Appendix C

Biological Resources Assessment

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FINAL

BIOLOGICAL RESOURCES ASSESSMENT
for the
LAGUNA CREEK DIVERSION RETROFIT PROJECT

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1 Introduction

The City of Santa Cruz's (City) North Coast system comprises approximately 15% to 35% of the City's overall water production from rainfall runoff and groundwater infiltration. The Laguna Creek Diversion Facility (Facility) is one of four surface water collection/diversion sources supplying raw water to the North Coast System. The Facility directs water from Laguna Creek into the drinking water system and is located just north of the Smith Grade roadway approximately 12 miles northwest of downtown Santa Cruz. The Laguna Creek Diversion Retrofit Project (Proposed Project) proposes to improve the reliability of the water supply by addressing sediment transport issues, fisheries protection requirements, safe access, and changing environmental conditions (B&V 2020a). The purpose of this report is to (1) describe the conditions of biological resources within the project site in terms of vegetation communities, plants, wildlife, wildlife habitats, and wetlands; (2) quantify potential direct and indirect impacts to biological resources that will result from the Proposed Project; (3) discuss those impacts in terms of biological significance in view of federal, state, and local laws and policies; and (4) specify measures to mitigate any significant or potentially significant biological resource impacts.

1.1 Project Location

The project site is located near the community of Bonny Doon, in unincorporated Santa Cruz County, approximately 7 miles northwest of downtown Santa Cruz (straight-line distance) (Figure 1, Project Location). The Facility is positioned approximately 4 miles upstream of the Pacific Ocean and 0.1 miles upstream of the confluence with Reggiardo Creek. The Facility is which is operated by the SCWD and provides water from Laguna Creek to the SCWD's water supply system. It located on a portion of Assessor's Parcel Number 062-101-03, which is privately-owned land, surrounded predominantly by undeveloped open space, with scattered low-density residential development to the east, south, and west. Elevations within the project site range from 600 feet above mean sea level to 670 feet above mean sea level, and the project site is located within the U.S. Geological Survey 7.5-minute Davenport quadrangle (USGS 2020).

The 2.14-acre project site consists of the Facility (the existing dam, intake structure, diversion flume, control building, and downstream plunge pool); the surrounding area, including portions of Laguna Creek upstream and downstream of the dam; and the three unimproved access roadways from Smith Grade (Figure 2, Project Components). A 300-foot buffer added around the project site described above constitutes the 17.44-acre biological study area (BSA), which was used to describe biological resources within the immediate vicinity of the project site (Figure 3, Biological Resources).

1.2 Project Description

1.2.1 Project Background

The Facility was completed in 1890 as a stone masonry dam, and minor improvements have been installed subsequently, including the screened intake structure, diversion flume, and control building. The dam itself is approximately 60 feet long and 12 feet high, spans the entire width of the creek channel, and has been virtually unimproved since its original construction. It creates an impoundment upstream that passively directs water into a screened intake structure connected to a diversion flume (Figure 2, Project Components). The diversion flume is approximately 100 feet long and channels the diverted water into a transmission pipeline that conveys water via

gravity to the City's Coast Pump Station on the San Lorenzo River, approximately 3.8 miles to the east. The water is ultimately delivered to the Graham Hill Water Treatment Plant.

The existing Facility includes two debris/sediment control bypasses with pneumatically operated gate valves to regulate sediment movement through the intake structure. Diversion of water from the creek to the City's water system is controlled by an electronic diversion control valve and propeller-type flowmeter. A control building houses operational equipment. Piping from the flume also allows for bypass flows to be returned to the stream. Approximately 400 feet downstream from the Facility, the creek passes under Smith Grade through a culvert under the roadway.

The City has historically diverted water from Laguna Creek as needed throughout the year based on established pre-1914 senior water rights. However, since 2007, the City has limited its diversions in order to maintain beneficial in-stream flows suitable for various salmonid life stages within the downstream anadromous reaches of Laguna Creek, based on ongoing agreements with the California Department of Fish and Wildlife (CDFW). Although the City is capable of diverting up to approximately 7 cubic feet per second based on current infrastructure, during the various salmonid life stages, water diversions are limited from Laguna Creek and often unavailable, as flows naturally recede below the agreed upon in-stream flows of 2 cubic feet per second. There is no typical diversion rate or diversion season, since the available flows are highly dependent on rainfall volume and timing.

While the Facility has several operational deficiencies related to management of sediment, fisheries protection, and maintenance challenges—issues that have been studied by the City—the overall condition of the Facility is satisfactory, with no signs of major deterioration, and it has adequate strength and stability for continued service. Even so, since the early 2000s, CDFW has corresponded with the City requesting improvements to sediment management and fisheries protection at the Facility. To that end, the City's draft Anadromous Salmonid Habitat Conservation Plan includes improvements at the Facility as a biological objective and as a covered activity, and improvements were analyzed at a programmatic level in the 2005 Program Environmental Impact Report for the North Coast System Repair and Replacement Project.

To address the aforementioned operational and maintenance issues, the City has developed the project-level definition of the Proposed Project, which is the subject of this project-level environmental impact report. A description of these operational and maintenance issues and how the Proposed Project would address them is outlined as follows:

- In-Stream Transport of Sediment. The dam impedes natural movement of sediment downstream. Although two sediment-control bypass valves can be operated during periods of sediment transport (e.g., during storms) to allow sediment to pass through the dam, they are intermittently clogged with large materials during high-flow storm events and have limited capacity, resulting in sediment buildup behind the dam, often during one large storm event. Periodic dredging and sediment removal are required to conduct maintenance activities and to clear the intake screen of sediment.
- Fish Protection Consistent with Regulatory Requirements. The existing intake screen is aged and buried in sediment. The screen was designed to prevent entrainment of debris within the diverted water and has a woven-wire opening of approximately 0.5 inches. Weekly maintenance and cleaning of the existing intake screen is required to clear sediment from the intake structure when the Facility is in service.

  The existing screen panels do not meet current regulatory requirements for screening of non-anadromous fish species; screen openings are too large to eliminate the potential for entrainment of juvenile fish and other aquatic organisms. Although federally or state-listed anadromous fish species are not present in

the project area due to several downstream natural barriers, Laguna Creek does contain populations of rainbow trout (*Oncorhynchus mykiss*). Fish habitat downstream of the dam has also been degraded by sediment impoundment.

- Maintenance, Safety, and Access. The location of the existing control building impairs access to the diversion structures by mechanized maintenance equipment, the diamond-plate cover on the existing flume requires confined-space entry procedures when staff need to enter the structure, and the Facility does not have permanent fall-protection infrastructure in place for use during dam maintenance.

1.2.2 Proposed Project Description

The Proposed Project seeks to improve the existing Facility in order to allow for natural sediment transport past the diversion and to protect fish species and habitat. The Proposed Project would not increase the diversion rates at the Facility and would continue to allow the City to operate its diversion while enhancing its ability to meet its instream flow requirements. The Proposed Project would be comprised of the following primary components:

- **New Coanda Screen Intake Structure**. The Proposed Project would use Coanda screen technology. A Coanda screen consists of finely spaced, wedge-shaped wires that deflect a portion of the water to a collection chamber below the screen. Flows pass over the crest of the dam and across a solid steel plate, referred to as an accelerator plate because it creates an increase in the flow rate as water passes over the dam crest. A portion of the water then flows across and through the slotted Coanda screen panel. Flow that passes through the screen is collected in a collection chamber and by a diversion pipe to conveyed to the Laguna Pipeline. The Coanda screen would be embedded within a concrete support structure on the downstream side of the dam's left/east abutment, with the face of the screen sloped steeply downward such that water would pass over it at a high velocity, transporting sediment and debris downstream while skimming thin layers of water that would be directed into the collection chamber below. The Coanda screen technology would allow the intake screen to function regardless of sediment accumulation and buildup within the reservoir (i.e., upstream impoundment). The Coanda screen would divert some water that passes through the screen while the flow over it would transport the majority of entrained sediment downstream. Removal of smaller sediment that accumulates within the screen housing would be facilitated by a blowoff system incorporated into the design. Periodic manual brushing of the screen would occur to keep the intake operating as designed.
- **Valve Vault and Creek Bank Components**. The valve vault and other improvements along the downstream side of the dam's left/east abutment (eastern creek bank) are described below.
    - **Valve Vault.** A concrete vault would be cast-in-place and installed along the eastern creek bank to house the control-valve equipment. The approximately 9.5-foot-wide by 11.5-foot-long valve vault would be installed along the creek bank along the left/east abutment of the dam and adjacent to the existing intake structure, in a location that is accessible to City staff for maintenance and operation. The valve vault base would be constructed of structural concrete and anchored to bedrock with rebar. A cement curb up to 12 inches in height may be installed along the top of the valve vault to confine the 100-year storm event within Laguna Creek and to keep new infrastructure from flooding.
    - **Access Stairs and Safety Improvements**. The Proposed Project would include access and safety improvements including a cast-in-place concrete stairway (approximately 5 feet wide and 20 feet long) to provide access to the downstream plunge pool and guard rails at various locations

within the Facility, such as along the creek bank, at the new intake structure, across the dam, and at the valve vault.

- **Riprap Bank Stabilization**. Limited reinforcement of the creek bank may be necessary and may entail installation of streambank stabilization at the east side of the creek to protect the bank from erosion. Stabilization of an area approximately 20 feet long by 10 feet wide (approximately 25 cubic yards) may be required.

- **Other Components.** Other components of the Proposed Project including the diversion pipe, pre-cast drop inlet, and power and controls are described below.
  - **Diversion Pipe.** The new intake would be linked to a new diversion pipe that would extend approximately 100 feet downstream, which would be placed underground parallel to the existing diversion flume. Water from the collection chamber would be diverted into the new diversion pipe that would connect to the existing Laguna Pipeline downstream of the flume.
  - **Pre-Cast Drop Inlet.** A sediment trap structure would be installed at the interconnection of the new diversion pipe and the existing Laguna Pipeline within a pre-cast drop inlet feature that would allow for sediment removal using a hydro-vacuum truck or a hand-held shop vacuum, if needed.
  - **Power and Controls.** The Proposed Project would include additional electro-mechanical equipment for operations and remote-control capabilities. New monitoring and control equipment, including water quality sensors, water meters, valve actuators, and telecommunications, would be connected to the existing communications system and electrical distribution system on site to provide essential data for operations.

    An in-line control valve and electric actuator would be included to regulate flow into the City's diversion downstream of the flume. New electrical circuits would be installed for powering, monitoring, and remotely operating the new control valve actuators. The Facility's existing electrical distribution and SCADA equipment are deemed sufficient to accomplish automation and control functions at the Facility. The existing control building and SCADA equipment would accommodate new equipment required by the Proposed Project. The existing single-phase electrical service and data-grade telephone line would continue to provide power supply and communication capabilities for diversion control and automation.
- **Modified Existing Components.** The existing intake would be modified and decommissioned in place once the proposed improvements are implemented. A bypass pipe would be incorporated in the intake to allow for emergency diversion of water and the intake would be backfilled with concrete. This bypass pipe would extend from the intake to the existing diversion flume to allow water to be conveyed to the City's water treatment plant in the event that the new intake structure needs to be taken out of service for repair. A new cement curb up to 12 inches in height may be installed along the top of the existing intake to confine the 100-year storm event within Laguna Creek and to keep new infrastructure from flooding.

  In addition, the two existing sediment-control bypass valves on the downstream face of the dam would be removed and the bypass pipes abandoned in place and capped as follows:
  - At the dam's right/west sediment-control bypass valve (from the vantage point of looking downstream), the existing gate and actuator and its hood would be removed, and a blind flange would be installed on the end of the bypass pipe.
  - The conduits and electrical components would also be removed including the metal conduit/cable across the face of the dam.

- The dam's left/east sediment-control bypass valve is at the location where the new intake structure would be installed. Prior to installation of the intake structure, the piece of the bypass pipe that protrudes from the dam and the actuator would be removed and the pipe would be backfilled with concrete

1.2.3 Standard Construction Practices

Presented in this section are Standard Construction Practices that would be implemented by the City or its contractors during construction activities associated with the Proposed Project, where relevant.

Erosion Control and Air Quality Control

1. Implement erosion control best management practices for all construction activities occurring in or adjacent to jurisdictional aquatic resources (resources subject to permitting under Clean Water Act Section 404, Clean Water Act Section 401, and/or California Fish and Game Code Section 1600). These measures may include, but are not limited to, (1) installation of silt fences, fiber or straw rolls, and/or bales along limits of work/construction areas and from the edge of the water course; (2) covering of stockpiled spoils; (3) revegetation and physical stabilization of disturbed graded and staging areas; and (4) sediment control including fencing, dams, barriers, berms, traps, and associated basins.
2. Provide stockpile containment and exposed soil stabilization structures (e.g., Visqueen plastic sheeting, fiber or straw rolls, gravel bags, and/or hydroseed).
3. Provide runoff control devices (e.g., fiber or straw rolls, gravel bag barriers/chevrons) used during construction phases conducted during the rainy season. Following all rain events, runoff control devices shall be inspected for their performance and repaired immediately if they are found to be deficient.
4. Implement wind erosion (dust) controls, including the following:
    - Use a water truck;
    - Water active construction areas as necessary to control fugitive dust;
    - Hydro seed and/or apply non-toxic soil binders to exposed areas after cut and fill operations;
    - Cover inactive storage piles;
    - Cover all trucks hauling dirt, sand, or loose materials off site; and
    - Install appropriately effective track-out capture methods at the construction site for all exiting trucks.

Water Quality Protection

5. Locate and stabilize spoil disposal sites and other debris areas such as concrete wash sites. Sediment control measures shall be implemented so that sediment is not conveyed to waterways or jurisdictional resources (resources subject to permitting under Clean Water Act Section 404, Clean Water Act Section 401, and/or California Fish and Game Code Section 1600).
6. Minimize potential for hazardous spills from heavy equipment by not storing equipment or fueling within a minimum of 65 feet of any active stream channel or water body unless approved by permitting agencies along with implementation of additional spill prevention methods such as secondary containment and inspection.
7. Ensure that gas, oil, or any other substances that could be hazardous to aquatic life or pollute habitat are prevented from contaminating the soil or entering waters of the state or of the United States by storing these types of materials within an established containment area. Vehicles and equipment would have spill

kits available, be checked daily for leaks, and would be properly maintained to prevent contamination of soil or water from external grease and oil or from leaking hydraulic fluid, fuel, oil, and grease. Any gas, oil, or other substance that could be considered hazardous shall be stored in water-tight containers with secondary containment. Emergency spill kits shall be on site at all times.

8. Prevent equipment fluid leaks through regular equipment inspections.
9. Implement proper waste/trash management.

In-Channel Work and Fish Species Protection

10. Avoid activities in the active (i.e., flowing) channel whenever possible.
11. Isolate work areas as needed and bypass flowing water around work site (see dewatering measures below).
12. Personnel shall use the appropriate equipment for the job that minimizes disturbance to the channel bed and banks. Appropriately tired vehicles, either tracked or wheeled, shall be used depending on the situation.

General Habitat Protection

13. Avoid disturbance of retained riparian vegetation to the maximum extent feasible when working in or adjacent to an active stream channel.
14. Restore all temporarily disturbed natural communities/areas by replanting native vegetation using a vegetation mix appropriate for the site.
15. Require decontamination of any used tools and equipment prior to entering water ways.
16. A qualified biologist shall conduct a training-educational session for project construction personnel prior to any mobilization-construction activities within the project sites to inform personnel about species that may be present on site. The training shall consist of basic identification of special-status species that may occur on or near the project site, their habitat, their basic habits, how they may be encountered in the work area, and procedures to follow when they are encountered. The training will include a description of the project boundaries; general provisions of the Migratory Bird Treaty Act, California Fish and Game Code, and federal and state Endangered Species Acts; the necessity for adhering to the provision of these regulations; and general measures for the protection of special-status species, including breeding birds and their nests. Any personnel joining the work crew later shall receive the same training before beginning work.

Dewatering

17. Prior to the start of work or during the installation of temporary water diversion structures, capture native aquatic vertebrates in the work area and transfer them to another reach as determined by a qualified biologist. Capture and relocation of aquatic native vertebrates is not required at individual project sites when site conditions preclude reasonably effective operation of capture gear and equipment, or when the safety of the biologist conducting the capture may be compromised.
18. When work in a flowing stream is unavoidable, isolate the work area from the stream. This may be achieved by diverting the entire streamflow around the work area by a pipe or open channel. Coffer dams shall be installed upstream and downstream, if needed, of the work areas at locations determined suitable based on site-specific conditions, including proximity to the construction zone and type of construction activities being conducted. Cofferdam construction shall be adequate to prevent seepage to the maximum extent feasible into or from the work area. Where feasible, water diversion techniques shall allow streamflows to flow by gravity around or through the work site. If gravity flow is not feasible, streamflows may be pumped

around the work site using pumps and screened intake hoses. Sumps or basins may also be used to collect water, where appropriate (e.g., in channels with low flows). The work area will remain isolated from flowing water until any necessary erosion protection is in place. All water shall be discharged in a non-erosive manner (e.g., gravel or vegetated bars, on hay bales, on plastic, on concrete, or in storm drains when equipped with filtering devices).

19. If a bypass will be of open channel design, the berm confining the channel may be constructed of material from the channel.
20. Diversions shall maintain ambient flows below the diversion, and waters discharged below the project site shall not be diminished or degraded by the diversion. All imported materials placed in the channel to dewater the channel shall be removed when the work is completed. Dirt, dust, or other potential discharge material in the work area will be contained and prevented from entering the flowing channel. Normal flows shall be restored to the affected stream as soon as is feasible and safe after completion of work at that location.
21. To the extent that streambed design changes are not part of the Proposed Project, return the streambed, including the low-flow channel, to as close to pre-project condition as possible unless the pre-existing condition was detrimental to channel condition as determined by a qualified biologist or hydrologist.
22. Remove all temporary diversion structures and the supportive material as soon as reasonably possible, but no more than 72 hours after work is completed.
23. Completely remove temporary fills, such as for access ramps, diversion structures, or coffer dams upon finishing the work.

Other Practices

24. In the event that archaeological resources (sites, features, or artifacts) are exposed during construction activities for the Proposed Project, immediately stop all construction work occurring within 100 feet of the find until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find. The archaeologist will determine whether additional study is warranted. Should it be required, the archaeologist may install temporary flagging around a resource to avoid any disturbances from construction equipment. Depending upon the significance of the find under CEQA (14 CCR 15064.5[f]; California Public Resources Code, Section 21082), the archaeologist may record the find to appropriate standards (thereby addressing any data potential) and allow work to continue. If the archaeologist observes the discovery to be potentially significant under CEQA, preservation in place or additional treatment may be required.
25. In accordance with Section 7050.5 of the California Health and Safety Code, if potential human remains are found, immediately notify the lead agency staff and the County Coroner of the discovery. The coroner would provide a determination within 48 hours of notification. No further excavation or disturbance of the identified material, or any area reasonably suspected to overlie additional remains, can occur until a determination has been made. If the County Coroner determines that the remains are, or are believed to be, Native American, the coroner would notify the Native American Heritage Commission within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the Native American Heritage Commission must immediately notify those persons it believes to be the Most Likely Descendant from the deceased Native American. Within 48 hours of this notification, the Most Likely Descendant would recommend to the lead agency her/his preferred treatment of the remains and associated grave goods.
26. Notify adjacent property owners of nighttime construction schedules. A Construction Noise Coordinator will be identified. The contact number for the Construction Noise Coordinator will be included on notices distributed to neighbors regarding planned nighttime construction activities. The Construction Noise

Coordinator will be responsible for responding to any local complaints about construction noise. When a complaint is received, the Construction Noise Coordinator shall notify the City within 48 hours of the complaint, determine the cause of the noise complaint, and implement as possible reasonable measures to resolve the complaint, as deemed acceptable by the City.

Project-Specific Practices for Biological Resources

27. To protect fish, the following shall be implemented:
    - Relocate fish to suitable habitat during dewatering activities.
    - Maintain adequate water depth within downstream plunge pool. A depth of 3 to 4 feet is preferred to conform to the existing pool depth and minimize potential for degrading the suitability of the pool for trout habitat. Greater depth also reduces the potential for harm to fish passing over the Coanda screen and entering the plunge pool below.
    - Maintain soft bank stabilization features identified during project design that provides potential habitat for trout.
    - Maintain native riparian shrubs and small trees in (as appropriate) and around riprap to provide overhead cover and shading when the plants have matured.
28. To protect trees that are retained on site, the following will be implemented:
    - Implement measures to minimize the potential for pathogen spread. Sanitize tools and equipment used in vegetation clearing including tree removal operations. If soil is collected on equipment, rinse equipment on site with a portable water tank or water truck, or at a designated rinsing station, to remove soil-borne pathogens and prevent transport to new sites. Alternatively, debris can be cleaned from tools/equipment via brushing, sweeping, or blowing with compressed air.
    - Implement additional prevention methods for sudden oak death and pitch canker. A qualified biologist, arborist, or forester should inspect loads of logs and equipment leaving the site to ensure that no host material is being transported without a permit if material is being transported to outside locations. If importing vegetative material for restoration purposes, ensure that material that has been produced in conformance with the latest horticultural standards in pest and disease avoidance and sanitation.
    - Implement recommendations from the Tree Inventory, Impact Assessment, and Protection Plan (Fouts 2020) prepared for the Proposed Project.
29. To prevent inadvertent entrapment of wildlife during construction activities, all excavated, steep-walled holes or trenches more than 2 feet deep and/or all open pipeline segments will be covered at the close of each working day with plywood or similar materials, to the extent feasible. These areas will be inspected for trapped wildlife before and after placement of exclusionary materials.

