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Appendix 3.2F
LSAA Permit

California Department of Fish and Wildlife Region 1

1602 Lake and Streambed Alteration Agreement Application

Potentia-Viridi Battery Energy Storage System Project

July 19, 2024

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1.1 PROJECT OR ACTIVITY INFORMATION

1.1.1 Box 4D Seasonal Work Period

The Project is anticipated to be built over an approximately 18-month period from the onset of site preparation activities through energization. Following energization, testing and commissioning would take place over 6 months. Initial mobilization and site preparation is anticipated to begin no later than Q1 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 1. 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 1.

Table 1. 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

1.1.2 Box 10A – Project Description

1.1.3 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 point of interconnect (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
- Operations and Maintenance Building

Project components are described in the following subsections and shown in Appendix A Figures. 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 2. 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 ft minimum
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 Building	1	100 ft x 50 ft x 30 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 3. Preliminary Footprint of BESS Facility

Component	Permanent Disturbance
BESS Yards	13.3 acres
Project Substation	5.5 acres
Access Roads	6.6 acres
Laydown Yards	15.2 acres
Stormwater Detention Areas	9.3 acres
Stormwater Outfall	0.6 acres
Other*	7.2 acres
Total+	*57.7 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.

1.1.3.1 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. 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 15 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.

1.1.3.2 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.

1.1.3.3 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.

1.1.3.4 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. 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.

1.1.4 Access Roads

The Project's roadway system would include two new facility access roads and driveways, a perimeter road, and internal access roads. One of the new site access roads and driveways would be constructed from an existing private road near the northeastern portion of the site, and the other would be constructed from Patterson Pass Road near the southwestern portion of the site. A project substation access road would be constructed outside of the perimeter fence, connecting the northeast and southwest driveways, to facilitate 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.

The gen-tie access road will require construction of a low-water crossing of water of the United States. This will consist of an "Arizona crossing" including grading of the bed and banks of the feature, followed by placement of approximately 6 cubic yards of clean rip-rap below the Ordinary High Water Mark, to accommodate maintenance vehicle crossing.

1.1.5 Laydown Yards

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 3). The primary laydown yard would be bladed, compacted, and surfaced with aggregate, while additional laydown yards would be cleared of vegetation and surfaced with aggregate or other soil stabilizing materials. Portions of additional laydown yards may also be graded, if necessary. 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. The O&M building, and required number of parking spaces for O&M staff, would be constructed within the primary laydown following construction of the BESS facility components.

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.

1.1.6 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 to stormwater detention basins located along the periphery of the BESS facility site (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 15-inch corrugated metal pipe would be constructed from a detention basin located in the southwest portion of the site to the inlet of an existing culvert on the north side of Patterson Pass Road. Approximately 10 cubic yards of clean rip-rap would be placed as an energy dissipator at the outfall to discharge clean stormwater at or below current rates into the existing drainage on the south side of Patterson Pass Road.

1.1.7 Site Security

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.

1.1.8 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.

1.1.9 Operations and Maintenance Building

Following construction of the BESS facility, an O&M building would be constructed within the primary laydown yard for the Project's anticipated three full-time operations staff. The O&M building would include parking, outside equipment and laydown areas, basic offices, meeting rooms, washroom facilities and climate-controlled storage for certain equipment and materials. A potable water storage tank would provide water for washroom and sanitary facilities, and sewage/wastewater would be collected in a separate tank. 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 O&M building would be powered via a distribution line from the project substation.

1.1.10 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. 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 shows the gen-tie route, scattered rural residences, and existing transmission lines within one mile of the proposed route. No parks, recreational areas, or scenic areas are located within one mile of the proposed gen-tie 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 4. 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 5. 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*

1.1.11 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 3 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), where feasible.

1.1.12 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 a dry 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.

1.1.13 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 pullbox. 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, if feasible.

1.1.14 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.

1.1.15 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.

1.1.16 Construction

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

1.1.16.1 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. Following energization, testing and commissioning would take place over 6 months. Initial mobilization and site preparation is anticipated to begin no later than Q1 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 6. 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

1.1.16.2 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 7: BESS Project - Construction Equipment and Usage Assumptions

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

Table 7: 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
				Rubber Tired Loaders	4	8
				Skid Steer Loaders	4	8
				Tractors/Loaders/ Backhoes	4	8
				Pavers	2	8
				Paving Equipment	2	8
				Rollers	2	8
				Plate Compactors	1	8
				Cement and Mortar Mixers	1	4
				Rock Crushers	4	8
Foundations and Underground Equipment Installation*	100	10	20	Paving Equipment	2	8
				Rollers	2	8
				Plate Compactors	2	8
				Cement and Mortar Mixers	2	8
				Bore/Drill Rig	3	8
				Tractors/Loaders/ Backhoes	6	8
				Excavators	2	8
				Rubber Tired Dozers	2	8
				Trenchers	4	8
				Skid Steer Loaders	2	8
BESS Installation*	160	20	2,636	Air Compressors	2	8
				Cranes	3	8
				Generator Sets	4	8
				Rough Terrain Forklifts	2	8
				Skid Steer Loaders	2	8
	40	20	0	Air Compressors	2	8

Table 7: 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
Project Substation Installation				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

Table 7: 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
				Trencher	1	8
Testing and Commissioning	52	0	0	Rough Terrain Forklift	1	8
				Off-Highway Trucks	3	8
Decommissioning	40	2	2,640	Concrete/Industrial Saws	2	8
				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.

1.1.16.3 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.

1.1.16.4 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. Blasting may be required if large boulders are encountered during excavation and grading.

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.

1.1.16.5 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 included 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

1.1.16.6 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.

1.1.16.7 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.

1.1.16.8 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.

1.1.16.9 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 three 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 in Table 4.

1.1.16.10 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.

1.1.16.11 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.

1.1.16.12 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.

1.1.16.13 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.

1.1.17 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.

1.1.18 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.

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.

1.1.18.1 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.

1.1.18.2 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.

1.1.18.3 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.

1.1.19 Decommissioning

In general, the BESS would be recycled at the expiration 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.

1.1.20 Box 11 – Project Impacts

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

The project includes two features that will require placement of fill materials within regulated Waters of the United States, including improvements to an existing culvert under Patterson Road, and the construction of a new low-water crossing within the corridor of the proposed overhead gen-tie line. The discharge point of the culvert will require placement of rip-rap to provide energy dissipation and prevent bed or bank erosion at the point of discharge. The proposed crossing includes minor grading to the bed and banks of the feature, and placement of rip-rap to create a stable point of crossing for maintenance vehicles. The civil plans are provided in Appendix A Figure 3. Impacts to EPH-01 (Patterson Run) are associated with a stormwater outfall as shown in Appendix B. Table 8 provides a summary of impacts to waters of the State.

