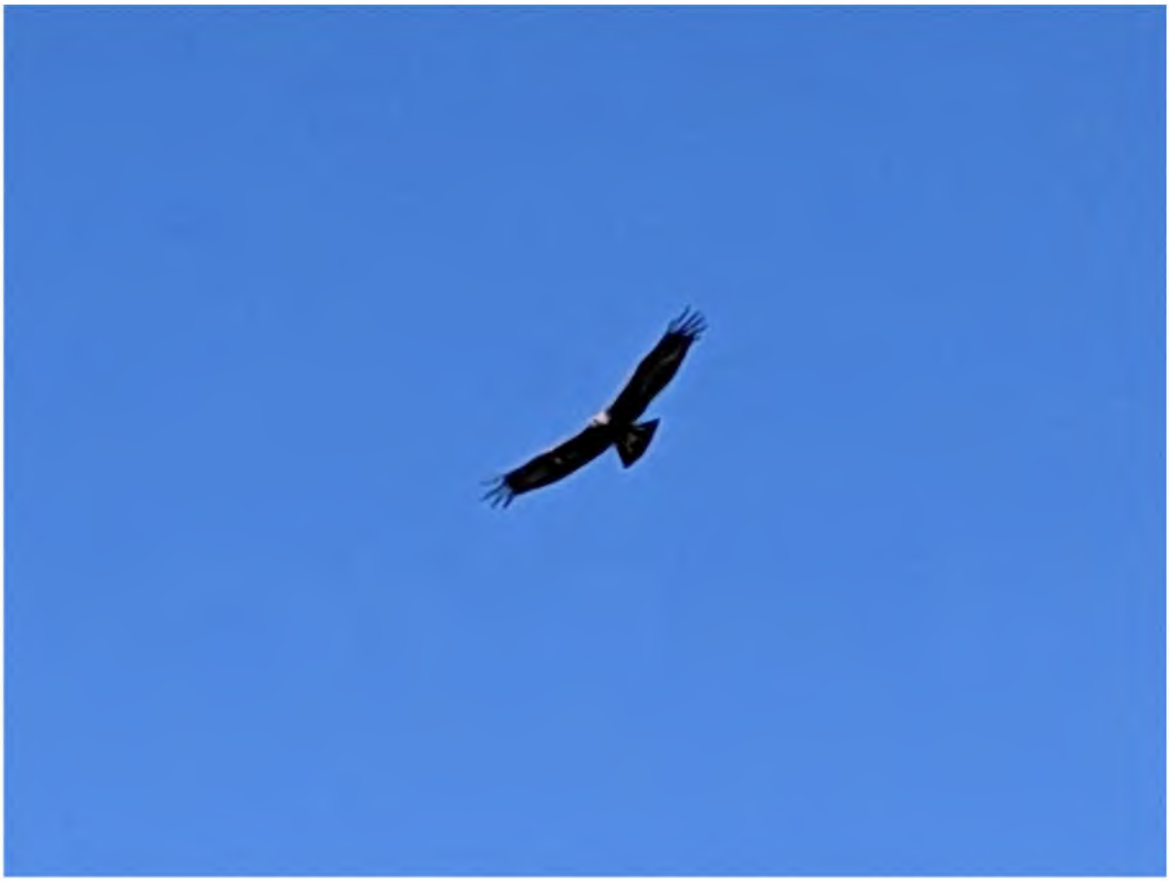


Photo Point 8: Bald Eagle (*Haliaeetus leucocephalus)* observed in the mitigation site.

Photo Point 9: Burrowing Owl (*Athene cunicularia)* observed in the mitigation site.

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