Project-Specific Practices for Cultural Resources

30. To protect the dam during construction, the following will be implemented:
    - Notching crest of dam. The notch in the crest of the dam shall be sawcut to score neat lines for stone masonry removal. The use of a wire saw would avoid excess material removal and would prevent unraveling of stone masonry beyond the limits of the new intake structure. Given the strength and hardness of the dam, the cuts may first be initiated using chisel hammers to remove materials as necessary.

- Water-pressure washing of dam to remove debris. To remove loose material and organics such as dirt and moss water-blasting of the downstream face of the dam may be required. Prior to completing any water-blasting work, and at the direction of the City and under supervision of the Project inspector, the contractor shall test washing methods and develop the least impactful method of dam cleaning. The pressure washing methods shall avoid eroding the mortar. The contractor shall start with a low-pressure water wash, and if unsuccessful, use water of slightly higher pressure. As feasible, the test shall be conducted in an inconspicuous location. Pressure washing shall be limited to the area where the new intake structure will be cast, with approximately 1-foot buffer. A bonding agent such as a high solids, water-based emulsion admixture suitable for modifying Portland cement compositions, shall be spray applied to the dam face within the limits of the new concrete formwork for the new intake structure.

31. Documentation of the historical resource. The City will work with a qualified architectural historian to develop interpretative text and content for a dedicated webpage on the City's public website that explains the history of the site and its importance within the water management system. This text and supporting content (historic era images) will be utilized to develop a brochure with a one-time limited pressing for distribution to local libraries and museums. In addition, the City will include a brief history of the project site as an entry in its Santa Cruz Municipal Utilities Review, a quarterly newsletter that is sent to all customers in the Water Service Area.

Project-Specific Practices for Wildfire Hazards

32. Internal combustion engine equipment shall include spark arrestors, fire suppression equipment (e.g. fire extinguishers and shovels) must be stored onsite during use of such mechanical equipment, and construction activities may not be conducted during red flag warnings issued by the California Department of Forestry and Fire Protection (CAL FIRE). Red flag warnings and fire weather watches are issued by CAL FIRE based on weather patterns (low humidity, strong winds, dry fuels, etc.) and listed on their website (https://www.fire.ca.gov/programs/communications/red-flag-warnings-fire-weather-watches/).

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2 Regulatory Setting

2.1 Federal

2.1.1 Clean Water Act

The Federal Water Pollution Control Act of 1972 (Clean Water Act) (33 USC 1251 et seq.), as amended by the Water Quality Act of 1987 (PL 100-4), is the major federal legislation governing water quality. The purpose of the Clean Water Act is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Discharges into waters of the United States are regulated under Section 404. Waters of the United States include (1) all navigable waters (including all waters subject to the ebb and flow of tides); (2) all interstate waters and wetlands; (3) all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, and natural ponds; (4) all impoundments of waters mentioned above; (5) all tributaries to waters mentioned above; (6) the territorial seas; and (7) all wetlands adjacent to waters mentioned above. In California, the State Water Resources Control Board and the RWQCBs are responsible for implementing the Clean Water Act. Important applicable sections of the Clean Water Act are as follows:

- Section 401 requires an applicant for any federal permit for an activity that may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the Clean Water Act. Certification is provided by the respective RWQCB.
- Section 402 establishes the National Pollutant Discharge Elimination System, a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the United States. The National Pollutant Discharge Elimination System program is administered by the RWQCB. Conformance with Section 402 is typically addressed in conjunction with water quality certification under Section 401.
- Section 404 provides for issuance of dredge/fill permits by USACE. Permits typically include conditions to minimize impacts on water quality. Common conditions include (1) USACE review and approval of sediment quality analysis before dredging, (2) a detailed pre- and post-construction monitoring plan that includes disposal site monitoring, and (3) required compensation for loss of waters of the United States.

2.1.2 Federal Endangered Species Act

The federal Endangered Species Act (FESA) of 1973 (16 USC 1531 et seq.), as amended, is administered by USFWS for most plant and animal species and by the National Oceanic and Atmospheric Administration National Marine Fisheries Service for certain marine species. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend and to provide programs for the conservation of those species, thus preventing the extinction of plants and wildlife. FESA defines an endangered species as "any species that is in danger of extinction throughout all or a significant portion of its range." A threatened species is defined as "any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Under FESA, it is unlawful to take any listed species; "take" is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." As part of this regulatory act, FESA provides for designation of critical habitat, defined in FESA Section 3(5)(A) as specific areas within the geographical range occupied by a species where physical or biological features "essential to the conservation of the species" are found and that "may require special management considerations

or protection." Critical habitat may also include areas outside the current geographical area occupied by the species that are nonetheless "essential for the conservation of the species." Critical habitat designations identify with the best available knowledge, those biological and physical features (primary constituent elements) which provide for the life history processes essential to the conservation of the species.

FESA allows for the issuance of incidental take permits for listed species under Section 7, which is generally available for projects that also require other federal agency permits or other approvals, and under Section 10, which provides for the approval of habitat conservation plans on public or private property without any other federal agency involvement.

The BSA occurs within USFWS-designated California red-legged frog critical habitat Unit SCZ-1 for Santa Cruz County (75 FR 12815-12959; USFWS 2020). According to USFWS, the following items are the primary constituent elements (PCE) identified for California red-legged frog (75 FR 12815-12959):

1. **Aquatic Breeding Habitat.** Standing bodies of fresh water (with salinities less than 4.5 parts per thousand), including natural and manmade (e.g., stock) ponds, slow-moving streams or pools within streams, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in all but the driest of years.
2. **Aquatic Non-Breeding Habitat.** Freshwater pond and stream habitats, as described above, that may not hold water long enough for the species to complete its aquatic life cycle but which provide for shelter, foraging, predator avoidance, and aquatic dispersal of juvenile and adult California red-legged frogs. Other wetland habitats considered to meet these criteria include, but are not limited to: plunge pools within intermittent creeks, seeps, quiet water refugia within streams during high water flows, and springs of sufficient flow to withstand short-term dry periods.
3. **Upland Habitat.** Upland areas adjacent to or surrounding breeding and non-breeding aquatic and riparian habitat up to a distance of 1 mile (1.6 kilometers) in most cases (i.e., depending on surrounding landscape and dispersal barriers) including various vegetation types such as grassland, woodland, forest, wetland, or riparian areas that provide shelter, forage, and predator avoidance for the California red-legged frog. Upland features are also essential in that they are needed to maintain the hydrologic, geographic, topographic, ecological, and edaphic features that support and surround the aquatic, wetland, or riparian habitat. These upland features contribute to: (1) filling of aquatic, wetland, or riparian habitats; (2) maintaining suitable periods of pool inundation for larval frogs and their food sources; and (3) providing non-breeding, feeding, and sheltering habitat for juvenile and adult frogs (e.g., shelter, shade, moisture, cooler temperatures, a prey base, foraging opportunities, and areas for predator avoidance). Upland habitat should include structural features such as boulders, rocks and organic debris (e.g., downed trees, logs), small mammal burrows, or moist leaf litter.
4. **Dispersal Habitat.** Accessible upland or riparian habitat within and between occupied or previously occupied sites that are located within 1 mile (1.6 kilometers) of each other, and that support movement between such sites. Dispersal habitat includes various natural habitats, and altered habitats such as agricultural fields, that do not contain barriers (e.g., heavily traveled roads without bridges or culverts) to dispersal. Dispersal habitat does not include moderate- to high-density urban or industrial developments with large expanses of asphalt or concrete, nor does it include large lakes or reservoirs over 50 acres (20 hectares) in size, or other areas that do not contain those features identified in PCE 1, 2, or 3 as essential to the conservation of the species.

2.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) was originally passed in 1918 as four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The primary motivation for the international negotiations was to stop the "indiscriminate slaughter" of migratory birds by market hunters and others. The MBTA protects over 800 species of birds (including their parts, eggs, and nests) from killing, hunting, pursuing, capturing, selling, and shipping unless expressly authorized or permitted.

2.2 State

2.2.1 California Environmental Quality Act

CEQA requires identification of a project's potentially significant impacts on biological resources and ways that such impacts can be avoided, minimized, or mitigated. The act also provides guidelines and thresholds for use by lead agencies for evaluating the significance of proposed impacts.

CEQA Guidelines Section 15380(b)(1) defines endangered animals or plants as species or subspecies whose "survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" (14 CCR 15380(b)(1). A rare animal or plant is defined in Section 15380(b)(2) as a species that, although not presently threatened with extinction, exists "in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or … [t]he species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the federal Endangered Species Act." Additionally, an animal or plant may be presumed to be endangered, rare, or threatened if it meets the criteria for listing, as defined further in CEQA Guidelines Section 15380(c).

CDFW has developed a list of "Special Species" as "a general term that refers to all of the taxa the California Natural Diversity Database (CNDDB) is interested in tracking, regardless of their legal or protection status." This is a broader list than those species that are protected under FESA, the California Endangered Species Act (CESA), and other CFGC provisions, and includes lists developed by other organizations, such as the Audubon Watch List Species. Guidance documents prepared by other agencies, including the Bureau of Land Management Sensitive Species and USFWS Birds of Special Concern, are also included on this CDFW Special Species list. Additionally, CDFW has concluded that plant species included on the California Native Plant Society's (CNPS's) California Rare Plant Rank (CRPR) List 1 and 2 are covered by CEQA Guidelines Section 15380.

CEQA Guidelines Section IV, Appendix G (Environmental Checklist Form), requires an evaluation of impacts to "any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service" (14 CCR 15000 et seq.).

2.2.2 California Endangered Species Act

CESA (CFCG Section 2050 et seq.) provides protection and prohibits the take of plant, fish, and wildlife species listed by the State of California. Unlike FESA, state-listed plants have the same degree of protection as wildlife, but insects and other invertebrates may not be listed. Take is defined similarly to FESA and is prohibited for both listed and candidate species. Take authorization may be obtained by the project applicant from the CDFW under CESA

Section 2081, which allows take of a listed species for educational, scientific, or management purposes. In this case, project applicants consult with CDFW to develop a set of measures and standards for managing the listed species, including full mitigation for impacts, funding of implementation, and monitoring of mitigation measures.

2.2.3 California Fish and Game Code

Fully Protected Species

The classification of "fully protected" was the state's initial effort in the 1960s to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, mammals, amphibians and reptiles, birds, and mammals. Fully protected species may not be taken or possessed at any time, and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock. "Take" is defined as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Lake or Streambed Alteration

Under the CFCG Section 1602, CDFW has authority to regulate work that will substantially divert or obstruct the natural flow of or substantially change or use any material from the bed, channel, or bank of any river, stream, or lake. CDFW also has authority to regulate work that will deposit or dispose of debris, water, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. This regulation takes the form of a requirement for a Lake or Streambed Alteration Agreement and is applicable to any person, state, or local governmental agency or public utility (CFCG Section 1601). CDFW jurisdiction includes ephemeral, intermittent, and perennial watercourses (including dry washes) and lakes characterized by the presence of (1) definable bed and banks and (2) existing fish or wildlife resources. In practice, CDFW marks its jurisdictional limit at the top of the stream or lake bank or the outer edge of the riparian vegetation, where present, and sometimes extends its jurisdiction to the edge of the 100-year floodplain. Because riparian habitats do not always support wetland hydrology or hydric soils, wetland boundaries, as defined by Clean Water Act Section 404, sometimes include only portions of the riparian habitat adjacent to a river, stream, or lake. Therefore, jurisdictional boundaries under Section 1602 may encompass a greater area than those regulated under Clean Water Act Section 404; CDFW does not have jurisdiction over ocean or shoreline resources.

Fish and Game Code Sections 3503, 3511, 3513, 4150

Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Fish and Game Code Section 3503.5 protects all birds-of-prey (raptors) and their eggs and nests. Section 3511 states fully protected birds or parts thereof may not be taken or possessed at any time. Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA. All nongame mammals, including bats, are protected by CFCG Section 4150.

2.2.4 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act established the State Water Resources Control Board and RWQCB as the principal state agencies responsible for the protection of water quality in California. The Central Coast Regional Water Quality Control Board (CCRWQCB) has regulatory authority over the project site. The Porter-Cologne Water

Quality Control Act provides that "All discharges of waste into the waters of the state are privileges, not rights." Waters of the State are defined in Section 13050(e) of the Porter-Cologne Water Quality Control Act as "…any surface water or groundwater, including saline waters, within the boundaries of the state." All dischargers are subject to regulation under the Porter-Cologne Water Quality Control Act, including both point and nonpoint source dischargers. The CCRWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within its jurisdiction. As noted above, the CCRWQCB is the appointed authority for Section 401 compliance in the project site.

2.2.5 California Native Plant Protection Act

The California Native Plant Protection Act of 1977 directed CDFW to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The Native Plant Protection Act gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take. CESA expanded on the original Native Plant Protection Act and enhanced legal protection for plants, but the Native Plant Protection Act remains part of the CFCG. To align with federal regulations, CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the act as threatened species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Because rare plants are not included in CESA, appropriate compensatory mitigation measures for significant impacts to rare plants are typically negotiated with the CDFW.

2.2.6 California Coastal Act

In 1976, the State Legislature enacted the California Coastal Act (Public Resources Code Section 30000 et seq.) to provide long-term protection of the state's 1,100-mile coastline for the benefit of current and future generations. The Coastal Act provides for the management of lands within California's coastal zone boundary, as established by the Legislature and defined in Coastal Act (Section 30103). The boundary of the coastal zones varies across the state and each location varies from anywhere of couple hundred feet to 5 miles. The coastal boundary extends approximately three miles offshore. The goals of the Coastal Act, per Public Resources Code Section 30001.5 are:

- Protect, maintain, and, where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources.
- Assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the state.
- Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sounds resources conservation principles and constitutionally protected rights of private property owners.
- Assure priority for coastal-dependent and coastal-related development over other development on the coast.
- Encourage state and local initiative and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

Furthermore, the Coastal Act includes specific policies to achieve these goals within the coastal zone (see Division 20 of the Public Resources Code). These policies include the legal standards applied to coastal planning and regulatory decisions made by the CCC in pursuant to the Coastal Act. The Coastal Act requires that individual jurisdictions adopt a Local Coastal Program (LCP) to implement the Coastal Act at the local level. After the CCC

certifies the LCP, and the local government becomes the coastal development permit (CDP) permitting authority. See Section 2.3.1, for information about the County's LCP.

2.2.7 California Government Code – Local Exemptions

California Government Code Section 53091 (d) and (e) provides that facilities for the production, generation, storage, treatment, and transmissions of water supplies are exempt from local (i.e., county and city) building and zoning ordinances. The Proposed Project evaluated in this report relate to operation, utilization, and storage of water resources, therefore, the Proposed Project is legally exempt from Santa Cruz County building and zoning ordinances.

2.2.8 California Public Resources Code - Timberland and Forest Land

California Public Resources Code 4526 defines "Timberland" to mean "land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees." While the project site is not used for growing timber for commercial purposes, the definition of timber under PRC 4526 is broad enough to include areas where commercial species of trees such as coast redwoods grow. Furthermore, the project site is zoned Timber Production by Santa Cruz County. Public Resources Code 12220(g) defines forest land as "land that can support 10% native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." The redwood forest at the project would be considered forestland.

2.2.9 California Department of Food and Agriculture Sudden Oak Death Zone of Infestation

The project site is located within the Sudden Oak Death Zone of Infestation and the "Regulated Area" for Sudden Oak Death, as designated by the California Department of Food and Agriculture (California Code of Regulations 3700). This designation requires a permit from the County Agricultural Commissioner prior to the removal of regulated plant material. The project site is also located within the Pitch Canker Zone of Infestation. California Public Resources Code (Article 5, Sections 4712-4718) outlines the authority of the California Board of Forestry to designate a Zone of Infestation associated with forest pests. The Code requires timberland owners to eradicate such pests and outlines the authority of the Board to take such actions within a designated Zone of Infestation. Since the City is not the landowner, they would not be responsible for pest eradication. Sudden Oak Death is a tree disease caused by the fungus-like plant pathogen *Phytophthora ramorum* affecting oak species (primarily coast live oak (*Quercus agrifolia*)), tanoak (*Notholithocarpus densiflorus*), and California bay (*Umbellularia californica*) trees. Host species include many found within the project site, including, but not limited to, redwood (*Sequoia sempervirens*), bigleaf maple (*Acer macrophyllum*), madrone (*Arbutus menziesii*), and Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*). Pitch canker is a disease of pine trees that is caused by the fungus *Fusarium circinatum*. Douglas-fir can also be infected, but this disease primarily affects Monterey pine (*Pinus radiata*) trees.

2.3 Local

2.3.1 County of Santa Cruz General Plan and Local Coastal Program

The Santa Cruz County General Plan and Local Coastal Program (LCP) is a comprehensive, long-term planning document for the unincorporated areas of the County and includes the County's LCP, which was certified by the California Coastal Commission in 1994 (County of Santa Cruz, 1994). The County General Plan and LCP provides policies and programs to establish guidelines for future growth and all types of physical developments.

The County's General Plan and LCP, Chapter 5 (Conservation and Open Space), Objective 5.2 (Riparian Corridors and Wetlands), establishes definitions for riparian corridors and wetlands to ensure their protection. Policies 5.2.1 through 5.2.5 identify and define riparian corridors and wetlands, determine the uses which are allowed in and adjacent to these habitats, and specify required buffer setbacks and performance standards for land in and adjacent to these areas. Riparian corridors are defined as (a) 50 feet from the top of a distinct channel or physical evidence of high water mark of perennial stream; (b) 30 feet from the top of a distinct channel or physical evidence of high water mark of an intermittent stream as designated on the General Plan maps and through field inspection of undesignated intermittent and ephemeral streams; (c) 100 feet of the high water mark of a lake, wetland, estuary, lagoon, or natural body of standing water; (d) the landward limit of a riparian woodland plant community; and (e) wooded arroyos within urban areas. The County definitions are consistent with those used for CEQA purposes.

The County's General Plan and LCP, Chapter 5 (Conservation and Open Space), Objective 5.1 (Biological Diversity), establishes definitions for sensitive habitats to ensure their protection. Policies 5.1.1 through 5.1.11 identify and define sensitive habitats, determine the uses which are allowed in and adjacent to these habitats, and specify performance standards for land in and adjacent to these areas.

The County's General Plan and LCP, Chapter 5 (Conservation and Open Space), Objective 5.12 (Timber Resources), describes lands to be designated for timber production to encourage economic production of forest products on a sustained yield basis under high environmental standards. Policies 5.12.1 through 5.12.14 identify and define permitted and conditional uses in timber production zones and specify performance standards for land in and adjacent to these areas.

The County's certified LCP is administered by the County Planning Department, pursuant to the California Coastal Act, and includes specific plans and ordinances for activities within the Coastal Zone. The LCP implementing ordinances in the County Code that are particularly relevant in the evaluation of biological resources of the Proposed Project include the following:

- County Grading Ordinance (Chapter 16.20)
- Erosion Control Ordinance (Chapter 16.22)
- Riparian Corridor and Wetlands Protection (Chapter 16.30)
- Sensitive Habitat Protection (Chapter 16.32)
- Significant Trees Protection (Chapter 16.34)
- Timber Harvesting Regulations (Chapter 16.52)

As the Proposed Project occurs within the Coastal Zone and is not exempt from the LCP, it would require compliance with the LCP and the standards contained in the above LCP implementing ordinances. While some of these ordinances require separate approvals or permits (e.g., Riparian Exception), such approvals are not required for the Proposed Project, as it falls under California Government Code Section 53091 (d) and (e) and is legally exempt from Santa Cruz County building and zoning ordinances (See Section 2.2.7 above). The relevant LCP implementing ordinances that are addressed through the CDP process, are described below.

2.3.1.1 Grading and Erosion Control Ordinances

Chapter 16.20, Grading Regulations, sets forth rules and regulations to control all grading, including excavations, earthwork, road construction, dredging, diking, fills and embankments. Chapter 16.22 requires control of all existing and potential conditions of accelerated (human-induced) erosion; sets forth required provisions for project planning, preparation of erosion control plans, runoff control, land clearing, and winter operations.