Table 8. Impacts to Waters of the State.

Feature Type	Crossing ID	Permanent Impacts		Temporary Impacts	
		Acreage (square feet)	Linear Feet	Acreage (square feet)	Linear Feet
Other Waters					
Ephemeral Stream	EPH-01	26,136	100	0	0

1.1.21 Box 11C - Special Status Species

Three listed wildlife species were identified as having potential to occur within the Project Site: California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*) and San Joaquin kit fox (*Vulpes macrotis mutica*). Federally designated critical habitat for California red-legged frog also occurs within the Project Site.

Eleven special-status plants have a moderate or high potential to occur onsite; however, one plant was observed onsite, Big tarplant (*Blepharizonia plumosa*). Big tarplant has a CRPR rank of 1B.1 (rare, threatened or endangered in California and elsewhere), and is a covered species under the EACCS. For additional information and potential impacts to this species.

For additional information and potential impacts to these species, see Appendix C for the Biological Resources.

1.1.22 Box 12 – Measures to Protect Fish, Wildlife, and Plant Resources

California tiger salamander and California red-legged frog

The following avoidance and minimization measures will be implemented following EACCS.

General

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

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

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

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

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

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

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

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

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

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

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

GEN ‐ 12 Erosion control measures will be implemented to reduce sedimentation in wetland habitat occupied by covered animal and plant species when activities are the source of potential erosion problems. Plastic 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 storms or after major storms (defined as 1 ‐ inch of rain or more).

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

Amphibians: CTS, CRLF

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

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

- Work will be avoided within suitable habitat from October 15 (or the first measurable fall rain of 1" or greater, to May 1.

San Joaquin kit fox

Potential direct and indirect effects could occur during construction activities as result from noise and vibration. In addition to the general measures listed above, the following species avoidance and minimization measures will be implemented during construction:

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

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

1.1.23 Box 12C – Mitigation

With the implementation of the above avoidance and minimization measures, compensatory mitigation proposed is associated with the preservation of upland and dispersal habitat for these species. To compensate for direct impacts on upland habitat for CTS and CRLF, the Applicant will purchase the appropriate mitigation credits from a USFWS-approved mitigation bank or another site to be approved by the USFWS. Currently, the Applicant anticipates purchasing mitigation credits from Vieira Ranch Conservation Bank, located within the same Conservation Zone as the AA (Conservation Zone 10). The EACCS standardized mitigation ratios for CTS and CRLF are 3:1 (three acres preserved for each acre removed) (ICF 2010). However, using the Mitigation Score Sheets of the EACCS, the mitigation ratios are adjusted downward because the mitigation bank provides higher quality habitat for CTS and CRLF than the AA, including suitable breeding habitat. As stated in the Programmatic Biological Opinion for the EACCS, the impact site score is divided by the mitigation site score and then multiplied by the standard mitigation ratio to determine the adjusted ratio:

(Impact Score ÷ Mitigation Score) x Standard Mitigation Ratio = Adjusted Mitigation Ratio

Therefore, Permanent impacts will be mitigated at a minimum of 1.9:1 for CTS and 2.3:1 for CRLF. Final mitigation ratios will be based on consultation with USFWS.

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 the appropriate mitigation credits from a USFWS-approved mitigation bank (anticipated to be Vieira Ranch Conservation Bank). The EACCS standardized mitigation ratios for San Joaquin kit fox are 3:1 (three acres preserved for each acre removed) (ICF 2010). However, using the Mitigation Score Sheets of the EACCS, the mitigation ratios are adjusted downward because the mitigation bank provides higher quality habitat for San Joaquin kit fox than the AA. Using the same mitigation formula stated in Section 7.1.1.2, permanent impacts will be mitigated at a minimum of 2.5:1 for San Joaquin kit fox. Final mitigation ratios will be based on consultation with USFWS.

Appendix A FIGURES

Appendix B IMPACTS TO WATERS OF THE STATE

Appendix C BIOLOGICAL RESOURCES TECHNICAL REPORT

Appendix A FIGURES

● Project Location

0 1.5 3 Miles
(At original document size of 8.5x11)
1:250,000

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 1
Title
Project Location

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

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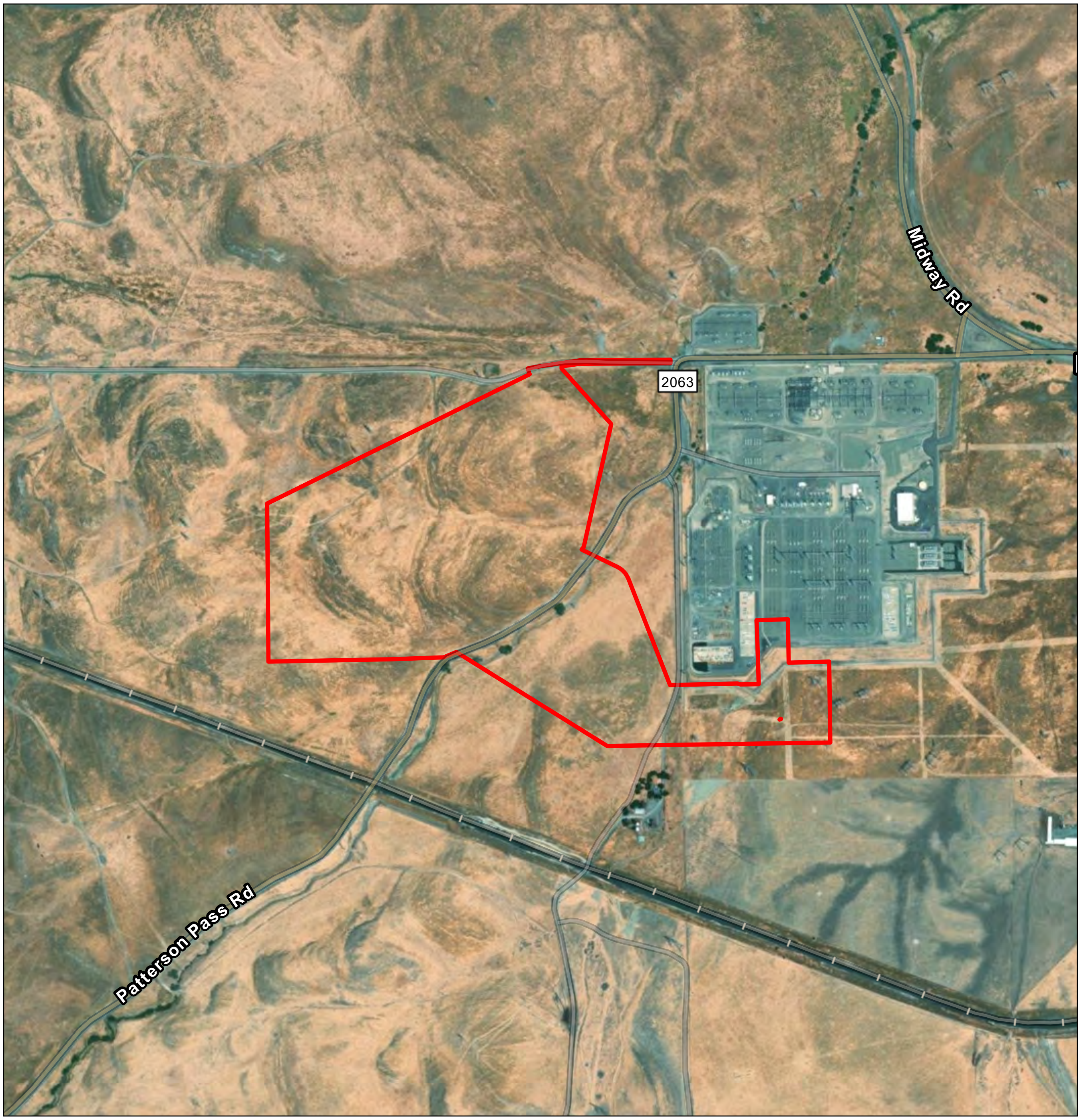

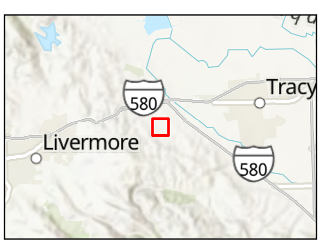

Project Site

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(At original document size of 8.5x11)
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N

Stantec

Project Location
Midway
Alameda County, CA

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

Client/Project
185706735

Potentia-Viridi Battery Energy Storage System
Biological Assessment

Figure No.
Figure 2

Title
Action Area

Notes
1. Coordinate System: NAD 1983 UTM Zone 10N
2. Data Sources: Esri, CGIAR, USGS, Esri Community Maps Contributors, San Joaquin County GIS/Planning, San Joaquin County Public Works, California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Maxar, San Joaquin County GIS/ Planning, California State Parks, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS

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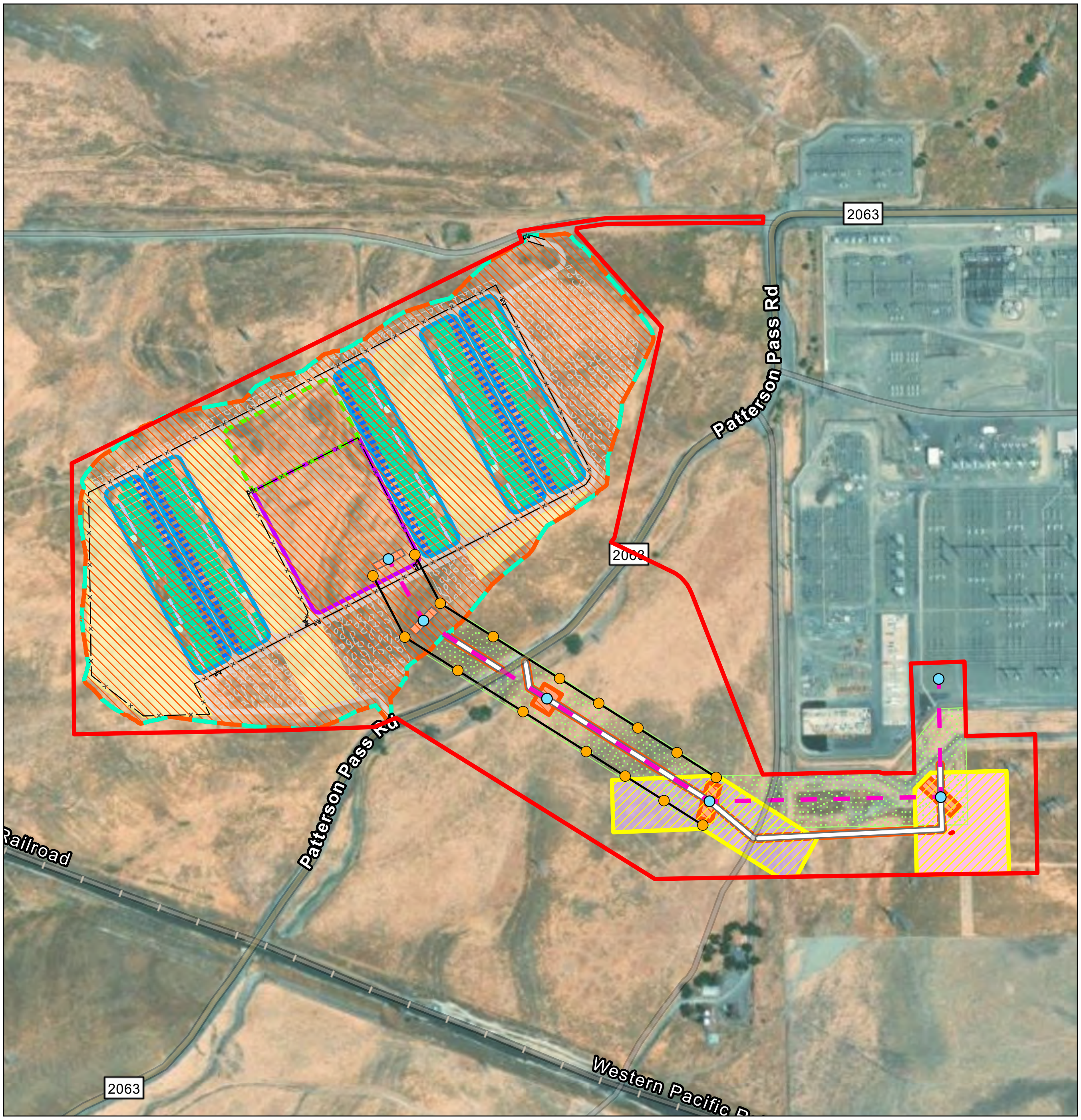
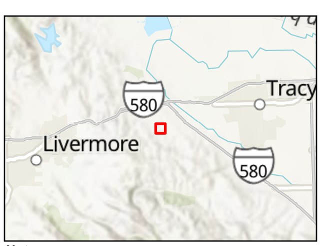




Notes
1. Coordinate System: NAD 1983 UTM Zone 10N
2. Data Sources: Esri Community Maps Contributors, San Joaquin County GIS/Planning, San Joaquin County Public Works, California State Parks, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of 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,