2.3.1.2 Riparian Corridor Protection Ordinance

Chapter 16.30, Riparian Corridor and Wetlands Protection, includes regulations to limit development activities in riparian corridors. The regulations provide that "no project shall undergo developmental activities in riparian corridors or areas with urban or rural service lines which are within a buffer zone as measured from the top of the arroyo." Buffer areas are specified in the regulations and shall be determined from characteristics found in the riparian area, including average slope within 30 feet of water's edge, vegetation, and stream characteristics. The buffer shall always extend 50 feet from the edge of riparian woodland and 20 feet beyond the edge of other woody vegetation as determined by the dripline. After the buffer is determined, a 10-foot setback from the edge of the buffer is required for all structures, which allows construction equipment and use of yard area. Exceptions and conditioned exceptions to the provisions of the chapter may be authorized. Findings meeting the following criteria define the circumstances necessary in granting an exception to the above requirements:

1. That there are special circumstances or condition affecting the property.
2. That the exception is necessary for the proper design and function of some permitted or existing activity on the property.
3. That the granting of the exception will not be detrimental to the public welfare or injurious to other property downstream or in the area in which the project is located.
4. That the granting of the exception, in the Coastal Zone, will not reduce or adversely impact the riparian corridor, and there is no feasible less environmentally damaging alternative.
5. That the granting of the exception is in accordance with the purpose of this chapter, and with the objectives of the General Plan and elements thereof, and the Local Coastal Program Land Use Plan.

2.3.1.3 Sensitive Habitats Protection Ordinance

Santa Cruz County Code Chapter 16.32 regulates development in or adjacent to specified environmentally sensitive habitat areas. An area is defined as "sensitive habitat" under this ordinance includes various criteria, and includes all lakes, wetlands, estuaries, lagoons, streams, rivers, and riparian corridors. No development activity may occur within an area of biotic concern unless approval is issued or unless the activity is reviewed concurrently with the review of an associated development of land-division application. All development within environmentally sensitive

habitat must be mitigated or restored. The following findings are necessary in granting an exception to the provisions and requirements of this ordinance:

1. That adequate measures will be taken to ensure consistency with the purpose of this chapter to minimize the disturbance of sensitive habitats; and
2. One of the following situations exists:
   a. The exception is necessary for restoration of a sensitive habitat; or
   b. It can be demonstrated by biotic assessment, biotic report, or other technical information that the exception is necessary to protect public health, safety, or welfare.

Any development activity that has received a riparian exception according to the provisions of Chapter 16.30 would not likely be subject to this chapter according Chapter 16.32.105, if the Planning Director determines that the Proposed Project received an equivalent review in granting a riparian exception.

2.3.1.4 Significant Trees Protection Ordinance

Chapter 16.34 regulates the removal of trees in the Coastal Zone, which could reduce scenic beauty and the attractiveness of the area to residents and visitors. The ordinance establishes the type of trees to be protected, the circumstances under which they may be removed, and the procedures for obtaining a permit for their removal. This chapter defines Significant Trees (Section 16.34.030) as

> "any tree, sprout clump, or group of trees, as follows:
>
> (A) Within the urban services line or rural services line, any tree which is equal to or greater than 20 inches d.b.h. (approximately five feet in circumference); any sprout clump of five or more stems each of which is greater than 12 inches d.b.h. (approximately three feet in circumference); or any group consisting of five or more trees on one parcel, each of which is greater than 12 inches d.b.h. (approximately three feet in circumference).
>
> (B) Outside the urban services line or rural services line, where visible from a scenic road, any beach, or within a designated scenic resource area, any tree which is equal to or greater than 40 inches d.b.h. (approximately 10 feet in circumference); any sprout clump of five or more stems, each of which is greater than 20 inches d.b.h. (approximately five feet in circumference); or, any group consisting of 10 or more trees on one parcel, each greater than 20 inches d.b.h. (approximately five feet in circumference).
>
> (C) Any tree located in a sensitive habitat as defined in Chapter 16.32 SCCC. Also see SCCC 16.34.090(C), exemption of projects with other permits."

A tree removal permit will not be required for the Proposed Project, as tree removal will be authorized under the County's Coastal Zone Regulations. Specifically, the Coastal Development Permit application shall address removal of any significant tree located within the Coastal Zone. The site plan submitted with the application shall include the Tree Inventory, Impact Assessment & Protection Plan (Fouts, K. 2020), which identifies the trees to be removed, a description of the species, size, and condition of the tree(s) to be removed, a description of the method to be used in removing the tree(s), the reason(s) for removal of the tree(s), and proposed visual impact mitigation measures, including identification of the size, location, and species of replacement trees on a site plan (if

necessary). Compliance with these requirements is further discussed in Section 4.11, Land Use and Planning and is not further addressed in this section.

2.3.1.5 Timber Harvesting Regulations

The project site is zoned Timber Production by Santa Cruz County. Chapter 16.34 establishes the definitions and procedures to protect and maintain the timberlands through regulation of timber harvesting. The regulations encourage the continued production of forest products in compliance with performance standards, which emphasize protection of environmental and open space values while fostering increased productivity of forest land. This regulation also serves to protect, maintain and improve the forest land of Santa Cruz County. The ordinance restricts timber harvesting to specified zone districts within the County and requires development of a timber harvest plan, timberland conversion permit, or conversion exemption prior to the cutting of any commercial tree species.

3 Methods

Data regarding biological resources present within the 17.44-acre BSA were obtained through a review of pertinent literature, field reconnaissance, an aquatic resources jurisdictional delineation, and habitat assessments, which are described in detail below. For purposes of this report, special-status resources are defined as follows:

- Special-status plant species include (1) species designated as either rare, threatened, or endangered by CDFW or USFWS and are protected under either CESA (CFCG 2050 et seq.) or FESA (16 USC 1531 et seq.); (2) species that are candidate species being considered or proposed for listing under CESA or FESA; (3) species that are included on the CDFW Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2020a) or species with a CRPR of 1 or 2 in the CNPS Inventory of Rare and Endangered Plants of California (CNPS Inventory; CNPS 2020); or (4) species given protection under the County's General Plan/Local Coastal Program and applicable ordinances.
- Special-status wildlife species include (1) species designated as either rare, threatened, or endangered by the CDFW or USFWS and are protected under either CESA (CFCG, Section 2050 et seq.) or FESA (16 USC 1531 et seq.); (2) species that are candidate species being considered or proposed for listing under CESA or FESA; or (3) species that are included on the CDFW Special Animals List (CDFW 2016b).
- Special-status vegetation communities include (1) those designated as sensitive by CDFW and assigned state ranks of S1-S3 based on their rarity and threats, (2) those that provide habitat for special-status species, or (3) those designated as sensitive by the County of Santa Cruz within Chapter 5 of the General Plan and County Code Title 16.

3.1 Literature Review

Prior to field surveys, special-status biological resources present or potentially present within the BSA were identified through queries of the County of Santa Cruz Online GIS database (County of Santa Cruz 2020), CNDDB (CDFW 2020b), USFWS Inventory for Planning and Conservation (IPaC) database (USFWS 2020), CNPS Inventory of Rare and Endangered Plants data (CNPS Inventory) (CNPS 2020), and U.S. Department of Agriculture Web Soil Survey (USDA 2020a). The CNPS Inventory and CNDDB were queried based on the U.S. Geological Survey 7.5-minute quadrangle in which the BSA is located (Davenport) and the six surrounding quadrangles (Santa Cruz, Felton, Año Nuevo, Castle Rock Ridge, Big Basin, and Franklin Point). The IPaC databases was queried using GIS software based on a 1-mile buffer around the BSA.

General information regarding wildlife species distribution in the region and potential presence within the BSA was primarily obtained from Cornell Lab of Ornithology (2016) for birds, Hall (1981) for mammals, and Stebbins (2003) for reptiles and amphibians.

3.2 Field Surveys

Dudek biologist Emily Scricca conducted a biological resources reconnaissance survey, vegetation mapping, and a formal California red-legged frog (*Rana draytonii;* CRLF) habitat assessment within the BSA on January 14, 2020. During this site visit, Dudek evaluated the site's potential to support sensitive natural communities and special-status plant and wildlife species. Also on January 14, 2020, Dudek environmental scientists Sheldon Leiker and Elizabeth Geisler conducted the aquatic resources jurisdictional delineation within the project site to investigate and delineate potential waters of the United States, including wetlands, under USACE jurisdiction,

pursuant to Section 404 of the federal Clean Water Act; and waters of the state under RWQCB jurisdiction, pursuant to the Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) and CDFW jurisdiction, pursuant to Section 1602 of the CFCG (Dudek 2020). Table 1 lists the dates, focus, scope, conditions, and personnel for each survey, and Appendix A, Site Photographs, documents photos taken during the survey efforts.

Table 1. Summary of Surveys

Date	Time	Type of Survey	Scope of Survey	Survey Conditions	Biologists
01/14/2020	1000-1400	Biological reconnaissance survey, vegetation mapping, CRLF habitat assessment	BSA	48°F –54°F, 0%-15% CC, 0-5 mph wind	ES
01/14/2020	1000-1400	CRLF habitat assessment	Project Site, plus 1-mile buffer	48°F –54°F, 0%-15% CC, 0-5 mph wind	ES
01/14/2020	1000-1700	Aquatic resources jurisdictional delineation	Project Site	48°F –54°F, 0%-15% CC, 0-5 mph wind	SL, EG

Biologists: ES = Emily Scricca; SL = Sheldon Leiker; EG = Elizabeth Geisler.
Notes: BSA = biological study area; CRLF = California red-legged frog; °F = degrees Fahrenheit; mph = miles per hour; CC = cloud cover.

3.2.1 Vegetation Communities and Land Covers

Dudek used the CDFW's Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Natural Communities (CDFW 2018) and the California Natural Communities List (CDFW 2019a) to map the entire BSA. Vegetation communities and land covers were delineated to the vegetation alliance level and, where appropriate, to the association level.

Vegetation communities and land uses within the BSA were mapped in the field directly onto a 1:2,400-scale (1 inch = 200 feet), aerial-photograph-based field map of the entire BSA. A minimum mapping unit of 2.2 acres (1 hectare) was established to standardize the mapping protocol among biologists. A Dudek GIS analyst processed the vegetation boundaries as delineated by the field biologists and created a GIS coverage for vegetation communities using ArcGIS software. Once major linework and community designations were completed, a geodatabase was created to help ensure the data was topologically correct and met final quality assurance/quality control procedures.

3.2.2 Plants

All plant species encountered during the field surveys were identified and recorded. Species that could not be identified immediately were collected brought into the laboratory for further investigation. Latin and common names for plant species with a CRPR (formerly "CNPS List") follow the CNPS Inventory (CNPS 2020). For plant species without a CRPR, Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2020), and common names follow the California Natural Community List (CDFW 2019a) or the USDA Natural Resources Conservation Service PLANTS Database (USDA 2020b).

3.2.3 Wildlife

Wildlife species detected during field surveys by sight, calls, tracks, scat, or other signs were recorded. Binoculars (10 × 42 power) were used to aid in the identification of observed wildlife throughout the BSA. In addition to species actually detected, expected wildlife use of the BSA was determined by known habitat preferences of local species and knowledge of their relative distributions in the area.

Sources for common and scientific names used for wildlife include Crother (2012) for reptiles and amphibians, American Ornithologists' Union (AOU 2012) for birds, Wilson and Reeder (2005) for mammals, North American Butterfly Association (NABA 2001) for butterflies, and Moyle (2002) for fish.

3.2.3.1 California Red-Legged Frog Habitat Assessment

The CRLF habitat assessment was conducted following the USFWS' Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog (USFWS 2005). The assessment included an evaluation of general upland and aquatic resources within and adjacent to the BSA, as well as a review of species occurrence records in the CNDDB for localities of CRLF within an approximate 1-mile radius of the project site. Other information sources on local occurrences included results of biological investigations conducted as part of the North Coast System Repair and Replacement Project (Entrix 2005, 2004, 2002, and 1997; LSA 2014), Dudek's in-house GIS database records on species occurrences, and information obtained from the City. A review of Google Earth imagery was also conducted during the desktop exercise to identify potential habitat types within the 1-mile radius.

A pedestrian survey within the BSA was conducted simultaneously with the general biological reconnaissance site visit by Emily Scricca on January 14, 2020, and the overall assessment was expanded to include the 1-mile buffer in order to evaluate the surrounding landscape and document relevant species observations. Aquatic habitats were mapped and characterized, which included collecting data on vegetation, water depth, bank full depth, stream gradient, substrate, and bank features. Other information collected included presence of aquatic predators, adjacent land uses, and barriers to CRLF movement.

3.2.4 Aquatic Resources Jurisdictional Delineation

Prior to visiting the project site, potential and/or historic drainages and aquatic features were investigated based on a review of the following: USGS topographic maps (1:24,000 scale), aerial photographs, the National Wetlands Inventory database (USFWS 2019), and the Natural Resources Conservation Service Web Soil Survey (USDA 2020a). In addition, hydrologic information from gauge stations within the vicinity of the project site was obtained.

The January 14, 2020, aquatic resources jurisdictional delineation served to investigate and identify potential jurisdictional aquatic resources within the project site including wetlands, streams, and creeks, among other aquatic features. All areas that were identified as being potentially subject to the jurisdiction of the USACE, RWQCB, and CDFW were field verified and mapped.

The USACE wetlands delineation was performed in accordance with the Corps Wetlands Delineation Manual (USACE 1987), Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010); A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States (Mersel and Lichvar 2014); and recent changes to 33 CFR, Part 328 provided by the USACE and EPA on the geographic extent of waters protected

under the Clean Water Act (USACE & EPA 2007). The new rule, referred to as the "Navigable Waters Protection Rule," issued new regulations to redefine the types of waterbodies covered by the federal Clean Water Act, which dramatically narrowed the scope of the federal administration's regulatory authority compared to previous Clean Water Act regulations. As a result of the final rule, EPA and USACE define "waters of the United States" to include the following four categories: (1) the territorial seas and traditional navigable waters; (2) tributaries of such waters; (3) certain lakes, ponds, and impoundments of jurisdictional waters; and (4) wetlands adjacent to other jurisdictional waters (other than waters that are themselves wetlands). Non-wetland waters of the United States were delineated based on the limits of an OHWM. During the delineation, drainage features were examined for evidence of an OHWM, indicators for top-of-bank (TOB), saturation, permanence of surface water, wetland vegetation, and nexus to a traditional navigable water of the United States. If any of these criteria were met, transects were run to determine the extent of each regulatory agency's jurisdiction.

Transects were taken approximately every 100 feet or greater if streambed conditions were unchanged. In dynamic reaches, transects were taken more frequently to capture channel morphology. Data on transect widths, dominant vegetation present within the drainage and in the adjacent uplands, and channel morphology were recorded on field forms. In areas where USACE jurisdictional wetlands were suspected, data on vegetation, hydrology, and soils were collected along transects to determine if any resources met the USACE jurisdictional three-parameter wetland test.

Areas regulated by the RWQCB are generally coincident with USACE, but include features isolated from navigable waters of the United States that have evidence of surface water inundation. The CDFW jurisdiction was defined to the bank of the stream/channels or to the limit of the adjacent riparian vegetation.

Drainage features were mapped during the field observation to obtain characteristic parameters and detailed descriptions using standard measurement tools. The location of transects, upstream and downstream extents of each feature, and sample points were collected in the field using a 1:2,400 scale (1 inch = 200 feet) aerial photograph and topographic map. GPS equipment could not be used due to the project location in a deep, narrow canyon with dense canopy cover. Dudek geographic information system (GIS) technician Tyler Friesen digitized the jurisdictional extents based on the transect measurements into a project-specific GIS using ArcGIS software.

Vegetation

Seasonal changes in species composition, human land-use practices, wildfires, and other natural disturbances can adversely affect the wetlands vegetation determination. During the delineation, a data station point was considered positive for hydrophytic vegetation if it passed the basic dominance test (Indicator 1), meaning that more than 50% of the dominant species sampled were characterized as either obligate, facultative wetland, and/or facultative per the North American Digital Flora: National Wetland Plant List (Lichvar et al. 2016), or if it passed the prevalence index (Indicator 2), which takes into account all plant species in the community, not just dominants. The standard plot sampling technique was used to sample vegetation within a 10-foot radius for herbaceous vegetation and a 30-foot radius for trees, shrubs, and woody vines (USACE 1987).

Hydric Soils

According to the National Technical Committee for Hydric Soils, hydric soils are "soils that are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (USDA 1994). Soil pits were prepared using a "sharp shooter" shovel to determine if hydric soils were present. The presence of hydric soils was analyzed in accordance with Field Indicators of Hydric Soils in the United States (USDA and NRCS 2018). Munsell Soil Color Charts were used to determine soil chroma and value. Where feasible, soil pits were prepared to depths ranging from 16 to 18 inches. Dry soils were moistened to obtain the most

accurate color. In general, soils from test pits were determined to be hydric if found to be of a chroma one or chroma two with mottles. Excavated soils were examined for evidence of hydric conditions, including low chroma values and mottling, vertical streaking, sulfidic odor, and high organic matter content in the upper horizon. Evidence of previous ponding or flooding was assessed, along with the slope, slope shape, existing landform characteristics, soil material/composition, and hydrophytic vegetation to determine if hydric soils were present.

Hydrology

Per the guidelines prescribed in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (USACE 2010), wetland hydrology indicators are separated into four major groups: Groups A, B, C, and D. Group A indicators are based on direct observations of surface flow, ponding, and soil saturation/groundwater. Group B indicators consist of evidence that the site has been or is currently subjected to ponding, including, but not limited to, water marks, drift deposits, and sediment deposits. Group C indicators include signs of previous and/or current saturation, including oxidized rhizospheres surrounding living roots and the presence of reduced iron or sulfur, both of which are indicative of extended periods of soil saturation. Group D indicators consist of "consists of landscape characteristics and vegetation and soil features that indicate contemporary rather than historical wet conditions." Each group is subdivided into primary and secondary categories based on its frequency and reliability of occurrence in the Western Mountains, Valleys, and Coast Region.

3.2.5 Survey Limitations

The surveys were conducted during the winter season, which resulted in detection and identification of most perennial plant species that may occur in the BSA. Due to the timing of the surveys, annual species that bloom in spring, summer, and early fall, as well as cryptic perennials, may not have been detectable. Limitations of the surveys also included a diurnal bias and the absence of trapping for small mammals, reptiles, and amphibians. The surveys were conducted during the daytime to maximize the detection of most wildlife. Most birds are active in the daytime; therefore, diurnal surveys maximize the number of bird observations. Conversely, diurnal surveys usually result in few observations of mammals, many of which may only be active at night. In addition, many species of reptiles and amphibians are secretive in their habits and are difficult to observe using standard meandering transects.

The biological reconnaissance survey, vegetation mapping, CRLF habitat assessment, and the aquatic resources jurisdictional delineation were conducted within the entire BSA from the existing easements and publicly accessible roads and rights-of-way. However, access was not available for all parcels within a 1-mile buffer of the project site for the CRLF habitat assessment due to private residential properties that surround the BSA. Therefore, use of aerial imagery signatures for vegetation communities and habitat suitability adjacent to the project site within the BSA were conducted for those areas that could not be accessed on foot.

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4 Results

4.1 Vegetation Communities and Land Covers

The BSA supports the following vegetation communities and land covers: redwood forest alliance, and urban/developed. Figure 3 illustrates the distribution, and Table 2 summarizes the extent of vegetation communities and land covers within the BSA. Descriptions of these vegetation communities and land covers are summarized below.

Table 2. Vegetation Communities and Land Covers within the Biological Study Area

Vegetation Community or Land Cover	Area (acres)
Forest and Woodland Alliances and Stands	
Redwood forest alliance*	16.65
Subtotal Forest and Woodland Alliances and Stands	*16.65*
Non-natural Land Covers/Unvegetated Communities	
Urban/Developed mapping unit	0.79
Subtotal Non-Natural Land Covers/Unvegetated Communities	*0.79*
Total	**17.44**

Note:
* CDFW sensitive vegetation community.

4.1.1 Forest and Woodlands Alliances

4.1.1.1 Redwood Forest Alliance

The redwood forest alliance includes redwood (*Sequoia sempervirens*) as the dominant or co-dominant tree in the canopy. The alliance has a continuous to intermittent canopy less than 400 feet in height with an infrequent to common shrub canopy and a variable herbaceous layer (Sawyer et al. 2009). Species associated with the alliance include bigleaf maple (*Acer macrophyllum*), California bay (*Umbellularia californica*), red alder (*Alnus rubra*), giant chinquapin (*Chrysolepis chrysophylla*), tanoak (*Notholithocarpus densiflorus*), Douglas fir (*Pseudotsuga menziesii*), and Pacific madrone (*Arbutus menziesii*) among others (Sawyer et al. 2009).

Redwood forest alliance makes up the entirety of the BSA aside from developed structures and roads encompassing 16.65 acres, and supports an overstory of redwood and tanoak with scattered bigleaf maple in the tree layer. The shrub layer is dominated by California blackberry (*Rubus ursinus*), poison oak (*Toxicodendron diversilobum*), and Himalayan blackberry (*Rubus armeniacus*); and the herbaceous layer included redwood sorrel (Oxalis oregana), western sword fern (*Polystichum munitum*), sugar scoop (*Tiarella trifoliata*), stinging nettle (*Urtica dioica*), American speedwell (*Veronica americana*), western rush (*Juncus patens*), and horsetail (*Equisetum* sp.). The redwood forest alliance is listed as a sensitive vegetation community (Global and State rarity rank of 3) under the California Natural Community List (CDFW 2019a).