- Action Area
- Telecomm Pole
- HV Structure
- Telecomm Line
- Gen-Tie
- Gen-Tie Corridor
- PG&E Temporary Work Area
- Tension Pulling Area
- Transmission Access Path
- Laydown Yard
- BESS Yards
- BESS Enclosures
- DC/DC Converters
- PCS Units
- Auxilary Transformers and Panels
- Primary Laydown Yard
- Project Substation Area
- Fence Line
- Stormwater Areas
- Roads
- Grading Limits
- Temporary Distrubance
- Permanent Disturbance

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

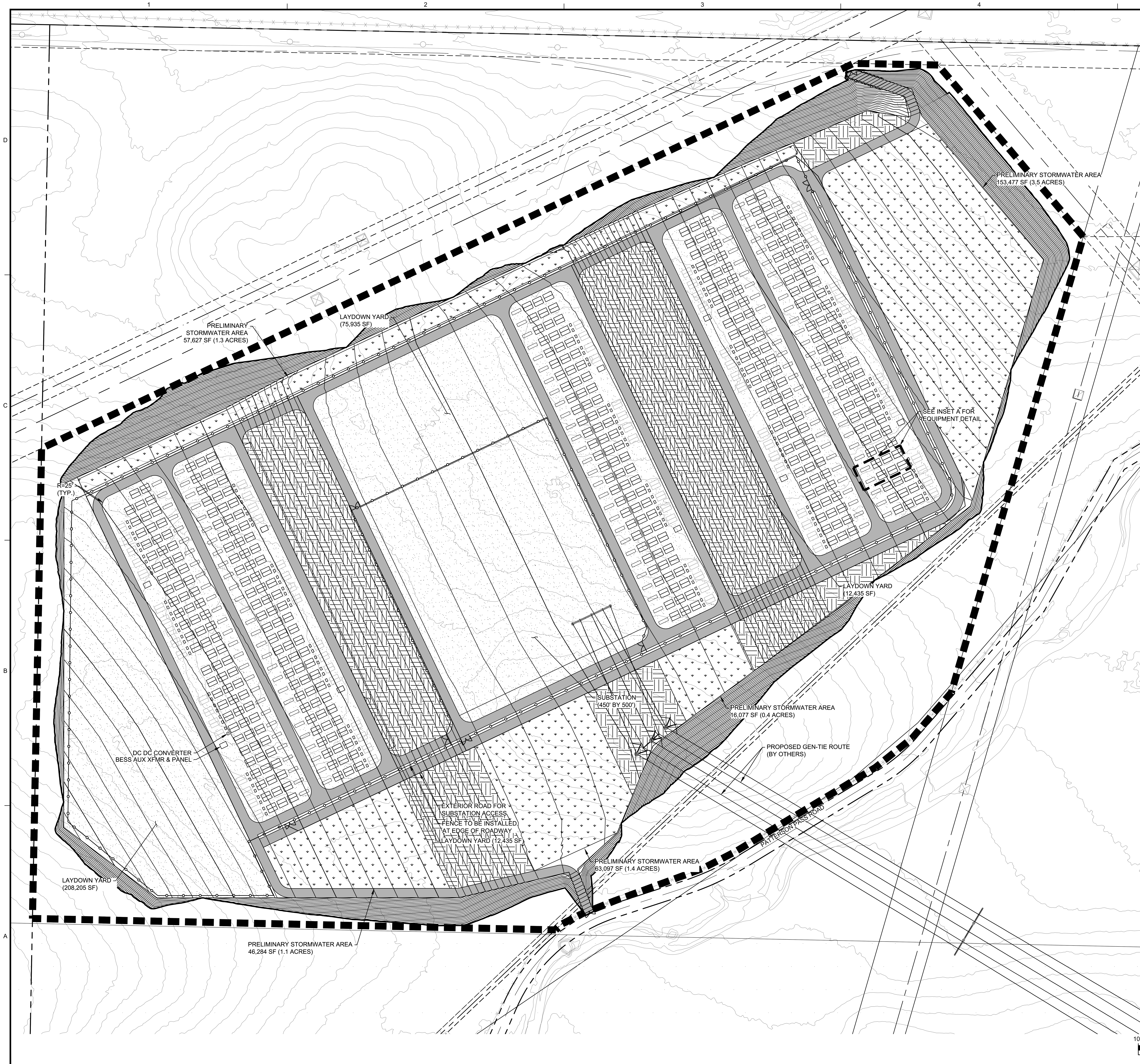
Client/Project
185706735
Potentia-Viridi Battery Energy Storage System
Biological Assessment

Figure No.
Figure 3

Title
Project Design Features

V:\1857\Active\185706735\ProIPV_BESS_BAIPV_BESS_BA.aprx Revised: 2024-06-12 By: kdelapena

Appendix B IMPACTS TO WATERS OF THE STATE



LEGEND

- GRAVEL ACCESS ROAD
- GRAVEL
- STORMWATER/ LID AREA
- LANDSCAPE

EARTHWORK QUANTITIES
CUT = 588,018 CUBIC YARDS
FILL = 344,900 CUBIC YARDS
NET = 243,118 CUBIC YARDS (EXPORT)

TOTAL = 932,918 CUBIC YARDS

NOTE:
1. EARTHWORK QUANTITIES ARE ESTIMATES ONLY AND ARE NOT ADJUSTED FOR SHRINKAGE, CONSOLIDATION, AND CLEARING LOSS FACTORS. THESE QUANTITIES ARE TO BE USED FOR BONDING AND PERMIT PURPOSES ONLY.
2. CUT/FILL SLOPES ARE SHOWN NO STEEPER THAN 3:1.
3. PRELIMINARY EARTHWORK QUANTITIES ASSUME ONSITE MATERIAL IS ADEQUATE FILL. ASSUMPTIONS ARE TO BE CONFIRMED BASED ON GEOTECH RECOMMENDATIONS.
4. EARTHWORK QUANTITIES DO NOT INCLUDE GEN-TIE LINE.

SYSTEM SUMMARY	
ESS TYPE	SOLBANK
ESS QUANTITY	1000
PCS UNITS	140
BATTERY CAPACITY	400 MW/3200 MWH
BESS YARD	13.2 ACRES
PROJECT SUBSTATION	8.1 ACRES
ACCESS ROADS	7.2 ACRES
LAYDOWN YARD (INCLUDING O&M BUILDING)	8.0 ACRES
STORMWATER AREAS*	9.3 ACRES
OTHER**	6.2 ACRES
TOTAL PROJECT AREA	52.0 ACRES
TOTAL DISTURBED AREA***	57.0 ACRES

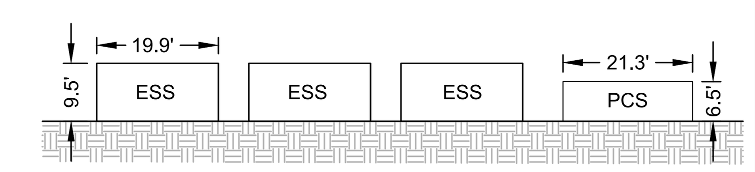
NOTE:
* PRELIMINARY STORMWATER TREAMENT AND STORAGE SIZING BASED ON ALAMEDA COUNTY STANDARDS
** INCLUDES SLOPED AREAS
*** TO GRADING DAYLIGHT

ABBREVIATIONS:

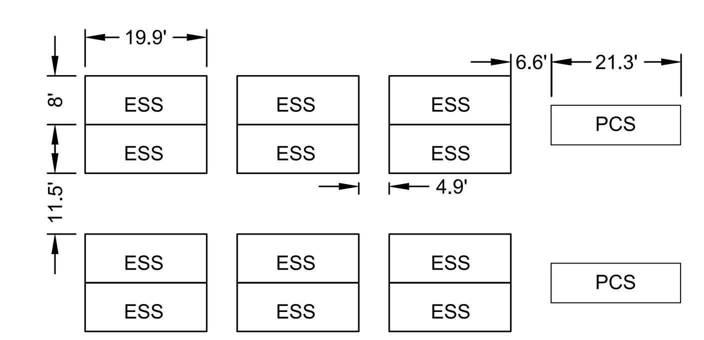
ESS ENERGY STORAGE SYSTEM
PCS POWER CONVERSION SYSTEM
POI POINT OF INTERCONNECTION
XMFR TRANSFORMER

GENERAL NOTES:
FUTURE STEEL FRAME O&M BUILDING (100'X50') WILL BE LOCATED WITHIN PROPOSED LAYDOWN YARD. EXACT BUILDING SIZE AND LOCATION TBD.

FIRE NOTES:
1) FIRE APPARATUS ACCESS ROADS SHALL HAVE AN UNOBSTRUCTED WIDTH OF NOT LESS THAN 20 FEET.
2) INTERNAL RADII = 25' MINIMUM.



INSET A - ELEVATION



INSET A - PLAN

UTILITY STATEMENT
LOCATION OF EXISTING UNDERGROUND UTILITIES HAVE BEEN TAKEN FROM DRAWINGS AND FIELD LOCATES SUPPLIED BY THE APPROPRIATE UTILITY COMPANIES. UTILITY LOCATIONS SHOWN ON THIS DRAWING ARE APPROXIMATE ONLY. PRIOR TO BEGINNING ANY CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF EACH UTILITY.

811 Know what's below. Call before you dig.

COFFMAN ENGINEERS
1939 Harrison Street, Suite 320
Oakland, CA 94612
ph 510.251.9578
www.coffman.com

POTENTIA-VIRIDI BATTERY ENERGY STORAGE SYSTEM

LEVY ALAMEDA, LLC

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION

PROJ. NO. 232059
DRAWN LB
CHECKED RB
DATE [illegible]