4.1.2 Non-Natural Land Covers

4.1.2.1 Urban/Developed Mapping Unit

This mapping unit refers to areas that have been constructed on or otherwise physically altered to the point where vegetation is no longer present. Urban or developed areas are characterized by permanent or semi-permanent structures, hardscapes, and landscaped areas that require irrigation. This mapping unit also includes areas that lack vegetation such as paved roads or unimproved areas that still retain a pervious surface.

Within the BSA, the urban/developed land cover includes 0.79 acres associated with Smith Grade, the main access road, the eastern and western access roads, and the existing Facility including the diversion flume, control building, and the dam.

4.2 Plants and Wildlife Observed

4.2.1 Plants

A total of 32 vascular and one nonvascular plant species, consisting of 26 native species (79%) and seven non-native species (21%), were recorded within the BSA during surveys. A full list of plant species observed is provided in Appendix B, Plant Compendium.

4.2.2 Wildlife

A total of four wildlife species, consisting of four native species (100%) and no non-native species (0%), were recorded within the BSA during the survey. A full list of wildlife species by taxonomic group observed is provided in Appendix C, Wildlife Compendium. Several other common wildlife species are expected to occur within the BSA and are noted below for each group of species.

4.2.2.1 Birds

One common avian species observed within the BSA during the survey was Steller's jay (*Cyanocitta stelleri*). Other common birds that are likely to inhabit the BSA include dark-eyed junco (*Junco hyemalis*), California quail (*Callipepla californica*), band-tailed pigeon (*Patagioenas fasciata*), acorn woodpecker (*Melanerpes formicivorus*), northern flicker (*Colaptes auratus*), California scrub jay (*Aphelocoma californica*), bushtit (*Psaltriparus minimus*), wrentit (*Chamaea fasciata*), California towhee (*Melozone crissalis*), and spotted towhee (*Pipilo maculatus*) among many others.

4.2.2.2 Reptiles and Amphibians

Two amphibians were observed during surveys, and included California newt (*Taricha torosa*) and California giant salamander (*Dicamptodon ensatus*). Based on previous snorkel survey efforts at the project site from 2006 through 2019, the City has consistently observed California newts and California giant salamanders, and crayfish (*Pacifastacus* sp.) to a lesser extent, at the project site (City of Santa Cruz 2020). Other common reptiles that are likely to inhabit the BSA include Santa Cruz gartersnake (*Thamnophis atratus atratus*), California alligator lizard

(*Elgaria multicarinata multicarinata*), and California kingsnake (*Lampropeltis californiae*); however, no reptiles were observed during surveys.

4.2.2.3 Mammals

No mammals were detected during field surveys. Common mammals that are likely to inhabit the BSA include western gray squirrel (*Sciurus griseus*), fox squirrel (*Sciurus niger*), striped skunk (*Mephitis mephitis*), brush rabbit (*Sylvilagus bachmani*), Botta's pocket gopher (*Thomomys bottae*), Virginia opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), and mule deer (*Odocoileus hemionus*).

4.2.2.4 Fish

Laguna Creek is a State Water Resources Control Board Class 1 cold-water stream. In a Class 1 stream, fish are always or seasonally present, either currently or historically; and habitat to sustain fish exists (SWRCB 2010). Rainbow trout (*Oncorhynchus mykiss*) are the primary fish species present within the BSA. Based on previous snorkel survey efforts at the project site from 2006 through 2019, the City has consistently observed rainbow trout, but no other fish species (City of Santa Cruz 2020). Other fish species detected outside the BSA during these annual surveys included prickly sculpin (*Cottus asper*) and coastrange sculpin (*Cottus aleuticus*), which are found lower in the watershed. These species may also be present at the project site, but were not observed during 2020 surveys conducted by Dudek (Berry et al 2019; City of Santa Cruz 2020). There is a barrier to anadromy within Laguna Creek that occurs approximately 1.43 miles upstream of the Pacific Ocean near the confluence with Y Creek. The barrier consists of a large bedrock waterfall which precludes anadromous fish from traveling further upstream (Hagar et al. 2017). This limit of anadromy is located approximately 2.66 miles downstream of the project site.

The reach of Laguna Creek from the barrier of anadromy upstream to the Facility has a relatively steep gradient (averaging 2.8%); however, there are short sections with cascades, falls, and logjams that have higher gradient and present obstacles or barriers to fish migration (Hagar 2014). Reggiardo Creek is the only major tributary in this reach and it enters Laguna Creek approximately 0.09 miles downstream of the diversion. Habitat for resident trout is good with cold, high quality water and frequent but small pools having adequate depth and generally good cover characteristics (Hagar 2014). There is a good mix of flatwater (run, step run, pocket water, and glide) and riffle habitat providing suitable conditions for spawning, early rearing for juvenile trout, and production of aquatic invertebrate forage organisms. Abundance of all life stages of trout is good both upstream and downstream of the dam and equals or exceeds abundance in the anadromous reach of Laguna Creek, and the other streams surveyed by the City (Liddell and Majors Creeks) (City of Santa Cruz 2020).

4.3 Special-Status Biological Resources

Appendix D, Special-Status Plant Potentially Occurring within the Biological Study Area, and Appendix E, Special-Status Wildlife Potentially Occurring within the Biological Study Area, provide tables of all special-status species whose geographic ranges fall within the general BSA vicinity. Special-status species potential to occur within the BSA were evaluated based on known species distribution, species-specific habitat preferences, and Dudek's knowledge of regional biological resources. Species potentially occurring within the BSA are identified as having moderate or high potential to occur based on habitat conditions on site, and species for which there is little or no suitable habitat are identified as not expected to occur or having low potential to occur.

4.3.1 Special-Status Plants

Special-status plants include those listed, or candidates for listing, as threatened or endangered by the USFWS and CDFW, and species identified as rare by the CNPS (particularly CRPR 1A – presumed extinct in California; CRPR 1B – rare, threatened, or endangered throughout its range; and CRPR 2 – rare or endangered in California, more common elsewhere).

No special-status plant species were observed within the BSA during surveys conducted in January 2020.

Dudek performed an extensive desktop review of literature, existing documentation, and GIS data to evaluate the potential for special-status plant species to occur within the BSA. Each special-status plant species was assigned a rating of "not expected," "low," "moderate," or "high" potential to occur based on relative location to known occurrences, vegetation community, soil, and elevation. Based on the results of the literature review and database searches, 57 special-status plant species were identified as potentially occurring within the region of the BSA. Of these, three were determined to have a moderate potential to occur within the BSA based on the soils, vegetation communities (habitat) present, elevation range, and previous known locations based on the CNDDB, IPaC, and CNPS Inventory. The remaining special-status species were evaluated and determined to have little to no potential to occur within the BSA. Table 3 includes the special-status plant species with a moderate to high potential to occur rating. Appendix D lists the 57 special-status plant species identified as occurring within the BSA and their potential to occur rating and reasoning.

Additionally, there is no USFWS-designated critical habitat for listed plant species within the BSA (USFWS 2020) or within 10 miles of the BSA.

Table 3. Special-Status Plant Species with a Moderate to High Potential to Occur within the Biological Study Area

Scientific Name	Common Name	Federal/State/CRPR	Status within Biological Study Area*
Dacryophyllum falcifolium	tear drop moss	None/None/1B.3	Moderate
Fissidens pauperculus	minute pocket moss	None/None/1B.2	Moderate
Piperia candida	white-flowered rein orchid	None/None/1B.2	Moderate

Source: CDFW 2020a; CNPS 2020.

Status Legend

***** Although the BSA provides potential habitat, the proposed work areas do not support suitable habitat for the tear drop moss, minute pocket moss, and white-flowered rein orchid.

Federal

Species listed do not have federal status.

State

Species listed do not have state status.

CRPR (California Rare Plant Rank)

CRPR List 1B: Plants rare, threatened, or endangered in California and elsewhere

Threat Rank:

.2 Fairly endangered in California (20% to 80% of occurrences threatened)

.3 Not very endangered in California (less than 20% of occurrences threatened or no current threats known)

4.3.1.1 Tear Drop Moss

Tear drop moss (*Dacryophyllum falcifolium*) is a moss with a CRPR of 1B.3 that occurs on limestone substrates, damp coastal soil, and rock outcrops within north coast coniferous forest (CNPS 2020; CDFW 2020b). This species is known to occur on limestone rock above mixed coniferous forest in Henry Cowell Redwoods State Park (CDFW

2020b). However, this species was not observed within the BSA, but would have been detected if present during the project surveys.

4.3.1.2 Minute Pocket Moss

Minute pocket moss (*Fissidens pauperculus*) is a moss with a CRPR of 1B.2 that occurs on damp soil along the coast, in dry streambeds, and on stream banks within north coast coniferous forest (CNPS 2020; CDFW 2020b). This species is known to occur along a trail edge on bare soil between mixed evergreen forest and grassland in upper University of California, Santa Cruz campus at four corners (CDFW 2020b). However, this species was not observed within the BSA, but would have been detected if present during the project surveys.

4.3.1.3 White-Flowered Rein Orchid

White-flowered rein orchid (*Piperia candida*) is a perennial herb with a CRPR of 1B.2 that blooms from May to September (CNPS 2020). This species occurs within broadleafed upland forest, lower montane coniferous forest, and north coast coniferous forest habitats occasionally on serpentine soils, and prefers forest duff, mossy streambanks, rock outcrops, and dry streambed microhabitats. This species is known to occur along the streambank of Boulder Creek near Hesse Brook (CDFW 2020b). However, this species was not observed within the BSA, but would have been detected if present during the project surveys.

4.3.2 Special-Status Wildlife

Special-status wildlife include those listed, or candidates for listing, as threatened or endangered by the USFWS and CDFW, and designated as species of special concern (SSC) by CDFW and sensitive by the USFWS.

One special-status wildlife species incidentally observed within the BSA during surveys conducted in January 2020 was the California giant salamander (*Dicamptodon ensatus*).

Similar to special-status plants, Dudek performed an extensive desktop review of literature, existing documentation, and GIS data to evaluate the potential for special-status wildlife species to occur within the BSA. Each special-status wildlife species was assigned a rating of "not expected," "low," "moderate," or "high" potential to occur based on relative location to known occurrences and vegetation community/habitat association. Based on the results of the literature review and database searches, 30 special-status wildlife species were reported in the CNDDB and USFWS databases as occurring in the vicinity of the BSA. Of these, two wildlife species were determined to have a moderate potential to occur within the BSA, and one was determined to have a high potential to occur within the BSA based on vegetation communities (habitat) present and previous known locations based on the CNDDB and IPaC records (Table 4). Two other special-status wildlife species were initially investigated due to historic records and/or mapped habitat within the vicinity of the BSA: CRLF and anadromous fishes including steelhead (*Oncorhynchus mykiss irideus*) and coho salmon (*Oncorhynchus kisutch*). These species are discussed further below. The remaining special-status species were evaluated and determined to have little to no potential to occur within the BSA. Table 4 includes the special-status wildlife species with a moderate to high potential to occur rating. Appendix E lists the 30 special-status wildlife species identified as occurring within the vicinity of the BSA and their potential to occur rating and reasoning.

Additionally, the BSA is within USFWS-designated critical habitat for the CRLF, Unit SCZ-1 for Santa Cruz County (75 FR 12815-12959; USFWS 2020).

Table 4. Special-Status Wildlife Species Detected or with a Moderate to High Potential to Occur within the Biological Study Area

Scientific Name	Common Name	Federal/State	Status within Biological Study Area
Amphibians			
Aneides flavipunctatus niger	Santa Cruz black salamander	None/SSC	Moderate
Dicamptodon ensatus	California giant salamander	None/SSC	High
Mammals			
Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	None/SSC	Moderate

Source: CDFW 2019b.
Status Legend
Federal
Species listed do not have a federal status.
State
SSC: California species of special concern

4.3.2.1 California Red-Legged Frog

The CLRF is a federally threatened species and a state SSC (CDFW 2019b). It generally inhabits lowland streams, wetlands, riparian woodland, and livestock ponds. CRLFs require dense, shrubby, or emergent vegetation associated with deep, still or slow-moving water (CDFW 2020b).

Based on a review of the CNDDB and other sources, no CRLF occurrences are known within the BSA. The nearest CNDDB records are located approximately 1.2 to 1.6 miles southwest of the Facility. All of these records are from the Liddell Creek and East Branch of Liddell Creek (CDFW 2020b). The BSA is within USFWS-designated California red-legged frog critical habitat Unit SCZ-1 for Santa Cruz County (USFWS 2020).

The entire reach of Laguna Creek within the BSA is characterized as a uniform, perennial drainage with an approximate 10-foot grade change at the dam (from 619 feet to 609 feet above mean sea level). Due to the geomorphological differences within Laguna Creek around the diversion dam, the evaluation of aquatic habitats for CRLF breeding and foraging suitability is presented in two segments: upstream of the dam and downstream of the dam.

In general, the upstream reach of Laguna Creek within the BSA is characterized by an earthen, trapezoidal-shaped channel that ranged in width from 8 to 20 feet. A few large logs were observed in the creek; however, no instream, emergent vegetation was observed. The adjacent banks were steep with an 80% slope on the western side and 20% slope on the eastern side. The vegetation was dense with an average 70% canopy cover and little sunlight exposure. This reach of Laguna Creek supports low suitable foraging opportunities for CRLF on the eastern side of the channel due to accessible slope and presence of woody debris and downed logs, which could be used as refugia. However, the western bank is unlikely to support potential foraging habitat due to its steepness. No breeding habitat occurs within or near the creek due to the lack of in-channel or adjacent pools/ponds and the associated high surface water velocities during the breeding season. A small, in-channel pool occurs immediately northwest of the dam. Some large woody debris was present; however, no emergent vegetation occurred within the pool. No additional pools or depressions were observed within or adjacent to Laguna Creek above the dam. The pool may support some marginal, low-flow foraging habitat along the edges, but poor breeding habitat due to the associated high water velocities during the breeding season and lack of backwater habitats.

Immediately below the dam, the downstream reach of Laguna Creek within the BSA is characterized by a large, in-channel pool that measures approximately 40 feet by 20 feet wide. The area is heavily shaded with a covered canopy, and little to no sunlight available. The banks are steep, approximately 80% to 90% grade on either side of the pool, and vegetation is sparse. Although the pool may offer some low-velocity edge water habitat for CRLF, there was no emergent or overhanging vegetation around the pool. The pool may support some low-flow foraging habitat along the edges, but offers poor breeding habitat because of the associated high water velocities during the breeding season and lack of backwater habitats. No emergent/aquatic vegetation was observed within the downstream section of the creek, and woody debris buildup was minimal. The banks were steep and rocky in this section, with a 60% to 80% grade throughout the downstream section of the creek within the BSA. Given the lack of pools or depressions in this downstream section of Laguna Creek, and the expected high water velocities, CRLF breeding is not expected. CRLF foraging is unlikely given the steep, rocky gradients on both sides of the creek.

In addition to Laguna Creek, a small tributary that feeds into Laguna Creek further downstream of the Facility within the BSA (Reggiardo Creek) was assessed for potential CRLF habitat components. Reggiardo Creek is a steep (30% grade), narrow, perennial creek (approximately 3 feet wide), that contains large rocks, boulders, and significant woody debris buildup. The banks of this creek are narrow and steep, and no pools, depressions, or aquatic and emergent vegetation was observed within this creek. The steep, confined channel of Reggiardo Creek likely creates high velocity conditions during the winter and spring, and likely does not provide appropriate CRLF breeding or foraging habitat.

The potential for upland refugia immediately surrounding the project site is considered low due to the presence of downed redwood logs and debris, redwood duff and vegetation. However, no mammal burrows (which can serve as habitat for CRLF) were observed anywhere within the BSA.

4.3.2.2 Steelhead and Coho Salmon

The federally and state endangered Central California Coast Evolutionarily Significant Unit of coho salmon (*Oncorhynchus kisutch* pop. 4) occurs in streams of the north coast. The federally threatened Central California Coast Distinct Population Segment of steelhead (*Oncorhynchus mykiss irideus* pop. 8) also occurs in streams along the coast of Santa Cruz County. Laguna Creek lagoon, which is located approximately 4 miles downstream of the Facility, supports both of these species, with coho salmon observed in the lower Laguna Creek lagoon in 2015 and steelhead observed in the lower Laguna Creek lagoon as recently as 2018 (Berry et. al 2019). The BSA, however, is not expected to support either of these species due to a large bedrock waterfall which serves as a natural barrier to anadromy approximately 1.4 miles upstream of the ocean, which precludes anadromous fish from traveling further upstream (Hagar et al. 2017). Resident rainbow trout are known to occur both upstream and downstream of the Facility within Laguna Creek, and the Santa Cruz Water Department has conducted annual abundance surveys in the stream reaches downstream and upstream of the dam since 2006, measuring the fluctuations of the separated populations of rainbow trout (City of Santa Cruz 2020).

4.3.2.3 Santa Cruz Black Salamander

The Santa Cruz black salamander (*Aneides niger*) is a state SSC that is restricted to mesic deciduous or coniferous forests in the fog belt of outer Coast Range of San Mateo, Santa Cruz, and Santa Clara counties (CDFW 2020b). This species occurs in moist streamside microhabitats and is typically found under rocks near streams, in talus, and under damp woody debris. This species is known to occur in the upper reaches of Laguna Creek, having been collected in 1979 in the vicinity of the Ice Cream Grade and Laguna Creek intersection (CDFW 2020b). No salamanders were observed within the BSA during January 2020 surveys.

4.3.2.4 California Giant Salamander

The California giant salamander is a state SSC that occurs in wet coastal forests near streams and seeps. This species' range is limited to Mendocino County, south to Monterey County and east to Napa County. Aquatic larvae are found in cold, clear streams and occasionally occur in lakes and ponds. Adults occur in wet forests under rocks and woody debris in the vicinity of streams or lakes (CDFW 2020b). This species was observed within the BSA during January 2020 surveys, located within the creek bed of Reggiardo Creek adjacent to the Laguna Creek confluence (Figure 3, Biological Resources).

4.3.2.5 San Francisco Dusky-footed Woodrat

The San Francisco dusky-footed woodrat is a state SSC that occurs in forest habitats with moderate canopy and dense to moderate understories, particularly on the upper banks of riparian forests or within poison oak-dominated shrublands (CDFW 2020b). The San Francisco dusky-footed woodrat is a small-sized rodent that builds middens made of sticks, typically at the base of trees and shrubs, but sometimes in the low to mid-level canopy of a tree. The dusky-footed woodrat feeds on a variety of woody plants, fungi, flowers and seeds. This species requires ample midden building materials to construct middens of shredded grass, leaves, or other materials. This species in known to occur along Smith Grade and was observed in 2006 near the intersection with Bonny Doon Road where multiple middens were observed primarily located in redwood forest and coyote brush scrub habitat (CDFW 2020b). No woodrat middens were observed within the BSA during January 2020 surveys.

4.3.3 Jurisdictional Wetlands and Waters

Jurisdictional aquatic resources mapped within the project site included one perennial drainage, Laguna Creek. Laguna Creek is a natural drainage that originates in the Santa Cruz Mountains near Pine Flat Road in Bonny Doon and drains to the Pacific Ocean. The mainstem and active channel of the drainage (including the OHWM) runs through the center of the project site. This natural perennial drainage is characterized by a redwood forest alliance vegetation community and supports a clearly defined bed and bank, as well as has connectivity to downstream receiving waters (Pacific Ocean). The BSA is within the coastal zone as defined by the CCA. Figure 3 illustrates the location and extent of jurisdiction within the project site, and Table 5 summarizes the specific acreages of jurisdictional aquatic resources.

Table 5. Jurisdictional Aquatic Resources within the Project Site

Jurisdictional Aquatic Resource	Acreage
Non-wetland Waters of the United States	
Developed	<0.01
Redwood forest alliance	0.28
Non-wetland Waters of the United States Subtotal	*0.29*
Non-Wetland Waters of the State	
Developed	0.02
Redwood forest alliance	0.63
Non-wetland Waters of the State Subtotal	*0.65*

Non-wetland Waters of the United States/State

The OHWM and TOB were recorded within the project site. OHWM indicators included break in slope, change in vegetation, change in duff and debris presence on the bank, and exposed roots and alluvial deposits in the bank. The TOB was indicated by a distinct natural break in slope, except in the downstream end of the project site where the access road served as TOB.

Near the Facility, Laguna Creek has filled with sediment and gravel behind the existing dam resulting in an island that has split the creek into two distinct channels for approximately 90 linear feet. The creek reconnects downstream of the island, approximately 25 linear feet upstream of the dam. An in-channel gravel bar has developed within the OHWM between the island and the dam, with some hydrophytic plants present. A data station was established on the island to determine if federal jurisdictional wetlands adjacent to the OHWM are present. Soils at the data station consisted of loamy sand interspersed with cobble and gravel from 1 to 14 inches below ground surface (refusal at cobble layer), and did not meet the definition of hydric soils. Vegetation at the date station was dominated by upland species such as redwood sorrel (*Oxalis oregana*) in the herbaceous layer, Pacific blackberry (*Rubus ursinus*) in the shrub layer, and coast redwoods (*Sequoia sempervirens)* in the tree layer. Although some hydrophytic plant species occurred in the herbaceous layer, the data station did not pass the dominance test or meet the prevalence index for hydrophytic vegetation. One secondary hydrology indicator was present on the island (water-stained leaves). In the absence of hydrophytic vegetation, hydric soils, and sufficient hydrology indicators, the island does not meet the USACE definition of a jurisdictional wetland.