SHEET TITLE:
CIVIL SITE PLAN

SHEET NO:
C-1.0

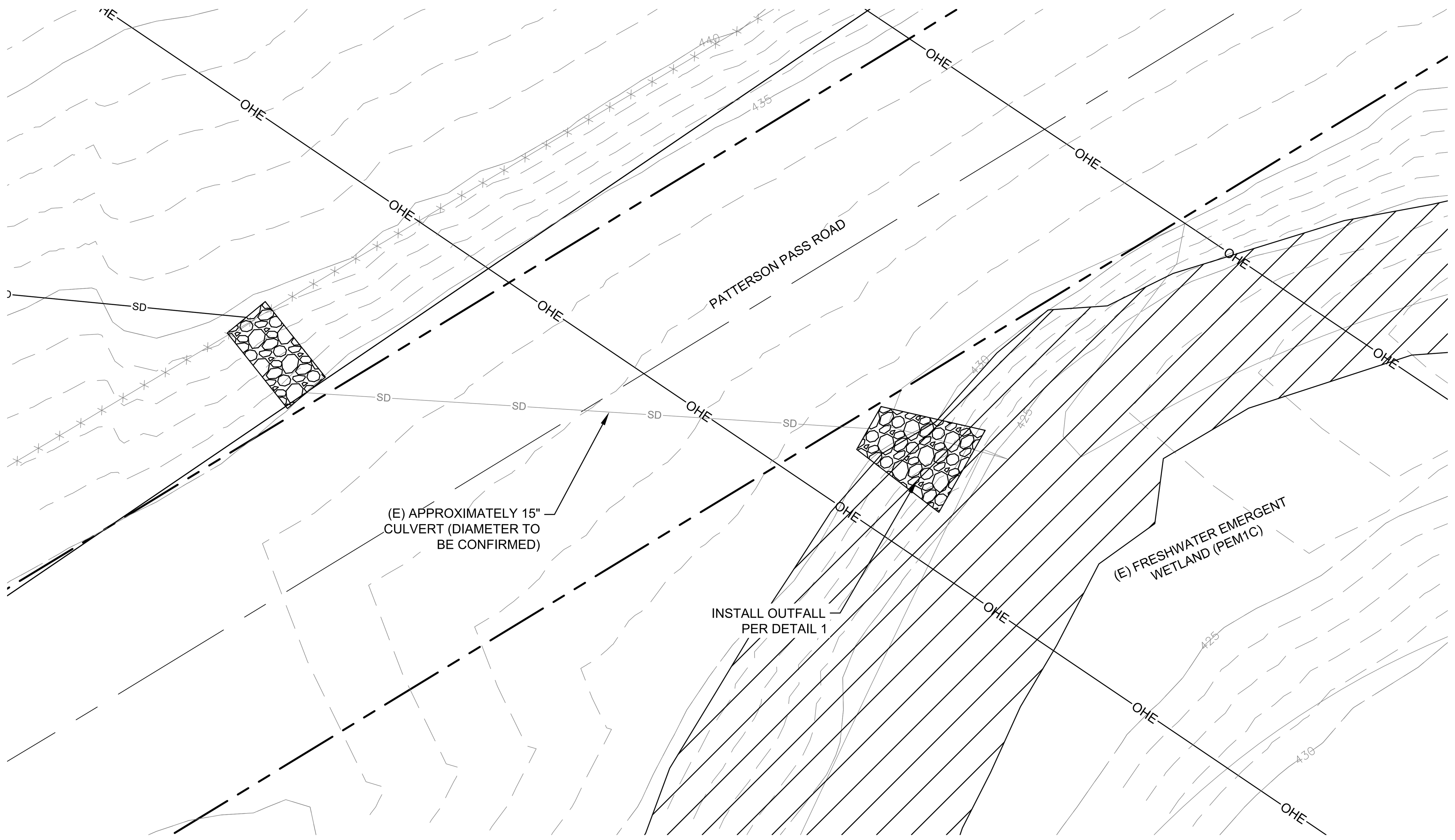
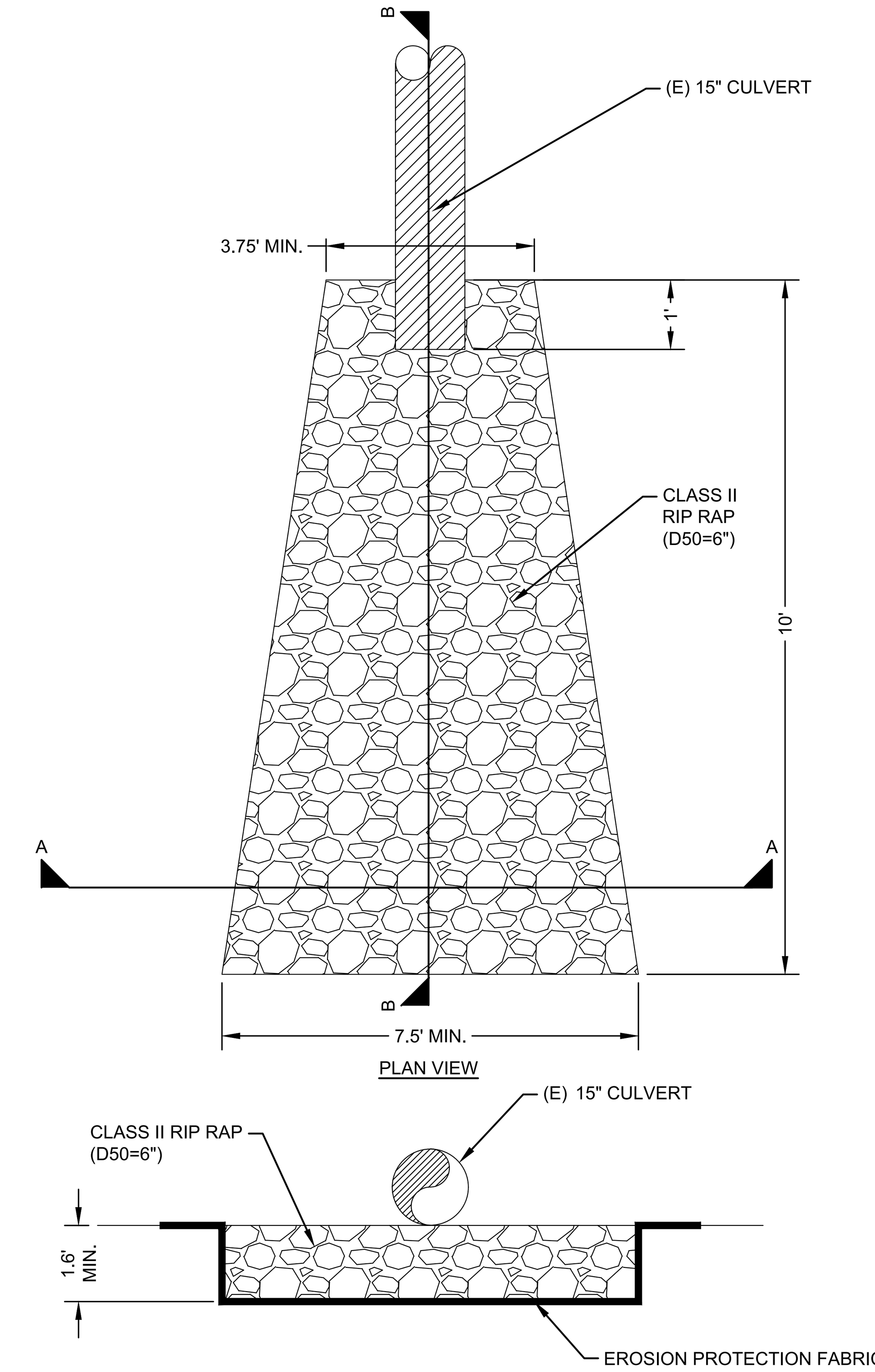
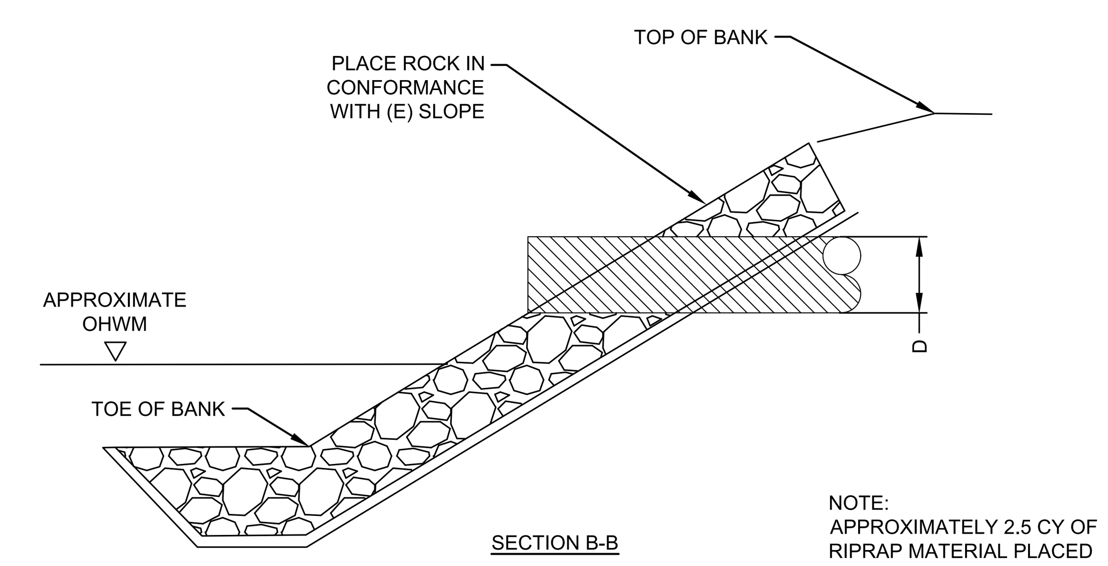


EXHIBIT A

SCALE: 1"=10'