The USACE/RWQCB/CDFW jurisdictional width encompassed the lateral extent of Laguna Creek's OHWM within the survey area and ranged in width from 17 to 60 feet. The CDFW and RWQCB-only jurisdictional width also encompasses the lateral extent of the Laguna Creek's TOB within the survey area and ranged from 40 to 110 feet. A total of 0.29 acres of USACE jurisdictional non-wetland waters of the United States occur within the project site, and a total of 0.65 acres of RWQCB and CDFW jurisdictional non-wetland waters of the state occur within the project site. No state or federally-defined wetlands occur within the project site.

4.3.4 Wildlife Corridors/Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the migration of animals. Wildlife corridors contribute to population viability by assuring continual exchange of genes between populations, providing access to adjacent habitat areas for foraging and mating, and providing routes for recolonization of habitat after local extirpation or ecological catastrophes (e.g., fires).

Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation. Habitat linkages provide a potential route for gene flow and long-term dispersal of plants and animals and may also serve as primary habitat for smaller animals, such as reptiles and amphibians. Habitat linkages may be continuous habitat or discrete habitat islands that function as steppingstones for dispersal.

Laguna Creek, between its headwaters and coastal terminus, may serve as a local movement corridor that connects habitat for certain amphibians, reptiles, and localized fish species. However, the BSA is not recognized as an important regional wildlife corridor by any state agency or jurisdiction, and is not considered critical to the ecological functioning of adjoining watersheds and open space areas. The most obstructive aspect of the Facility for aquatic-dependent species is the dam across Laguna Creek that has been present since 1890, which effectively separates the upstream and downstream portions of the creek for strictly aquatic organisms. This barrier to aquatic-dependent species is one of several natural and artificial barriers within Laguna Creek. There is a bedrock waterfall barrier to

anadromy approximately 1.4 miles upstream of the ocean within Laguna Cr eek that prevents anadromous steelhead and coho salmon from traveling further upstream to the BSA (Hagar et al. 2017), so the existing Facility does not pose a barrier to movement to anadromous fishes. However, the rest of the Facility is non-intrusive and does not pose an obstruction to habitat connectivity or wildlife movement.

5 Project Impacts

This section addresses direct, indirect, and cumulative impacts to biological resources that would result from implementation of the Proposed Project. The significance determinations for potential impacts are described in Section 6.

- **Direct impacts** refer to complete loss of a biological resource. For purposes of this report, it refers to the area where vegetation clearing, grubbing, or grading replaces biological resources. Direct impacts were quantified by overlaying the proposed impact limits on the biological resources within the BSA.
- **Indirect impacts** are reasonably foreseeable effects caused by Proposed Project implementation on remaining or adjacent biological resources outside the direct disturbance zone. Indirect impacts may affect areas outside the disturbance zone, including open space and areas within the BSA. Indirect impacts may be short-term and construction-related, or long-term in nature and associated with development in proximity to biological resources.
- **Cumulative impacts** refer to the combined environmental effects of the Proposed Project and other relevant projects.

The evaluation of Proposed Project's impacts is organized by the resource potentially affected and follows Appendix G of the CEQA Guidelines for biological resources (described further in Section 6 of this report): special-status species, sensitive vegetation communities, jurisdictional wetlands, wildlife corridors and habitat linkages, local policies or ordinances, and habitat conservation plans.

Analysis of the Proposed Project presented below focuses on temporary construction-related impacts and permanent impacts due to the placement of a Coanda screen and new intake structure, a new concrete control vault to house new control values and additional diversion piping, a downstream streambank stabilization, new access and safety provisions including stairways, and a drop inlet at the interconnection of the new diversion pipe and the existing Laguna Pipeline (Figure 4, Project Impacts). The new concrete control vault, access stairways, and streambank stabilization would be located within a small segment of the wetted and TOB portions of Laguna Creek, just downstream of the existing intake screen. The bulk of temporary impacts during construction are limited to the use of the existing unimproved access routes; however, additional grading beyond the limits of both western and eastern access routes is necessary to adequately access the upstream and downstream dam areas. Installation of a new diversion pipeline adjacent to the existing diversion flume, temporary dewatering of the work area with downstream and upstream cofferdam installation, diversion of Laguna Creek flows past the active work area, minor channel grading, and sediment removal upstream and downstream of the dam will also contribute to construction-related temporary impacts within the project site (Figure 4, Project Impacts). Access road improvements are also proposed as a part of Project implementation.

The operations and maintenance activities would generally remain similar to existing operations and maintenance activities, which are conducted weekly, monthly, and annually. However, unlike existing conditions, the Proposed Project would not require periodic sediment removal from behind the dam. Additionally, it is anticipated that the operations and maintenance activities would also occur with a similar frequency and intensity of activities under existing conditions. Routine maintenance of the Facility would consist of a weekly visit to inspect the Facility operations. Basic clearing of fallen leaves, needles, and branches from the intake screen and on access roads would continue as is done under existing conditions. Plant restoration is anticipated to occur over approximately 2 to 5 years; landscape restoration activities would include weeding, monitoring, and installation of irrigation or monthly/biweekly watering, which could require water to be trucked periodically to the site. If nighttime emergency

work is required, task lighting that would be installed as part of the Proposed Project as described above would be used. Emergency work could include use of a Vactor truck with vacuum and high-pressure water jetting capabilities for cleaning out sediment from the intake.

Because the majority of sediment in the creek would flow over the screen and not fall through the screen, only a minor amount of sediment is anticipated to fall into the collection chamber within the intake structure (i.e. approximately 97% of entrained sediment would pass over the screen). An adaptive management plan would be developed for the flushing out of the minor amount of sediments that could collect within the intake structure. This plan would be developed in collaboration with applicable resource agencies.

The City would continue to maintain in-stream flow levels established with CDFW pursuant to ongoing agreements and ultimately would maintain the in-stream flow levels established by the Anadromous Salmonid Habitat Conservation Plan that is currently under preparation. As described above, these in-stream flows are intended to protect anadromous salmonids and other species.

Future operations and maintenance activities will result in reduced impacts to long-term to biological resources as compared to current conditions due to better management of diversions and required downstream flows. Specifically, reduced impacts to long-term biological resources would include improved in-stream transport of sediment by changing the format and orientation of water intake so sediment would not obstruct water intake and be able to pass downstream unimpeded, particularly during high stream flows similar to how sediment transport would occur in a more natural system. While federally or state-listed anadromous fish species are not expected to occur in the Proposed Project area due to several downstream natural barriers (Hagar el al 2017), Laguna Creek does contain resident rainbow trout populations, and therefore appropriate fish screening will be implemented by the Proposed Project. Finally, the Proposed Project would provide better remote controls of diversions to improve the regulation of downstream water levels so that fish and other aquatic organisms are not stranded by rapid changes in water levels when the City diverts Laguna Creek and maintains the water intake, and would allow for a flexible approach to manage the quantity and quality of water that can be diverted, minimize the use of power, and provide for economical and operational feasibility.

From this point forward, impacts will be analyzed for the construction phase of the Proposed Project (and not operations and maintenance) in relation to the project site, given that operations and maintenance activities are expected to have beneficial impacts on biological resources, as indicated above. This report assumes that direct impacts will generally occur within the temporary and permanent impact footprints within the project site, and indirect, temporary impacts will generally occur within the surrounding 300-foot buffer BSA. Figure 4, Project Impacts, shows the general location of direct biological resources impact areas that will occur within the project site.

5.1 Impacts to Special-Status Species

5.1.1 Special-Status Plants

The BSA provides moderate potential to support three special-status plant species: tear drop moss, minute pocket moss, and white-flowered rein orchid. These species have potential to occur in the redwood forest alliance community adjacent to the proposed work areas. However, these species were not observed within the BSA, but would have been detected if present during the project surveys.

5.1.1.1 Direct Impacts

Direct, temporary impacts resulting from construction activities would primarily be located within existing unimproved access roads in areas mapped as develop totaling 0.30 acres (see Figures 3 and 4). Additional construction-related temporary impacts would occur to 0.14 acres of the redwood forest understory immediately adjacent and within the streambed and banks of Laguna Creek during dewatering and diversion activities. Heavy construction equipment would access the existing dam and intake screen to implement Proposed Project improvements. The three special-status plant species are unlikely to occur within or along the existing developed access roads, especially since none are disturbance followers or have other characteristics that might suggest they would prefer disturbed areas.

Direct, permanent impacts to 0.01 acres of the redwood forest understory between Laguna Creek and the existing diversion flume would occur from the placement of a new concrete control vault, stairways, and streambank stabilization (see Figure 4). This specific area does not support suitable habitat for the tear drop moss, minute pocket moss, or white-flowered rein orchid.

The Proposed Project would not occur within federally designated critical habitat for special-status plant species, and there would be no direct impacts to critical habitat.

5.1.1.2 Indirect Impacts

Construction-related dust, soil erosion, and water runoff could indirectly impact any potentially occurring special-status plant species outside the immediate work areas, but within the BSA. Special-status plant species are unlikely to occur within existing access routes or the wetted portion of Laguna Creek where the temporary and permanent impacts would occur.

5.1.2 Special-Status Wildlife

The BSA provides moderate to high potential to support three special-status wildlife species: Santa Cruz black salamander, California giant salamander, and San Francisco dusky-footed woodrat. The California giant salamander was incidentally observed south of the project site during the January 2020 surveys. However, neither of the other species (nor any woodrat middens) were detected. Three federally-listed species evaluated, but not expected to occur within the BSA, include the California red-legged frog, steelhead trout, and coho salmon. Although not considered a special-status species, resident trout are present within the project site and their protection has been addressed below. Additionally, the native trees and shrubs within the BSA provide suitable nesting habitat for bird species protected under the MBTA and CFGC Section 3500 and roosting bats protected under CFGC Section 4150.

Additionally, the BSA occurs within USFWS-designated California red-legged frog critical habitat Unit SCZ-1 for Santa Cruz County (75 FR 12815-12959; USFWS 2020). However, this species has a low potential to occur within the BSA.

5.1.2.1 Direct Impacts

As discussed above for special-status plants, direct temporary impacts resulting from construction activities would primarily be located within existing unimproved access roads in areas mapped as developed. Additional construction-related temporary impacts would occur immediately adjacent and within the streambed and banks of Laguna Creek during dewatering and diversion activities. Heavy construction equipment would access the existing

dam and intake screen to implement Proposed Project improvements. Construction-related ground disturbance beyond the limits of the developed access routes to enter the dam area would result in temporary impacts to each of the three special-status wildlife species, if they are present during construction. Temporary impacts to these species could also occur within Laguna Creek during diversion, dewatering, and minor channel grading activities. A total of 0.14 acres of temporary impacts could occur to potential habitat for the Santa Cruz black salamander, California giant salamander, and San Francisco dusky-footed woodrat. Direct, permanent impacts to 0.01 acres of redwood forest understory between Laguna Creek and the existing diversion flume would permanently impact potential habitat of these species from the placement of a new concrete control vault, stairways, and a streambank stabilization for bank protection.

Direct impacts to federally designated critical habitat for CRLF could occur as a result of implementing the Proposed Project. However, the primary constituent elements for this species as described in Section 2.1.2 are not supported within the BSA (75 FR 12815-12959). Aquatic breeding habitat, aquatic non-breeding habitat, upland habitat, and dispersal habitat were each assessed during the habitat assessment conducted for this species and were considered either unsuitable or marginally suitable. As a result, no adverse modification to CRLF-designated critical habitat would occur with the Proposed Project's implementation.

Trimming, pruning, and/or removal of trees and native shrubs may occur as a result of construction of the Proposed Project. Therefore, there may be a potential for direct or indirect impacts to nesting birds and bats, particularly during the general nesting season of February 1 through August 31 or near a bat maternity roost.

5.1.2.2 Indirect Impacts

Short-term indirect impacts to special-status wildlife species that could occur during construction include an increase in human activity and construction noise in the immediate vicinity of potentially occupied areas. Operation of construction equipment during vegetation removal, grading, dewatering, and dam improvements could temporarily interrupt the feeding and breeding cycles of Santa Cruz black salamander, California giant salamander, and San Francisco dusky-footed woodrat, if present. Additionally, noise generated by construction activities, including vegetation removal and grading, that are conducted during the avian breeding season (February 1 through August 31), could result in indirect impacts to nesting birds and roosting bats, if present. Specifically, indirect impacts to nesting birds and roosting bats from short-term construction-related noise could result in decreased reproductive success, disrupted feeding, or abandonment of an area as nesting or roosting habitat if conducted during the nesting season (i.e., February through August) or near a bat maternity roost.

Indirect impacts associated with decreased water quality during construction downstream of the work areas are not expected with implementation of the Standard Construction Practices.

5.2 Impacts to Sensitive Vegetation Communities

The BSA is characterized as a redwood forest with a portion of the understory that has been developed within roadways or existing structures associated with the Facility. The redwood forest alliance vegetation community is considered a sensitive natural community on the California Natural Community List (CDFW 2019a).

5.2.1 Direct Impacts

The Proposed Project would result in the temporary removal of vegetation and ground disturbance as necessary to access the existing dam and intake screen areas with heavy equipment beyond the limits of the existing access roads. Portions of Laguna Creek will be temporarily impacted through diversion and dewatering, minor grading and sediment removal within the channel, and possible trimming during equipment ingress/egress of the work area directly adjacent to the creek. A very small portion of redwood forest habitat between Laguna Creek and the existing diversion flume would be permanently impacted from the placement of a new concrete control vault, stairways, and streambank stabilization for bank protection. However, the vast majority of the redwood forest habitat over Laguna Creek and within the project site is proposed to remain intact.

Table 6 summarizes the direct impacts to sensitive vegetation communities and land covers anticipated as a result of project implementation.

Table 6. Impacts to Sensitive Vegetation Communities and Land Covers within the Project Site

Vegetation Community or Land Cover	Permanent Impacts (acres)	Temporary Impacts (acres)
Forest and Woodland Alliances and Stands		
Redwood forest alliance[1]	0.01	0.14
Subtotal Forest and Woodland Alliances and Stands	*0.01*	*0.14*
Total[2]	**0.01**	**0.14**

Notes:
1 CDFW sensitive vegetation community (CDFW 2019a).
2 Totals may not sum due to rounding.

Up to 12 coast redwood trees situated along the banks of Laguna Creek just downstream of the dam between the creek and the existing diversion flume would be removed due to the placement of the new concrete control vault, stairways, streambank stabilization, and improvements to the main access road.

5.2.2 Indirect Impacts

During construction activities, indirect impacts to sensitive vegetation communities (redwood forest alliance) resulting from edge effects may include dust, which could disrupt plant vitality in the short term, or construction-related soil erosion and water runoff.

5.3 Impacts to Jurisdictional Wetlands and Waters

Laguna Creek, which runs through the middle of the project site and is the surface water source for the Facility, supports jurisdictional non-wetland waters of the United States/state. No state or federally-defined wetlands occur within the project site.

5.3.1 Direct Impacts

Direct temporary impacts to portions of Laguna Creek would result from surface water diversion and dewatering activities upstream and downstream of the dam. These temporary impacts include installation of cofferdams and a diversion pipe to isolate and divert flows past the active work area, as well as minor grading and sediment removal within the channel. Possible vegetation trimming during equipment ingress/egress along the banks of Laguna Creek is also a potential temporary impact. Temporary impacts would also occur within the existing structures that are located within the jurisdictional boundaries of Laguna Creek, and would be largely confined to work along the dam and existing intake screen. A very small portion of the streambed and banks of Laguna Creek just below the existing intake screen would be permanently impacted from the placement of a new concrete control vault, stairways, and streambank stabilization.

A total of 0.11 acres of temporary impacts and less than 0.01 acres of permanent impacts would occur to USACE non-wetland waters of the United States. A total of 0.13 acres of temporary impacts and 0.01 acres of permanent impacts would occur to RWQCB and CDFW non-wetland waters of the state. Table 7 summarizes the direct impacts to jurisdictional aquatic resources anticipated as a result of the Proposed Project's implementation.

Table 7. Impacts to Jurisdictional Aquatic Resources within the Project Site

Jurisdiction	Permanent Impacts (acres)	Temporary Impacts (acres)
Non-Wetland Waters of the United States (OHWM)	<0.01	0.11
Non-Wetland Waters of the State (Streambed/TOB)	0.01	0.13

5.3.2 Indirect Impacts

Indirect impacts to jurisdictional aquatic resources could result primarily from adverse indirect edge effects. During construction activities, edge effects may include construction-related soil erosion and water runoff.

5.4 Impacts to Wildlife Corridors and Migratory Routes

5.4.1 Direct Impacts

The Proposed Project would not substantially alter the vegetation communities or physical setting of Laguna Creek. During construction, activities could block or otherwise hinder wildlife movement along Laguna Creek or temporarily affect the ability of wildlife to access other habitat areas upstream or downstream of the BSA. However, this impact would be temporary and would not substantially degrade the quality or use of a wildlife corridor or migratory route. Existing habitat linkages and wildlife corridor functions would remain intact while construction activities are conducted and following completion. Construction activities would not likely result in impacts to wildlife movement because no new structures that would impede wildlife movement are proposed.

Following temporary construction disturbances, the function and values of Laguna Creek would remain the same as existing conditions, and would improve downstream of the dam due to sediment management at the Facility and maintenance of in-stream flows facilitated by the Proposed Project. While a small area within the banks of Laguna

Creek would be permanently impacted due to the placement of diversion improvement structures, this small displacement of habitat would not impact wildlife movement or use of native wildlife nursery sites within the project site and surrounding areas. Since the existing dam structure already functions as a barrier to the movement of aquatic species, it is assumed that the existing wildlife corridor functions within Laguna Creek would remain intact during and post construction. Project-related construction activities would not likely result in direct impacts to wildlife movement because the Proposed Project improvements would not exacerbate the impediment to wildlife movement that is already present in the form of the dam. Although the dam would still serve as a barrier to movement past the Facility, wildlife movement is anticipated to improve downstream due to better controls of flows so that fish are not stranded by rapid changes in water levels during diversions.

5.4.2 Indirect Impacts

There would be no long-term indirect impacts to wildlife movement as a result of the Proposed Project. Some short-term, indirect impacts to localized wildlife movement could occur due to construction-related noise and in-water work. However, these impacts would be temporary and would not be expected to disrupt wildlife movement due to the assumed limited construction activities within the creek, ambient noise conditions, and the ability for wildlife to continue to move through the creek and upland portions of the BSA during and following construction activities. Work activities are not currently proposed during the nighttime, requiring lighting that would need to be positioned away from the creek. However, future maintenance activities may occur during the nighttime in response to emergency situations. Limited lighting sources that are on timers and switches could be used during these situations to provide safe access. Additionally, due to the current existing uses on the site and amount of human presence, the conditions and uses surrounding Laguna Creek post-construction would either be consistent with or improved from existing uses, particularly by providing better flow to downstream fish habitat during diversions, decreasing the potential for any minimal long-term indirect impacts.

5.5 Impacts to Local Policies and Ordinances

Potential impacts resulting from implementation of the Proposed Project were analyzed for compliance with the Santa Cruz County LCP and LCP implementing ordinances. Based on the discussion presented in Section 2.3, the impact analysis below focuses on the Riparian Corridor Protection Ordinance.

The County's Riparian Corridor Protection Ordinance prohibits development within riparian corridors or areas within a buffer zone as measured from the top of bank. The portion of Laguna Creek within the BSA meets the definition of an arroyo that includes discernible banks with a minimum slope of 20% and adjacent area characterized by a "live oak or other woodland" (i.e. redwood forest that lacks a separate, distinct riparian vegetation community). The buffer zone for an arroyo associated with a perennial stream meeting these parameters extend 50 feet from the edge of the arroyo (i.e., top of bank). In addition, a 10-foot setback from the edge of the buffer is required for all structures to allow for construction equipment and use of yard area. The Proposed Project occurs within the protected buffer zone of Laguna Creek. However, the Proposed Project qualifies as a riparian exception considering the unique circumstances of its design, function, and net benefit to natural resources. Specifically, the Proposed Project:

- is necessary for the proper design and function of an existing facility;
- will not be detrimental to the public welfare or injurious to other property downstream or in the area in which the project is located;

- will not reduce or adversely impact the riparian corridor, and there is no feasible less environmentally damaging alternative (see Section 6, Alternatives for additional information); and
- is in accordance with the purpose of the County's ordinance, the objectives of the General Plan, and the Local Coastal Program Land Use Plan (see Section 4.11, Land Use and Planning for additional information).

Since the Proposed Project is considered a riparian exception according to the provisions of Chapter 16.30, it would not be subject to the provisions from Chapter 16.32 (Sensitive Habitats Protection Ordinance).