NOTES:
ENERGY DISSIPATER SIZED PER FEDERAL HIGHWAY ADMINISTRATION HYDRAULIC ENGINEERING MANUAL



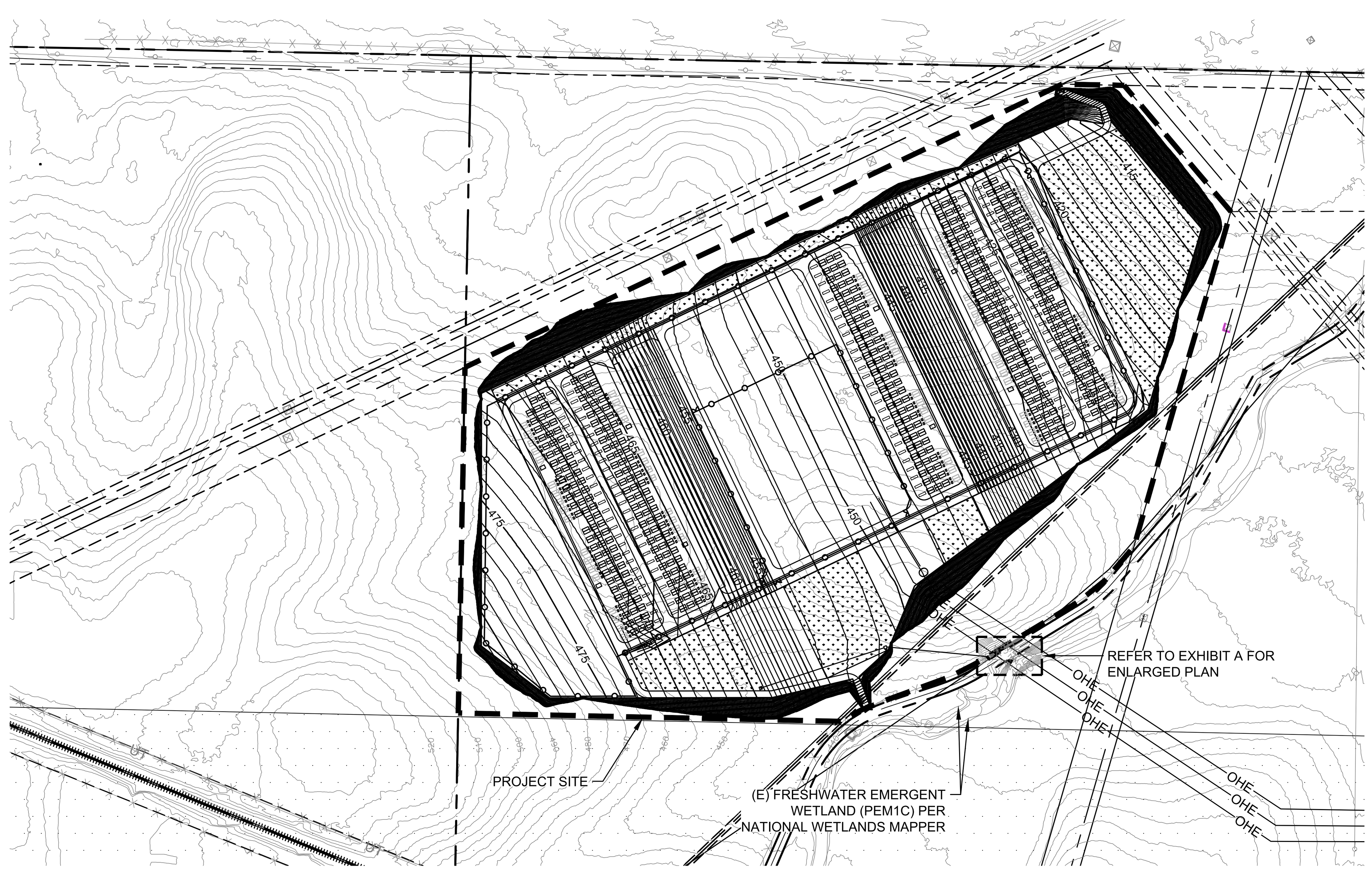
NOTE:
APPROXIMATELY 2.5 CY OF RIPRAP MATERIAL PLACED BELOW OHWM.

1 OUTFALL DETAIL

SCALE: NTS

LEGEND

——— — ———	CENTERLINE
— — — — —	EASEMENT LINE
——— - - ———	PROPERTY LINE
▬ ▬ ▬ ▬	PROPOSED LEASE LINE
▬▬▬▬▬	DRAINAGE MANAGEMENT AREA
—x—x—x—	EXISTING CHAIN LINK FENCE
—o—o—o—	PROPOSED FENCE
———SD———	STORM DRAIN PIPE
++++++	RAILROAD
-○-	EXISTING UTILITY POLE
200	EXISTING CONTOURS
200	PROPOSED CONTOURS
▨	ORDINARY HIGH WATER MARK
⁘	STORMWATER/LID AREA



SITE MAP

SCALE: 1"=300'

200 100 0 200 400

SCALE: 1 INCH = 200 FEET

UTILITY STATEMENT

LOCATION OF EXISTING UNDERGROUND UTILITIES HAVE BEEN TAKEN FROM DRAWINGS AND FIELD LOCATES SUPPLIED BY THE APPROPRIATE UTILITY COMPANIES. UTILITY LOCATIONS SHOWN ON THIS DRAWING ARE APPROXIMATE ONLY. PRIOR TO BEGINNING ANY CONSTRUCTION, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF EACH UTILITY.