Additionally, the Proposed Project would require the removal of up to 14 trees (approximately 12 coast redwoods and 2 tan oaks) that may meet the County's definition of a significant tree. These trees are situated along the banks of Laguna Creek just downstream of the dam between the creek and the existing diversion flume are proposed to be removed due to the construction of the new concrete control vault, stairways, and streambank stabilization, as well as due to main access road improvements. Adjacent redwood trees that would not be removed by the Proposed Project may be subject to injury or damage with construction equipment and materials. Removal of significant trees and protection of avoided trees within the coastal zone would be addressed through the coastal development permit process.

These trees represent about 0.01 acres of redwood forest and this area is within land zoned Timber Production by the County. The removal of these trees would constitute a Minor Conversion as defined in Chapter 16.52.195 of the Santa Cruz County Code. Minor Conversions permits are administered by CAL FIRE (14 CCR Section 1104(a)(4)). As such, a tree inventory and protection plan has been developed for the project (Fouts, K. 2020) and would require a minor conversion permit exemption prior to tree removal.

It is anticipated that a less than 3-acre conversion exemption (14 CCR Section 1104.1(a)) approved by CAL FIRE would be required to remove these redwood trees. Timber operations conducted under an exemption are exempt from conversion permit and timber harvesting plan requirements of the California Forest Practice Rules, although they are still required to comply with all other applicable provisions of the Z'berg-Nejedly Forest Practice Act, regulations of the Board of Forestry, and currently effective provisions of county general plans, zoning ordinances and any implementing ordinances.

Impacts related to Sudden Oak Death and Pine Pitch Canker are associated with the spread of these pathogens to uninfected trees within the project area and the spread of pathogens outside of the project area. Pathogens can be spread via tools and equipment used in tree removal operations and by the movement of infested soil and plant materials.

5.6 Impacts to Habitat Conservation Plans

The Proposed Project does not occur within any approved Habitat Conservation Plans (HCPs) or other approved local, regional or state habitat conservation plans. Therefore, no impacts to any conservation planning efforts would occur with implementation of the Proposed Project.

5.7 Cumulative Impacts

This section provides an evaluation of cumulative impacts to biological resources associated with the Proposed Project and other reasonably foreseeable future projects. The cumulative projects considered include other City

Water Department planned capital improvement projects, construction/development projects proposed within the County, or improvement projects on nearby state facilities.

The geographic scope of cumulative impacts to biological resources is limited to the Laguna Creek watershed and the immediate surroundings of the project site that support a similar undeveloped setting. The surrounding vegetation community is an extension of the redwood forest alliance found on the project site. Surrounding land uses include open space and rural residential.

Cumulative projects in the project vicinity would be those that would contribute to construction- or operations-related impacts to biological resources impacted by the Proposed Project. Cumulative projects that could potentially overlap with the operation of the Proposed Project include the Santa Cruz Water Rights Project (SCWRP) and the North Coast System Repair and Replacement Project. No cumulative projects within the study area are anticipated to have overlapping construction-periods with the Proposed Project.

The SCWRP proposes to implement changes to the City's existing water rights in order to improve the City's water system flexibility, while enhancing stream flows for local anadromous fisheries. The SCWRP would commit the City to ensuring minimum bypass flows, including at the Facility. No construction or development within the Laguna Creek watershed is proposed as part of the SCWRP. No change is proposed to the authorized volume of water under the City's existing water rights; however, changes in stream flows would result in impacts (likely beneficial) on aquatic special-status species.

The North Coast System Repair and Replacement Project proposes to rehabilitate several existing stream diversion facilities to ensure continued operation and reliability. Diversions along the Liddell, Majors, and Reggiardo creeks would be rehabilitated as part of a phased approach and occur over a 15- to 20-year timeframe. No additional construction activities are anticipated at the Facility and the anticipated effect of the rehabilitation project is a net benefit to biological resources within the immediate vicinity of each project site.

Other future projects within the County could result in impacts to biological resources. However, these projects would be subject to review and approval by the County on a case-by-case basis. Thus, it can be reasonably assumed that these projects would be designed or otherwise conditioned to avoid and minimize impacts to biological resources and would be required to comply with federal, state, and local regulations, policies and ordinances.

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6 Findings of Significance and Mitigation

6.1 Explanation of Findings of Significance

Impacts to special-status vegetation communities, plant and wildlife species, and jurisdictional waters, including wetlands, must be quantified and analyzed to determine whether such impacts are significant under CEQA. CEQA Guidelines Section 15064(b) states that an ironclad definition of "significant" effect is not possible, because the significance of an activity may vary with the setting. Appendix G of the CEQA Guidelines, however, does provide "examples of consequences which may be deemed to be a significant effect on the environment" (14 CCR 15064(e)). These effects include substantial effects on rare or endangered species of animal or plant or the habitat of the species. CEQA Guidelines Section 15065(a)(1) is also helpful in defining whether a project may have a significant effect on the environment. Under that section, a proposed project may have a significant effect on the environment if the project has the potential to (1) substantially degrade the quality of the environment, (2) substantially reduce the habitat of a fish or wildlife species, (3) cause a fish or wildlife population to drop below self-sustaining levels, (4) threaten to eliminate a plant or animal community, (5) reduce the number or restrict the range of a rare or endangered plant or animal, or (6) eliminate important examples of a major period of California history or prehistory.

The following are the significance thresholds for biological resources provided in the CEQA Guidelines Appendix G Environmental Checklist, which states that a project would potentially have a significant effect if it:

- Impact BIO-1. Has a substantial adverse effect, either directly or through habitat modifications, on any species identified as being a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- Impact BIO-2. Has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFW or USFWS.
- Impact BIO-3. Has a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- Impact BIO-4. Interferes substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impedes the use of native wildlife nursery sites.
- Impact BIO-5. Conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Impact BIO-6. Conflicts with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.
- Impact BIO-7. Has impacts that are individually limited, but cumulatively considerable.

The evaluation of whether or not an impact to a particular biological resource is significant must consider both the resource itself and the role of that resource in a regional context. Substantial impacts are those that contribute to, or result in, permanent loss of an important resource, such as a population of a rare plant or wildlife species. Impacts may be important locally, because they result in an adverse alteration of existing site conditions, but considered not significant because they do not contribute substantially to the permanent loss of that resource

regionally. The severity of an impact is the primary determinant of whether or not that impact can be mitigated to a level below significance.

The following significance determinations were made based on the impacts of the Proposed Project presented in Section 5.

6.2 Impact BIO-1: Special-Status Species

6.2.1 Special-Status Plants

Potential direct temporary and permanent impacts could occur to three special-status plant species that have moderate potential to occur within the BSA: tear drop moss, minute pocket moss, and white-flowered rein orchid. These impacts could result from grading activities to establish temporary access and construction work areas, as well as installation of a new concrete control vault/stairway and bank protection. However, these special-status plant species were not detected during project surveys and are unlikely to occur within the Proposed Project footprint (along the existing unimproved roadways or within the streambed of Laguna Creek. Additionally, even if present, loss of individuals or the habitat of these species would not threaten their regional populations as a result of the Proposed Project, the temporary and permanent direct impacts to special-status plant species would be less than significant.

Indirect impacts to special-status plants that could occur during construction include a limited amount of dust in the immediate vicinity of areas potentially occupied by special-status plants. These impacts are anticipated to be less than significant.

These potential direct and indirect impacts to special-status plants would be less than significant. Potential impacts would be further reduced with the implementation of the Standard Construction Practices listed in Section 1.2.3.

6.2.2 Special-Status Wildlife

Potential direct temporary and permanent impacts resulting from grading activities to establish temporary access and construction work areas, as well as installation of a new concrete control vault/stairway and bank protection, could result in significant impacts to special-status wildlife species. Short-term, indirect impacts to special-status wildlife resulting from increased human presence and noise generated during construction activities could also result in significant impacts to special-status wildlife species.

Santa Cruz black salamander, California giant salamander, and San Francisco dusky-footed woodrat. These three special-status wildlife species would have a moderate to high potential to occur within the project site. Construction-related activities could have a substantial adverse effect on these species, if present. Additionally, a total of 0.14 acres of temporary impacts and 0.01 acres of permanent impacts to potential habitat for these species would be impacted during construction-related ground disturbance. The impact of the Proposed Project on these species would be potentially significant.

Nesting Birds and Roosting Bats. Potential direct temporary and permanent impacts resulting from grading activities could occur to nesting birds and roosting bats. The BSA contains suitable nesting habitat for ground and tree-nesting bird species and roosting bats, particularly within the riparian areas associated with Laguna Creek and the undeveloped lands surrounding the project site. Construction-related activities that occur within the general nesting

season (February through August) could result in a substantial adverse effect to nesting birds. Construction activities that could result in direct impacts to nesting birds and roosting bats include vegetation and tree removal during grading activities. Indirect impacts to nesting birds and roosting bats that could occur during construction include an increase in human activity, construction noise and dust in the immediate vicinity of an active nest that could result in significant harassment and nest abandonment, causing loss of the nest. Therefore, the impact of the Proposed Project on nesting birds and roosting bats would be potentially significant.

California Red-legged Frog. The CRLF was determined to have low potential to occur within the BSA, and focused, protocol-level surveys within the BSA were not warranted for this species. The project site occurs within federally designated critical habitat for the CRLF. Based on the habitat assessment conducted for the species, the BSA does not support the primary constituent elements established for this species. Aquatic breeding habitat, aquatic non-breeding habitat, upland habitat, and dispersal habitat were each assessed during the habitat assessment conducted for this species and were considered either unsuitable or marginally suitable. Implementation of the Proposed Project would have long-term beneficial effects to CRLF by reducing the need for future emergency repairs and for sediment removal at the Facility. Therefore, the Proposed Project's impacts on CRLF or its potential habitat would be less than significant.

Steelhead and Coho Salmon. These special-status fish species are not expected to occur within the BSA due to several barriers to anadromy downstream of the Facility. As a result, the Proposed Project would not be expected to have any direct impact on these species. Indirect impacts associated with decreased water quality during construction downstream of the work areas are not expected with implementation of the Standard Construction Practices. Downstream reaches of Laguna Creek would continue to receive base flows during construction to support these species as required. The Proposed Project would not adversely affect suitable spawning and rearing habitat for steelhead or coho salmon located approximately 2 miles downstream of the Proposed Project. Additionally, implementation of the Proposed Project would have long-term beneficial effects to steelhead and coho salmon by improving sediment management at the Facility and maintaining in-stream flows suitable for various salmonid life stages within the downstream anadromous reaches of Laguna Creek. As a result, the Proposed Project would not be expected to have an impact on these species.

Implementation of **MM BIO-1**, **MM BIO-2**, **MM BIO-3**, and **MM BIO-4,** as well as Standard Construction Practices listed in Section 1.2.3 above, would reduce potentially significant direct and indirect impacts to special-status wildlife species, if identified, to a less-than-significant level.

MM BIO-1 **Conduct Worker Environmental Awareness Training.** A qualified biologist shall conduct an education program for all persons employed on the Proposed Project prior to performing work activities. The presentation given by the qualified biologist will include a discussion of the biology and general behavior of any special-status species that may be in the area, how they may be encountered within the work area, and procedures to follow when they are encountered. The qualified biologist shall prepare and distribute handouts containing all of this information for workers to carry on site. Interpretation shall be provided for non-English speaking workers. All personnel working on the site will receive this training, and will sign a sign-in sheet showing they received the training. Any personnel joining the work crew after the training has been administered shall receive the same training before beginning work.

MM BIO-2 **Conduct Special-Status Amphibian Species Survey and Monitoring.** A pre-construction survey for Santa Cruz black salamander, California giant salamander, and California red-legged frog shall be conducted within 48 hours prior to the onset of construction activities. The survey area shall include all suitable habitat within the project site, plus a 50-foot buffer. Suitable habitat for these species in the project site consists of damp upland areas near/adjacent to existing aquatic features associated

with Laguna Creek, and the wetted portion of Laguna Creek. Additionally, a qualified biologist shall be onsite daily during construction activities to ensure impacts to special-status wildlife are avoided and minimized. A daily pre-construction sweep for wildlife within all staging and work areas shall be conducted followed by construction monitoring when work is conducted within suitable habitat.

Salamanders. If any individuals of Santa Cruz black salamander or California giant salamander are observed during the pre-construction survey or subsequent monitoring, their location(s) shall be recorded and identified for avoidance. Individuals found should be allowed to move out of the area on their own. If avoidance is not feasible, they shall be moved to the nearest appropriate habitat outside of the construction footprint by a qualified biologist. Qualified biologists shall be approved by the California Department of Fish and Wildlife prior to handling/translocating individuals of these species.

California red-legged frogs. Although determined to have a low potential to occur within the project site, initial ground-disturbing activities shall avoid the period when California red-legged frogs are most likely to be moving through upland areas (November 1 through March 31). When ground-disturbing activities must take place between November 1 and March 31, a qualified biologist shall monitor construction activity daily for the species to ensure avoidance. If any California red-legged frogs are observed and take authorization has been provided for the Proposed Project, relevant conservation measures from the applicable take authorization shall be implemented. If any California red-legged frogs are observed and take authorization has not been provided for the Proposed Project, the monitoring biologist shall have the authority to temporarily stop work to allow the species to move out of the work area on its own volition. The U.S. Fish and Wildlife Service shall be contacted if frogs remain in work areas and appropriate avoidance and minimization measures shall be implemented, as determined by the qualified biologist and approved by the City, to ensure protection of the frogs.

MM BIO-3 **Conduct San Francisco Dusky-Footed Woodrat Survey and Relocation.** A pre-construction survey to locate woodrat middens shall be conducted by a qualified biologists within 48 hours prior to the onset of construction activities. The survey area shall include all suitable habitat within the project site, plus a 50-foot buffer. Woodrat middens found shall be mapped and flagged with high visibility flagging tape for avoidance. If middens are found and complete avoidance is not feasible, the following measures shall be implemented:

- If construction is to occur during the breeding season (generally between January 1 and September 31), and young are suspected to be present, the existing midden shall be left undisturbed until such a time as the qualified biologist determines the young are capable of independent survival.
- A qualified biologist shall construct replacement woodrat middens for each midden that would be removed. The replacement middens shall be located in similar habitat outside the area of disturbance.
- A qualified biologist shall trap woodrats and relocate them to the constructed middens outside the area of disturbance. After trapping is complete, the biologist will disassemble the existing woodrat middens by hand to allow any remaining woodrats inside to escape unharmed.
- Prior to implementation of any disturbance of the existing woodrat middens and/or trapping/relocation, approval from the California Department of Fish and Wildlife will be obtained.

MM BIO-4 **Conduct Preconstruction Nesting Bird and Roosting Bat Survey**. Construction and tree removal activities should avoid the migratory bird nesting season (typically February 1 through August 31),

to reduce any potentially significant impact to birds that may be nesting on the study area. If construction and tree removal activities must occur during the migratory bird nesting season, an avian nesting survey of the project site and contiguous habitat within 300 feet of all impact areas must be conducted for protected migratory birds and active nests. The avian nesting survey shall be performed by a qualified wildlife biologist within 7 days prior to the start of ground or vegetation disturbance. Once construction has started, if there are breaks in ground or vegetation disturbance that exceed 14 days, then another avian nesting survey shall be conducted. If an active bird nest is found, the nest shall be flagged and mapped on the construction plans along with an appropriate no disturbance buffer, which will be determined by the biologist based on the species' sensitivity to disturbance (typically 250 feet for passerines and 500 feet for raptors and special-status species). The nest area shall be avoided until the nest is vacated and the juveniles have fledged. The nest area shall be demarcated in the field with flagging and stakes or construction fencing.

To the extent practicable, tree removal should occur outside peak bat activity timeframes when young or overwintering bats may be present, which generally occurs from March through April and August through October, to ensure protection of potentially occurring bats and their roosts on the project site. Additionally, daily restrictions on the timing of any construction activities should be limited to daylight hours to reduce disturbance to roosting (and foraging) bat species. Additionally, a visual bat survey should be conducted within 30 days of the removal of any trees. The survey should include a determination on whether active bat roosts are present on or within 50 feet of the project site. If a non-breeding and non-wintering bat colony is found, the individuals shall be evicted under the direction of a qualified biologist to ensure their protection and avoid unnecessary harm. If a maternity colony or overwintering colony is found in the control building or trees on the project site, then the qualified biologist shall establish a suitable construction-free buffer around the location. The construction-free buffer shall remain in place until the qualified biologist determines that the nursery is no longer active.

6.3 Impact BIO-2: Sensitive Vegetation Communities

The only natural vegetation community within the project site is the redwood forest alliance. This vegetation community is considered a sensitive vegetation community, and the Proposed Project would have a substantial adverse effect on this community and therefore project-related impacts would be considered potentially significant. Direct temporary and permanent impacts to the redwood forest alliance would result from grading activities to establish temporary access and construction work areas, as well as installation of a new concrete control vault/stairway and bank protection. A total of 0.01 acres of permanent impacts and 0.14 acres of temporary impacts to this natural vegetation community could result from Proposed Project implementation. Up to 12 redwood trees would be removed with Proposed Project implementation. While the vast majority of the redwood forest habitat over Laguna Creek and within the project site is proposed to remain intact, the Proposed Project could result in a substantial adverse effect on redwood forest alliance. Therefore, the direct impact of the Proposed Project on sensitive natural communities would be potentially significant.

Potential indirect impacts to the redwood forest alliance would be limited to short-term construction-related impacts due to erosion, runoff, and dust. The Standard Construction Practices listed in Section 1.2.3 would be implemented during construction to address these potential indirect impacts. With these Standard Construction Practices, the indirect impact of the Proposed Project on sensitive natural communities would be less than significant.

Potentially significant direct impacts to sensitive vegetation communities would be mitigated to less than significant through implementation of **MM BIO-5**.

MM BIO-5 **Compensate for Impacts to Sensitive Vegetation Communities.** Direct temporary impacts to 0.14 acres of redwood forest alliance would be mitigated through on-site rehabilitation to conditions similar to those that existed prior to grading and/or ground-disturbing activities. This would consist of re-contouring temporarily impacted areas to match pre-project grade and non-native species removal and monitoring over a 3-year period to inhibit non-native species encroachment. A one-time rehabilitation effort followed by monitoring and non-native weed removal for a minimum of 3 years shall compensate for temporary direct impacts to the redwood forest alliance vegetation community.

Direct permanent impacts to 0.01 acres of redwood forest alliance vegetation community shall be mitigated through on-site enhancement activities at a 2:1 mitigation ratio.

A conceptual Habitat Mitigation and Monitoring Plan shall be prepared and implemented that includes the enhancement activities, which may include non-native species removal and revegetation followed by monitoring, for all disturbed areas. The plan shall specify the criteria and standards by which the enhancement actions will compensate for impacts of the Proposed Project on the redwood forest vegetation community and shall at a minimum include discussion of the following:

- The enhancement objectives including the type and amount of revegetation to be implemented taking into account enhanced areas where non-native invasive vegetation is removed and replanting specifications that take into account natural regeneration of species.
- The specific methods to be employed for revegetation.
- Success criteria and monitoring requirements to ensure vegetation community restoration success.
- Remedial measures to be implemented in the event that performance standards are not achieved.

6.4 Impact BIO-3: Jurisdictional Wetlands

No state or federally protected wetlands occur within the BSA. However, implementation of the Proposed Project could have direct, temporary and permanent effects to non-wetland waters of the United States/state under the jurisdiction of USACE, RWQCB, and CDFW. A total of 0.13 acres of temporary impacts to jurisdictional waters would result from diversion, dewatering, minor channel grading, and sediment removal upstream and downstream of the dam. A total of 0.01 acres of permanent impacts to jurisdictional waters would result from the construction and placement of a new concrete control vault, access stairways, and streambank stabilization within a very small portion of Laguna Creek streambed, but primarily along the upper banks of Laguna Creek. The direct impact of the Proposed Project on jurisdictional non-wetland waters would be potentially significant.

Short-term and long-term indirect impacts to jurisdictional non-wetland waters relating to construction activities (edge effects) and trash/pollution would not likely result in significant impacts, with implementation of the Standard Construction Practices that would be implemented during Proposed Project construction (Section 1.2.3). Therefore, the indirect impact of the Proposed Project on jurisdictional non-wetland waters would be less than significant.

Potentially significant impacts to jurisdictional non-wetland waters of the United States/state would be mitigated to less than significant through implementation of **MM-BIO-6**. This mitigation shall overlap with measures taken to address impacts to sensitive vegetation communities (as identified above in **MM-BIO-5**).

MM-BIO-6 **Compensate for Impacts to Jurisdictional Non-Wetland Waters.** Direct temporary and permanent impacts to jurisdictional non-wetland waters shall be mitigated on site. On-site measures shall include rehabilitation of areas temporarily impacted (approximately 0.13 acres) and permanently impacted (approximately 0.01 acres) within jurisdictional limits at a 1:1 mitigation ratio. Areas impacted shall be returned to conditions similar to those that existed prior to grading and/or ground-disturbing activities. The conceptual Habitat Mitigation and Monitoring Plan implemented as part of MM-BIO-6 shall include enhancement activities to address impacts to jurisdictional non-wetland waters, which may include non-native species removal and revegetation followed by monitoring, for all disturbed areas. The plan shall specify the criteria and standards by which the enhancement actions will compensate for impacts of the Proposed Project on jurisdictional non-wetland waters. Direct temporary and permanent impacts to jurisdictional non-wetlands waters shall be addressed through Section 401 and Section 404 of the Clean Water Act, the Porter-Cologne Water Quality Act, and Section 1602 of the California Fish and Game Code.

6.5 Impact BIO-4: Wildlife Corridors and Migratory Routes

The BSA is not recognized as an important regional wildlife corridor by any state agency or jurisdiction and is not considered critical to the ecological functioning of adjoining watersheds and open space areas. However, Laguna Creek may serve as a local movement corridor that marginally connects habitat for certain amphibians, reptiles, and localized fish species. Overall, the Proposed Project would not substantially alter the vegetation communities or physical setting of Laguna Creek.

During construction, activities could block or otherwise hinder wildlife movement along Laguna Creek or temporarily affect the ability of wildlife to access other habitat areas upstream or downstream of the BSA. However, this impact would be temporary and would not substantially degrade the quality or use of a wildlife corridor or migratory route. Existing habitat linkages and wildlife corridor functions would remain intact while construction activities are conducted and following completion. Construction activities would not likely result in impacts to wildlife movement because no new structures that would impede wildlife movement would be installed.

Following temporary construction disturbances, the function and values of Laguna Creek would remain the same as existing conditions, and would improve downstream of the dam due to sediment management at the Facility and maintenance of in-stream flows facilitated by the Proposed Project. While a small area within the banks of Laguna Creek would be permanently impacted due to the placement of diversion improvement structures, this small displacement of habitat would not impact wildlife movement or use of native wildlife nursery sites within the project site and surrounding areas. Since the existing dam structure already functions as a barrier to the movement of aquatic species, it is assumed that the existing wildlife corridor functions within Laguna Creek would remain intact during and post construction.

Some indirect impacts to localized wildlife movement could occur during construction due to construction-related noise and in-water work. However, these impacts would be temporary and would not be expected to significantly disrupt wildlife movement during and following construction activities. The environmental conditions and uses surrounding Laguna Creek post-construction would remain and actually improve for riparian-dependent species as a result of the project's design and operation to provide better flow to downstream fish habitat during diversions. These factors would also reduce the potential for any long-term indirect impacts to wildlife movement as a result of the Proposed Project.

Therefore, direct and indirect impacts on wildlife corridors and migratory routes resulting from the Proposed Project would be less than significant.

6.6 Impact BIO-5: Local Policies or Ordinances

Potentially significant impacts resulting from implementation of the Proposed Project were analyzed for compliance with the Santa Cruz County LCP and LCP implementing ordinances. The Proposed Project occurs within the protected buffer zone of Laguna Creek. However, the Proposed Project qualifies as a riparian exception considering the unique circumstances of its design, function, and net benefit to natural resources. Since the Proposed Project is considered a riparian exception according to the provisions of Chapter 16.30, the Proposed Project would not conflict with the County's Riparian Corridor Protection Ordinance or Sensitive Habitats Protection Ordinance and the impact would be less than significant.

Removal of significant trees and protection of avoided trees within the Coastal Zone will be addressed through the Coastal Development Permit process. Tree removal associated with the Proposed Project would also be required to obtain a minor conversion permit exemption from Cal FIRE. Furthermore, Standard Construction Practices described above in Section 1.2.3, would protect trees from construction damage and reduce impacts related to the Sudden Oak Death Zone of Infestation (and the "Regulated Area") and the Pitch Canker Zone of Infestation.

The Proposed Project would not be in conflict with any local policies or ordinances protecting biological resources. Therefore, the impact of the Proposed Project related local policies would be less than significant.

6.7 Impact BIO-6: Habitat Conservation Plans

The Proposed Project is not located within any adopted habitat conservation plans, natural community conservation plans, or other approved local, regional, or state habitat conservation plan. Therefore, the Proposed Project would not be in conflict with any such plans, and there would be no impacts as a result of the Proposed Project.

6.8 Impact BIO-7: Cumulative Impacts

As described above, the known cumulative projects planned within the Laguna Creek watershed include the Santa Cruz Water Rights Project and the North Coast System Repair and Replacement Project. These two SCWD projects are anticipated to result in construction impacts that can be reduced to a less-than-significant level with standard mitigation measures and would have long-term benefits to biological resources. Other cumulative projects may include those subject to County approval; such projects that require discretionary approval are assumed to be designed or otherwise conditioned to avoid and minimize impacts to biological resources. As described above, implementation of the Proposed Project would result in minor impacts to areas immediately surrounding the Facility. Post-construction, the project site would be operated and maintained similar to existing conditions. Mitigation measures have been identified to reduce potential impacts to special-status wildlife species, sensitive vegetation communities, and jurisdictional wetlands resulting from project implementation to less-than-significant levels. Therefore, the Proposed Project, in combination with the reasonably foreseeable future projects in the Laguna Creek watershed would result in less-than-significant impacts to biological resources and no further mitigation measures are required.

7 References

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16 USC 1531–1544. Endangered Species Act of 1973, as amended.

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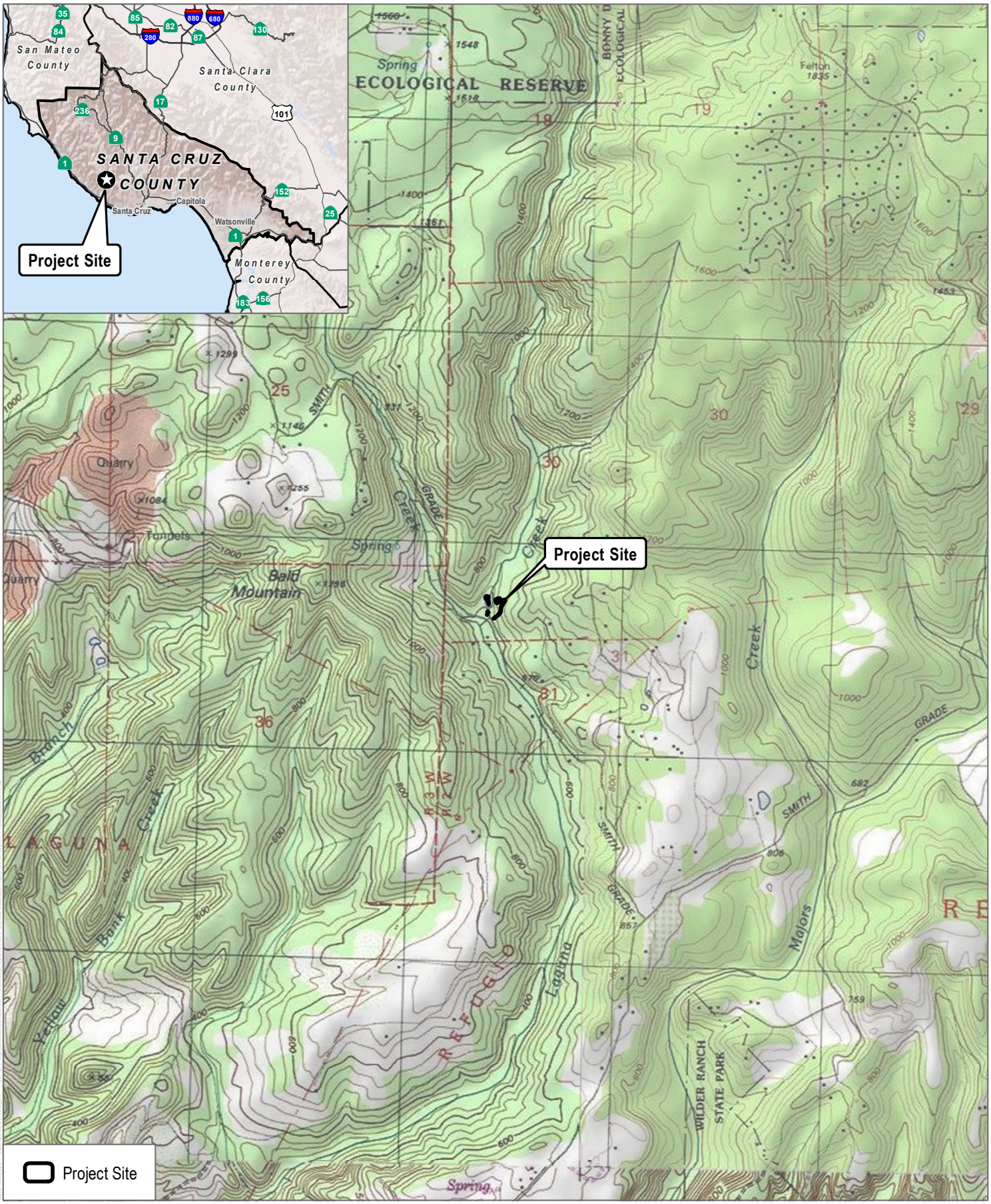


SOURCE: USGS 7.5-Minute Series Davenport Quadrangle

DUDEK

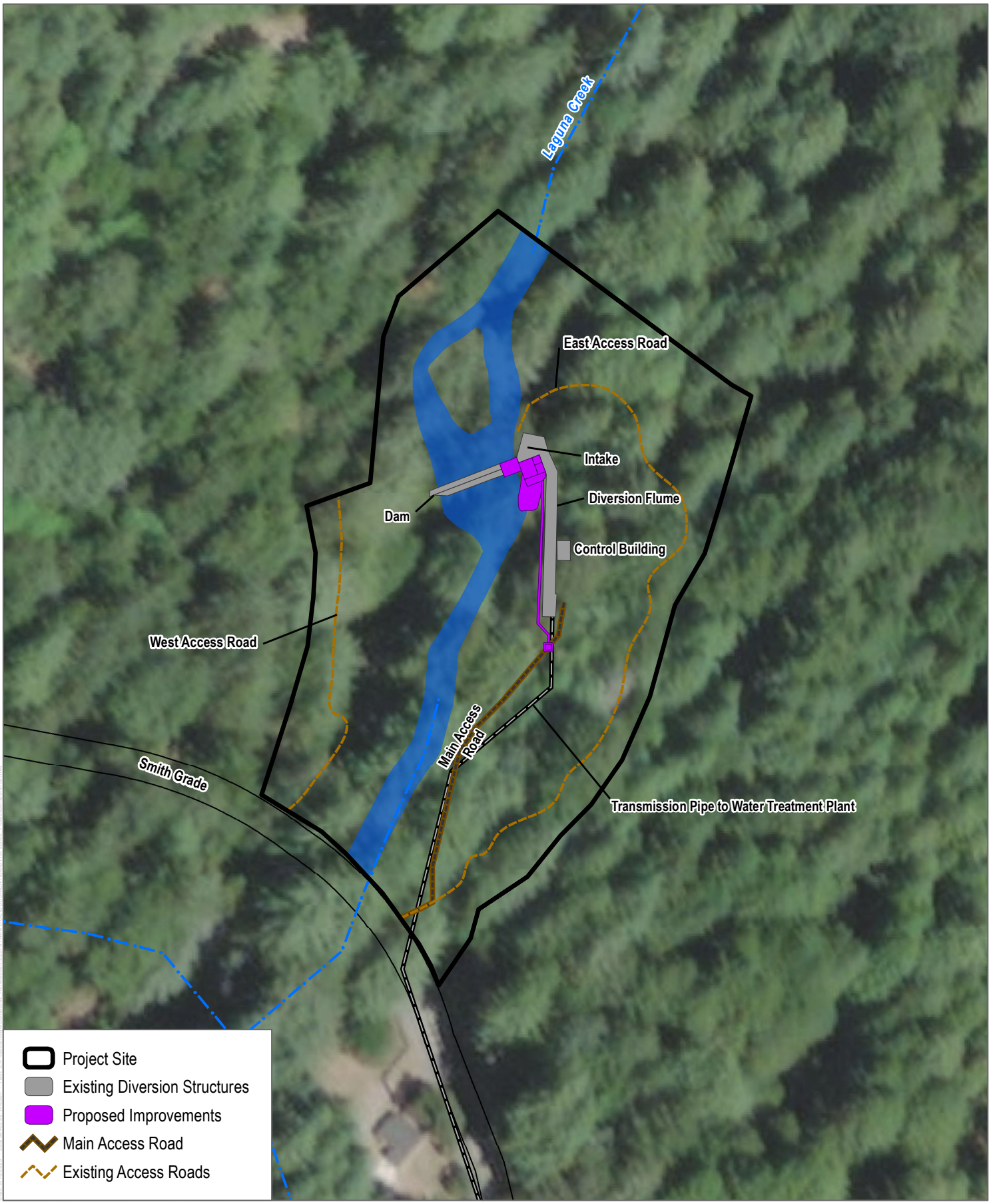
0 1,000 2,000 Feet

FIGURE 1

Project Location

Laguna Creek Diversion Retrofit Project

INTENTIONALLY LEFT BLANK



SOURCE: ESRI 2020, City of Santa Cruz 2019, USGS 2019

DUDEK

0 40 80 Feet

FIGURE 2

Project Components

Laguna Creek Diversion Retrofit Project

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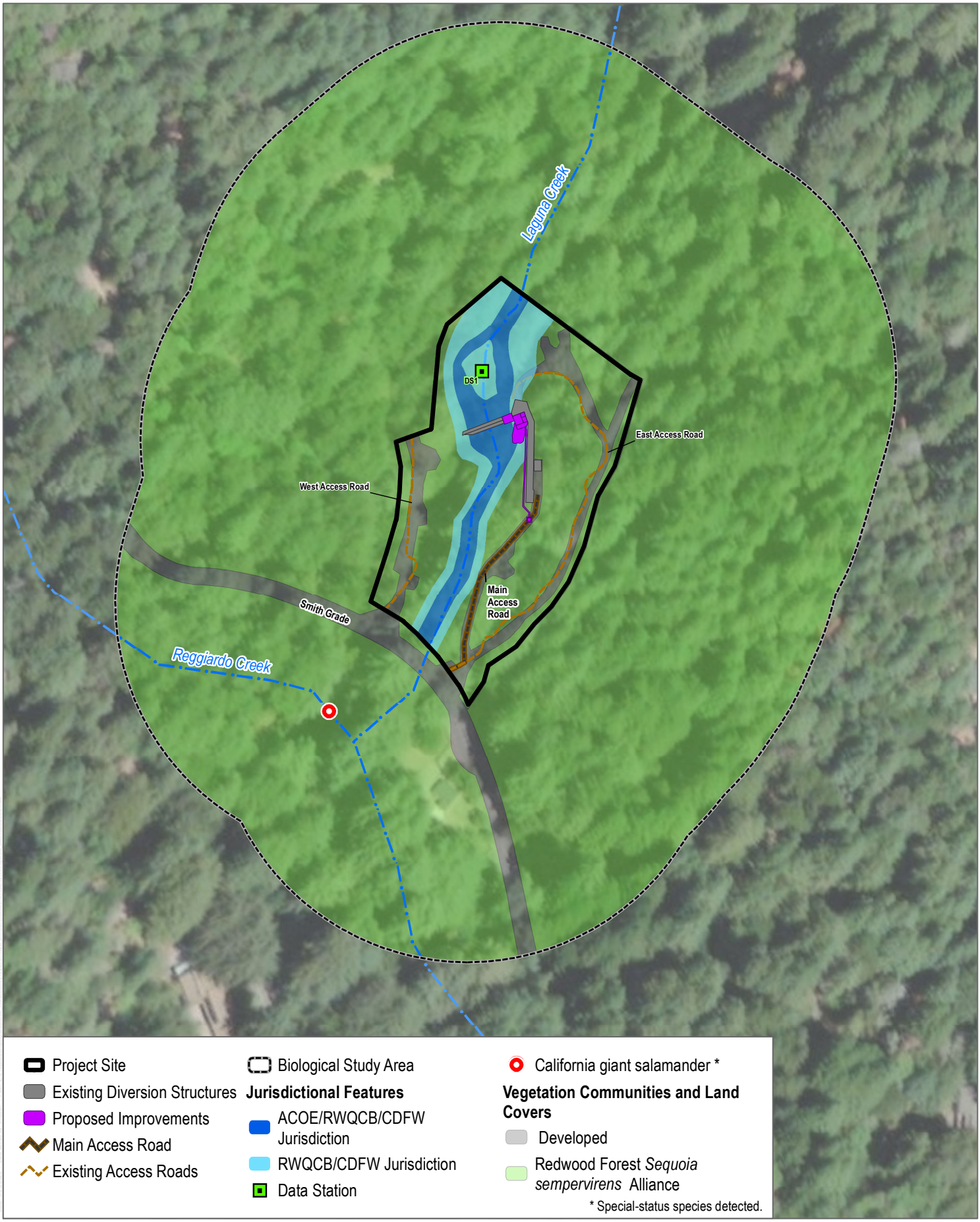

SOURCE: Santa Cruz County 2016, ESRI 2020

DUDEK

0 75 150 Feet

FIGURE 3

Biological Resources

Laguna Creek Diversion Retrofit Project

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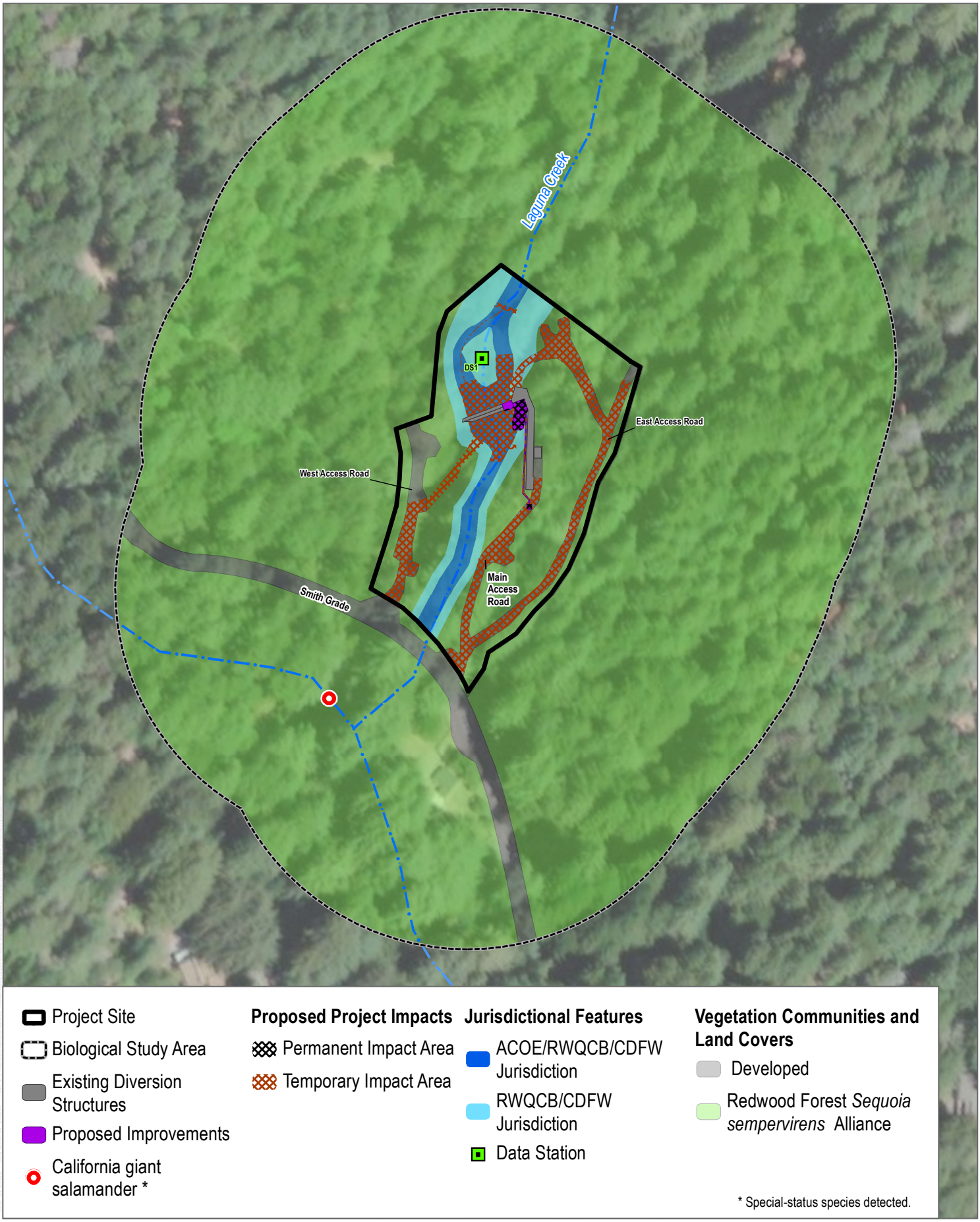

SOURCE: Santa Cruz County 2016, ESRI 2020

DUDEK

0 75 150 Feet

FIGURE 4

Project Impacts

Laguna Creek Diversion Retrofit Project

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Appendix A

Site Photographs

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Photo 1: Laguna Creek upstream of the dam. View looking south (downstream).