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POTENTIA-VIRIDI BATTERY ENERGY STORAGE SYSTEM

LEVY ALAMEDA, LLC

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION

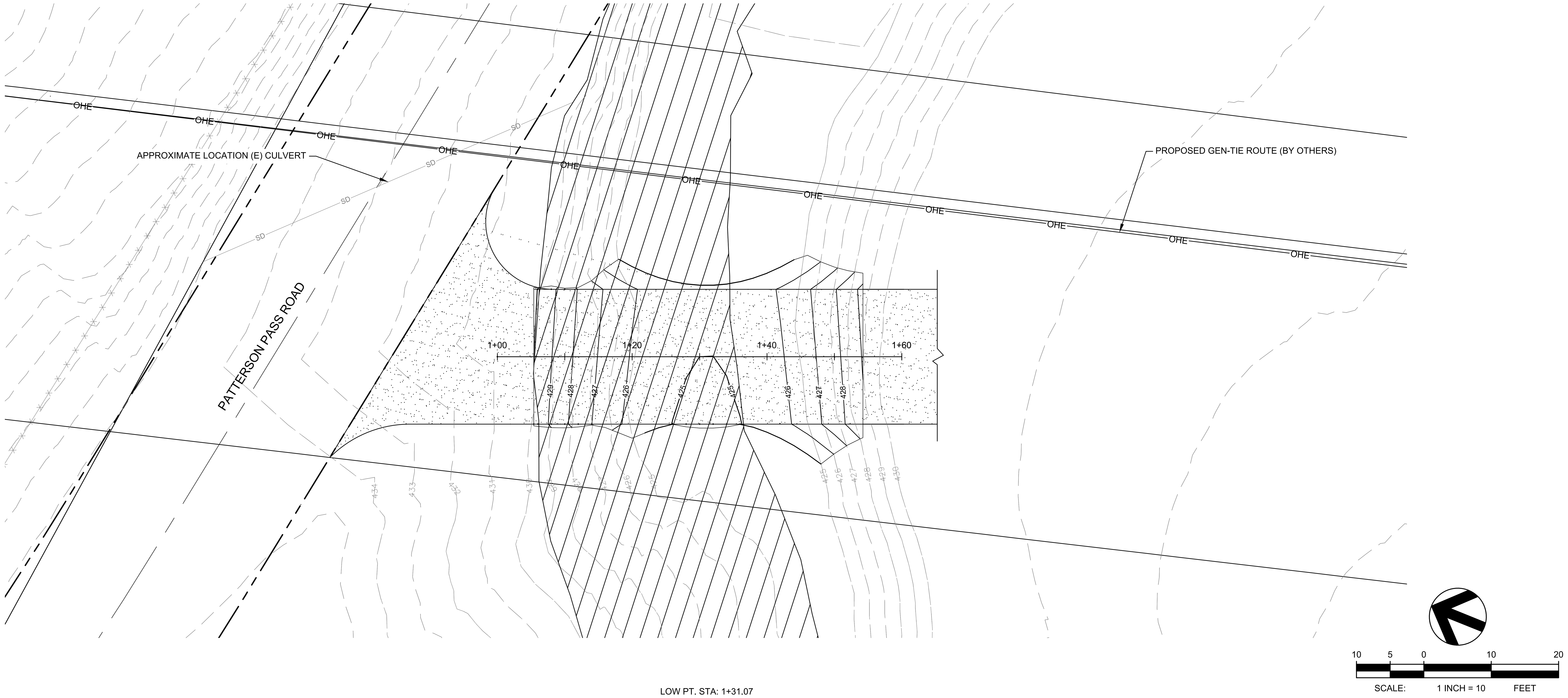
PROJ. NO.	232059
DRAWN	LB
CHECKED	RB
DATE	[illegible]

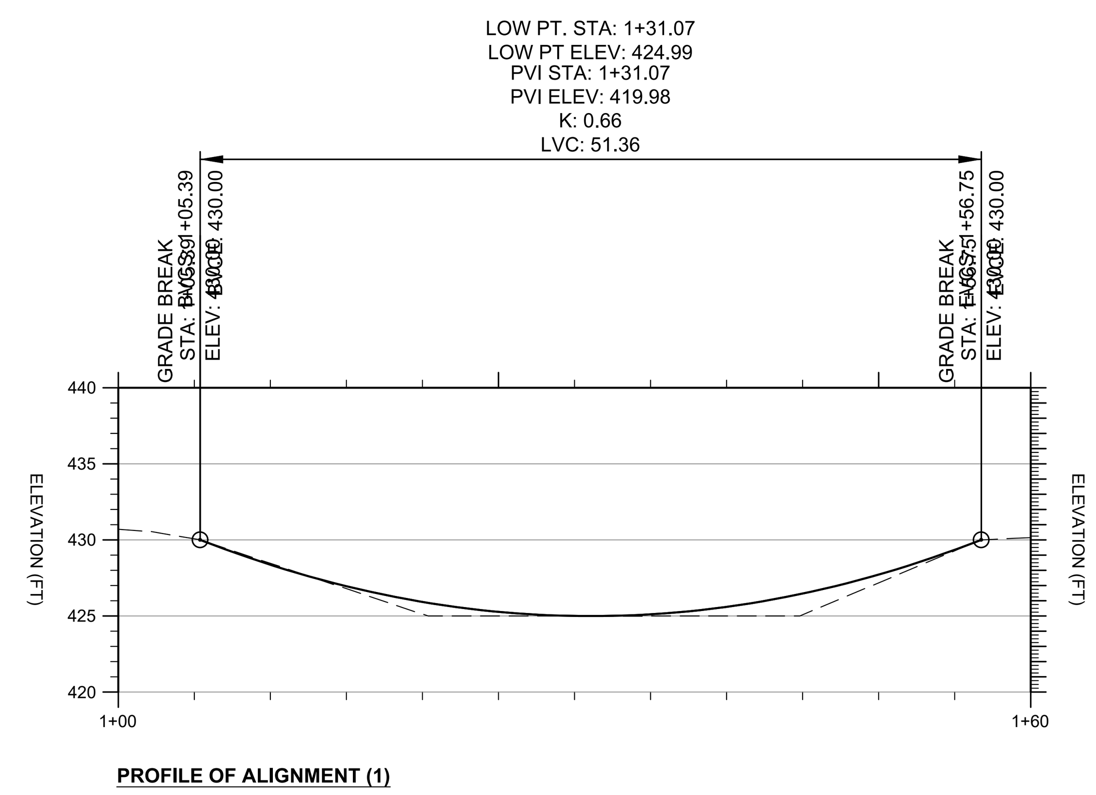
SHEET TITLE:

CONCEPTUAL CIVIL HYDROLOGY/ HYDRAULIC OUTFALL SCHEMATIC

SHEET NO:

C-1.0





PROFILE OF ALIGNMENT (1)

QUANTITIES				
DISTURBED AREA (SF)	EXCAVATED VOLUME (CY)	TOTAL FILL VOLUME (CY)	TOTAL CUT VOLUME (CY)	RIP RAP VOLUME (CY)
1,600	18	17	1	

OHWM QUANTITIES				
DISTURBED AREA (SF)	EXCAVATED VOLUME (CY)	FILL VOLUME (CY)	CUT VOLUME (CY)	RIP RAP VOLUME (CY)
650	7	6	1	

LEGEND

- CENTERLINE
- EASEMENT LINE
- PROPERTY LINE
- PROPOSED LEASE LINE
- EXISTING CHAIN LINK FENCE
- PROPOSED FENCE
- SD — STORM DRAIN PIPE
- 200 — EXISTING CONTOURS
- 200 — PROPOSED CONTOURS
- ORDINARY HIGH WATER MARK
- PROPOSED CONSTRUCTION ACCESS

UTILITY STATEMENT
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LEVY ALAMEDA, LLC

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION

PROJ. NO. 232059
DRAWN LB
CHECKED RB
DATE 12/7/23

SHEET TITLE:

CONCEPTUAL ACCESS ROAD SCHEMATIC

SHEET NO:

C-1.0

SHEET OF 7

Appendix C BIOLOGICAL RESOURCES TECHNICAL REPORT

FINAL

Biological Technical Report

Potentia-Viridi Battery Energy Storage System Project

JULY 2024

Prepared for:

LEVY ALAMEDA LLC
c/o Capstone Infrastructure Corporation
155 Wellington Street West, Suite 2930
Toronto, Ontario M5V 3H1, Canada
Contact: Lauren McLeod

Prepared by:

DUDEK
1904 Franklin Street, Suite 600
Oakland, California 94612

Please see Appendix 3.2A for complete BTR