Photo 2: Sediment buildup in Laguna Creek immediately upstream of the dam. View looking south (downstream).

Photo 3: Small, in-channel pool upstream of the dam (northwest). View looking southwest (downstream).

Photo 4: In-channel pool below the dam. View looking southwest.

Photo 5: Laguna Creek downstream of the dam. View looking south (downstream).

Photo 6: Existing control building and diversion flume. Foreground would be the approximate location of the riprap apron and shows the few redwood trees to be removed. View looking southeast.

Photo 7: Characteristic upland habitat within project site taken from the eastern access road. Note the existing control building in the background. View looking southwest.

Photo 8: East access road within project site. View looking north.

Photo 9: Main access road turnoff from Smith Grade Road. View facing southwest.

Photo 10: Main access road leading to the existing facility. View facing northeast.

Photo 11: West access road within the project site. View facing north.

Photo 12: Area where Laguna Creek passes under Smith Grade Road (upstream). Facing northeast.

Photo 13: Reggiardo Creek. View looking northwest (upstream).

Photo 14: Reggiardo Creek. View looking southeast (downstream).

Photo 15: Deceased California giant salamander discovered in Reggiardo Creek.

Appendix B

Plant Compendium

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Vascular Species

Eudicots

ANACARDIACEAE—SUMAC OR CASHEW FAMILY

Toxicodendron diversilobum—poison oak

ARALIACEAE—GINSENG FAMILY

* *Hedera helix*—English ivy

BORAGINACEAE—BORAGE FAMILY

* *Myosotis latifolia*—broadleaf forget-me-not

BRASSICACEAE—MUSTARD FAMILY

Cardamine oligosperma—little western bittercress

CAPRIFOLIACEAE—HONEYSUCKLE FAMILY

Lonicera hispidula—pink honeysuckle

ERICACEAE—HEATH FAMILY

Vaccinium ovatum—California huckleberry

FABACEAE—LEGUME FAMILY

Lathyrus vestitus—Pacific pea

* *Vicia benghalensis*—purple vetch

FAGACEAE—OAK FAMILY

Notholithocarpus densiflorus—tanoak

Quercus agrifolia—coast live oak

LAMIACEAE—MINT FAMILY

* *Mentha spicata*—spearmint

Stachys bullata—California hedgenettle

MORACEAE—MULBERRY FAMILY

* *Ficus carica*—edible fig

OXALIDACEAE—OXALIS FAMILY

Oxalis oregana—redwood-sorrel

PLANTAGINACEAE—PLANTAIN FAMILY

Veronica americana—American speedwell

POLYGONACEAE—BUCKWHEAT FAMILY

* *Rumex crispus*—curly dock

ROSACEAE—ROSE FAMILY

Prunus ilicifolia—holly leaf cherry

* *Rubus armeniacus*—Himalayan blackberry

Rubus ursinus—California blackberry

SAPINDACEAE—SOAPBERRY FAMILY

Acer macrophyllum—bigleaf maple

SAXIFRAGACEAE—SAXIFRAGE FAMILY

Tiarella trifoliata—threeleaf foamflower

URTICACEAE—NETTLE FAMILY

Urtica dioica—stinging nettle

VIOLACEAE—VIOLET FAMILY

Viola sempervirens—evergreen violet

Ferns and Fern Allies

DRYOPTERIDACEAE—WOOD FERN FAMILY

Polystichum munitum—western swordfern

EQUISETACEAE—HORSETAIL FAMILY

Equisetum sp.—horsetail

POLYPODIACEAE—POLYPODY FAMILY

Polypodium californicum—California polypody

PTERIDACEAE—BRAKE FAMILY

Adiantum sp.—maidenhair

Gymnosperms and Gnetophytes

CUPRESSACEAE—CYPRESS FAMILY

Sequoia sempervirens—redwood

Monocots

CYPERACEAE—SEDGE FAMILY

Carex obnupta—slough sedge
Cyperus eragrostis—tall flatsedge

JUNCACEAE—RUSH FAMILY

Juncus mexicanus—Mexican rush
Juncus patens—western rush

Non-Vascular Species

Complex-Thallus Liverworts

AYTONIACEAE — NO FAMILY NAME

Asterella californica —no common name

* signifies introduced (non-native) species

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Appendix C

Wildlife Compendium

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Vertebrates

Amphibians

DICAMPTODONTIDAE— GIANT SALAMANDERS

Dicamptodon ensatus —California giant salamander

SALAMANDRIDAE—NEWTS

Taricha torosa—California newt

Birds

CORVIDAE—CROWS & JAYS

Cyanocitta stelleri—Steller's jay

Fish

SALMONIDAE—SALMON & TROUTS

Oncorhynchus mykiss—rainbow trout[1]

[1] City of Santa Cruz, 2020. Unpublished data: results of 2006-2019 annual snorkel surveys. City of Santa Cruz Water Department, Watershed Section.

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Appendix D

Special-Status Plant Species Potentially Occurring within the Biological Study Area

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Scientific Name	Common Name	Status Federal/State/ CRPR	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet amsl)	Potential to Occur
Agrostis blasdalei	Blasdale's bent grass	None/None/1B.2	Coastal bluff scrub, Coastal dunes, Coastal prairie/perennial rhizomatous herb/May–July/0–490	Not expected to occur. Suitable coastal bluff, dune, or prairie habitat is not present within the BSA.
Amsinckia lunaris	bent-flowered fiddleneck	None/None/1B.2	Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland/annual herb/Mar–June/5–1,640	Low potential to occur. Although suitable woodland habitat is present, the closest CNDDB occurrence is located 6.3 miles northwest of the BSA (CDFW 2020).
Arctostaphylos andersonii	Anderson's manzanita	None/None/1B.2	Broadleafed upland forest, Chaparral, North Coast coniferous forest; openings, edges/perennial evergreen shrub/Nov–May/195–2,495	Not expected to occur. No suitable redwood forest habitat with openings or edges is present. This perennial species would have been detected if present during surveys. The closest CNDDB occurrence is located in the Bonny Doon Ecological Reserve 1.2 miles north of the BSA (CDFW 2020).

Scientific Name	Common Name	Status Federal/State/ CRPR	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet amsl)	Potential to Occur
Arctostaphylos glutinosa	Schreiber's manzanita	None/None/1B.2	Closed-cone coniferous forest, Chaparral; diatomaceous shale/perennial evergreen shrub/(Nov)Mar–Apr/555–2,245	Low potential to occur. Suitable coniferous forest habitat is present, and the closest CNDDB occurrence is located 1.6 miles north of the BSA; however, diatomaceous shale soils are not present (CDFW 2020; USDA 2020).

Scientific Name	Common Name	Status Federal/State/ CRPR	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet amsl)	Potential to Occur
Arctostaphylos ohloneana	Ohlone manzanita	None/None/1B.1	Closed-cone coniferous forest, Coastal scrub; siliceous shale/evergreen shrub/Feb–Mar/1,475–1,740	Not expected to occur. The site is outside of the species' known elevation range.
Arctostaphylos pajaroensis	Pajaro manzanita	None/None/1B.1	Chaparral (sandy)/perennial evergreen shrub/Dec–Mar/95–2,495	Not expected to occur. Suitable chaparral habitat is not present in the BSA, and this species is not known to occur within the region* (CDFW 2020).

Scientific Name	Common Name	Status Federal/State/ CRPR	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet amsl)	Potential to Occur
Arctostaphylos regismontana	Kings Mountain manzanita	None/None/1B.2	Broadleafed upland forest, Chaparral, North Coast coniferous forest; granitic or sandstone/perennial evergreen shrub/Dec–Apr/1,000–2,395	Not expected to occur. The site is outside of the species' known elevation range.
Arctostaphylos silvicola	Bonny Doon manzanita	None/None/1B.2	Closed-cone coniferous forest, Chaparral, Lower montane coniferous forest; inland marine sands/perennial evergreen shrub/Jan–Mar/390–1,970	Not expected to occur. No suitable forest habitat with inland marine sandy soils is present. This perennial species would have been detected if present during surveys. The closest CNDDB occurrence recorded in 1989 is located 0.5 miles northeast of the BSA (CDFW 2020).
Arenaria paludicola	marsh sandwort	FE/SE/1B.1	Marshes and swamps (freshwateror brackish); sandy, openings/perennial stoloniferous herb/May–Aug/5–560	Not expected to occur. Suitable marsh and swamp habitat is not present.
Astragalus pycnostachyus var. *pycnostachyus*	coastal marsh milk-vetch	None/None/1B.2	Coastal dunes (mesic), Coastal scrub, Marshes and swamps (coastal salt, streamsides)/perennial herb/(Apr)June–Oct/0–100	Not expected to occur. The site is outside of the species' known elevation range.
Calyptridium parryi var. *hesseae*	Santa Cruz Mountains pussypaws	None/None/1B.1	Chaparral, Cismontane woodland; sandy or gravelly, openings/annual herb/May–Aug/1,000–5,020	Not expected to occur. The site is outside of the species' known elevation range.
Campanula californica	swamp harebell	None/None/1B.2	Bogs and fens, Closed-cone coniferous forest, Coastal prairie, Meadows and seeps, Marshes and swamps (freshwater), North Coast coniferous forest; mesic/perennial rhizomatous herb/June–Oct/0–1,330	Low potential to occur. Although suitable forest habitat is present, bog or marsh vegetation is absent within the BSA. The only CNDDB occurrence within the region* is located 6 miles north of the BSA near Camp Evers (CDFW 2020).

Scientific Name	Common Name	Status Federal/State/ CRPR	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet amsl)	Potential to Occur
Carex comosa	bristly sedge	None/None/2B.1	Coastal prairie, Marshes and swamps (lake margins), Valley and foothill grassland/perennial rhizomatous herb/May–Sep/0–2,050	Not expected to occur. Suitable marsh, swamp, or grassland habitat is not present.
Carex saliniformis	deceiving sedge	None/None/1B.2	Coastal prairie, Coastal scrub, Meadows and seeps, Marshes and swamps (coastal salt); mesic/perennial rhizomatous herb/June(July)/5–755	Not expected to occur. Suitable prairie, meadow, scrub, or marsh habitat is not present.
Chorizanthe pungens var. *hartwegiana*	Ben Lomond spineflower	FE/None/1B.1	Lower montane coniferous forest (maritime ponderosa pine sandhills)/annual herb/Apr–July/295–2,000	Not expected to occur. Suitable maritime ponderosa pine sandhills habitat not present. Closest CNDDB occurrence is located 1.7 miles north of the BSA within Bonny Doon Ecological Reserve (CDFW 2020).
Chorizanthe robusta var. *hartwegii*	Scotts Valley spineflower	FE/None/1B.1	Meadows and seeps (sandy), Valley and foothill grassland (mudstone and Purisima outcrops)/annual herb/Apr–July/750–805	Not expected to occur. Suitable grassland or meadow habitat is not present.
Chorizanthe robusta var. *robusta*	robust spineflower	FE/None/1B.1	Chaparral (maritime), Cismontane woodland (openings), Coastal dunes, Coastal scrub; sandy or gravelly/annual herb/Apr–Sep/5–985	Not expected to occur. Suitable woodland habitat or sandy terraces/bluffs in sandy soils are not present within the BSA. The closest CNDDB occurrence is located 1.8 miles southeast of the BSA (CDFW 2020).
Cirsium andrewsii	Franciscan thistle	None/None/1B.2	Broadleafed upland forest, Coastal bluff scrub, Coastal prairie, Coastal scrub; mesic, sometimes serpentinite/perennial herb/Mar–July/0–490	Not expected to occur. The site is outside of the species' known elevation range.
Collinsia multicolor	San Francisco collinsia	None/None/1B.2	Closed-cone coniferous forest, Coastal scrub; sometimes serpentinite/annual herb/(Feb) Mar–May/95–820	Low potential to occur. Although suitable forest habitat is present, the closest CNDDB occurrence recorded in 1936 is 3.6 miles southwest of the BSA (CDFW 2020).
Dacryophyllum falcifolium	tear drop moss	None/None/1B.3	North Coast coniferous forest; carbonate/moss/N.A./160–900	Moderate potential to occur. Suitable coniferous forest is present, however rocky outcrops area limited within the BSA. The closest CNDDB occurrence is located 3 miles northeast of the BSA (CDFW 2020).

Scientific Name	Common Name	Status Federal/State/ CRPR	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet amsl)	Potential to Occur
Eriogonum nudum var. *decurrens*	Ben Lomond buckwheat	None/None/1B.1	Chaparral, Cismontane woodland, Lower montane coniferous forest (maritime ponderosa pine sandhills); sandy/perennial herb/June–Oct/160–2,625	Not expected to occur. Suitable maritime ponderosa pine sandhills habitat not present. The closest CNDDB occurrence is located 1.5 miles north of the BSA at the south end of Bonny Doon Ecological Reserve (CDFW 2020).
Erysimum ammophilum	sand-loving wallflower	None/None/1B.2	Chaparral (maritime), Coastal dunes, Coastal scrub; sandy, openings/perennial herb/Feb–June/0–195	Not expected to occur. The site is outside of the species' known elevation range.
Erysimum teretifolium	Santa Cruz wallflower	FE/SE/1B.1	Chaparral, Lower montane coniferous forest; inland marine sands/perennial herb/Mar–July/390–2,000	Not expected to occur. No suitable chaparral or yellow pine forest habitat is present, and inland marine sandy upland deposits were not explicitly detected on site. The closest CNDDB occurrence is located 1.5 miles north of the BSA in Bonny Doon Ecological Reserve (CDFW 2020).
Fissidens pauperculus	minute pocket moss	None/None/1B.2	North Coast coniferous forest (damp coastal soil)/moss/N.A./30–3,360	Moderate potential to occur. Suitable coniferous forest and streambank habitat is present. The closest CNDDB occurrence is located 3.1 miles east of the BSA (CDFW 2020).
Fritillaria liliacea	fragrant fritillary	None/None/1B.2	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland; Often serpentinite/perennial bulbiferous herb/Feb–Apr/5–1,345	Low potential to occur. Although woodland habitat is present, the only CNDDB occurrence in the region* is located 14 miles northeast of the BSA (CDFW 2020).
Grimmia torenii	Toren's grimmia	None/None/1B.3	Chaparral, Cismontane woodland, Lower montane coniferous forest; Openings, rocky, boulder and rock walls, carbonate, volcanic/moss/N.A./1,065–3,805	Not expected to occur. The site is outside of the species' known elevation range.
Grimmia vaginulata	vaginulate grimmia	None/None/1B.1	Chaparral (openings); Rocky, boulder and rock walls, carbonate/moss/N.A./2,245–2,245	Not expected to occur. The site is outside of the species' known elevation range.
Hesperevax sparsiflora var. *brevifolia*	short-leaved evax	None/None/1B.2	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie/annual herb/Mar–June/0–705	Not expected to occur. Suitable dune, scrub, or prairie habitat is not present.

Scientific Name	Common Name	Status Federal/State/ CRPR	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet amsl)	Potential to Occur
Hesperocyparis abramsiana var. *abramsiana*	Santa Cruz cypress	FT/SE/1B.2	Closed-cone coniferous forest, Chaparral, Lower montane coniferous forest; sandstone or granitic/perennial evergreen tree/N.A./915–2,625	Not expected to occur. The site is outside of the species' known elevation range.
Hesperocyparis abramsiana var. *butanoensis*	Butano Ridge cypress	FT/SE/1B.2	Closed-cone coniferous forest, Chaparral, Lower montane coniferous forest; Sandstone/perennial evergreen tree/Oct/1,310–1,610	Not expected to occur. The site is outside of the species' known elevation range.
Hoita strobilina	Loma Prieta hoita	None/None/1B.1	Chaparral, Cismontane woodland, Riparian woodland; usually serpentinite, mesic/perennial herb/May–July (Aug–Oct)/95–2,820	Low potential to occur. Although woodland habitat is present, the only CNDDB occurrence in the region* recorded in 1913 is located 17 miles northeast of the BSA (CDFW 2020).
Holocarpha macradenia	Santa Cruz tarplant	FT/SE/1B.1	Coastal prairie, Coastal scrub, Valley and foothill grassland; often clay, sandy/annual herb/June–Oct/30–720	Not expected to occur. Suitable grassland, scrub, or prairie habitat is not present.
Horkelia cuneata var. *sericea*	Kellogg's horkelia	None/None/1B.1	Closed-cone coniferous forest, Chaparral (maritime), Coastal dunes, Coastal scrub; sandy or gravelly, openings/perennial herb/Apr–Sep/30–655	Low potential to occur. Suitable forest habitat is present; however, sandy or gravelly soils were not explicitly detected on site. The closest CNDDB occurrence is 1.6 miles north of the BSA in Bonny Doon Ecological Reserve (CDFW 2020).
Horkelia marinensis	Point Reyes horkelia	None/None/1B.2	Coastal dunes, Coastal prairie, Coastal scrub; sandy/perennial herb/May–Sep/15–2,475	Not expected to occur. Suitable dune, scrub, or prairie habitat is not present, although the closest CNDDB occurrence is only 1.6 miles north of the BSA in Bonny Doon Ecological Reserve (CDFW 2020).
Lessingia micradenia var. *glabrata*	smooth lessingia	None/None/1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland; serpentinite, often roadsides/annual herb/(Apr–June) July–Nov/390–1,380	Low potential to occur. Although woodland habitat is present, this species is not known to occur in the region* (CDFW 2020).
Limnanthes douglasii ssp. *sulphurea*	Point Reyes meadowfoam	None/SE/1B.2	Coastal prairie, Meadows and seeps (mesic), Marshes and swamps (freshwater), Vernal pools/annual herb/Mar–May/0–460	Not expected to occur. The site is outside of the species' known elevation range.

Scientific Name	Common Name	Status Federal/State/ CRPR	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet amsl)	Potential to Occur
Malacothamnus arcuatus	arcuate bush-mallow	None/None/1B.2	Chaparral, Cismontane woodland/perennial evergreen shrub/Apr–Sep/45–1,165	Low potential to occur. Although woodland habitat is present, the only CNDDB occurrence in the region* is located 12 miles northwest of the BSA (CDFW 2020).
Microseris paludosa	marsh microseris	None/None/1B.2	Closed-cone coniferous forest, Cismontane woodland, Coastal scrub, Valley and foothill grassland/perennial herb/Apr–June (July)/15–1,165	Not expected to occur. Suitable coastal scrub or closed-cone pine forest habitat is not present, and the closest CNDDB occurrence is located 2.9 miles east of the BSA (CDFW 2020). Within the region* this species seems to occur along grassland margins which are not present in the BSA.
Monardella sinuata ssp. *nigrescens*	northern curly-leaved monardella	None/None/1B.2	Chaparral (SCR Co.), Coastal dunes, Coastal scrub, Lower montane coniferous forest (SCR Co., ponderosa pine sandhills); Sandy/annual herb/(Apr) May–July (Aug–Sep)/0–985	Not expected to occur. Suitable chaparral, coastal dune, coast scrub, or coniferous forest habitat is not present. Additionally, sandy upland soils were not explicitly detected on site. The closest CNDDB occurrence is located 4.8 miles northwest of the BSA (CDFW 2020).
Monolopia gracilens	woodland woolythreads	None/None/1B.2	Broadleafed upland forest (openings), Chaparral (openings), Cismontane woodland, North Coast coniferous forest (openings), Valley and foothill grassland; Serpentine/annual herb/(Feb) Mar–July/325–3,935	Not expected to occur. Suitable woodland habitat is present, however grassy openings and serpentine soils which this species prefers are not present within the BSA. The closest CNDDB occurrence is located 4.5 miles northeast of the site; however, it was recorded in 1930 (CDFW 2020).
Orthotrichum kellmanii	Kellman's bristle moss	None/None/1B.2	Chaparral, Cismontane woodland; sandstone, carbonate/moss/Jan–Feb/1,125–2,245	Not expected to occur. The site is outside of the species' known elevation range.
Pedicularis dudleyi	Dudley's lousewort	None/SR/1B.2	Chaparral (maritime), Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland/perennial herb/Apr–June/195–2,955	Low potential to occur. Suitable shaded coniferous forest habitat is present; however, the closest CNDDB recorded after 1900 is located 16.5 miles northwest of the BSA (CDFW 2020).

Scientific Name	Common Name	Status Federal/State/ CRPR	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet amsl)	Potential to Occur
Penstemon rattanii var. *kleei*	Santa Cruz Mountains beardtongue	None/None/1B.2	Chaparral, Lower montane coniferous forest, North Coast coniferous forest/perennial herb/May–June/1,310–3,610	Not expected to occur. The site is outside of the species' known elevation range.
Pentachaeta bellidiflora	white-rayed pentachaeta	FE/SE/1B.1	Cismontane woodland, Valley and foothill grassland (often serpentinite)/annual herb/Mar–May/110–2,035	Low potential to occur. Suitable woodland habitat is present, although the only CNDDB occurrence in the region* that isn't considered possibly extirpated is 8.6 miles northwest of the BSA (CDFW 2020).
Pinus radiata	Monterey pine	None/None/1B.1	Closed-cone coniferous forest, Cismontane woodland/perennial evergreen tree/N.A./80–605	Not expected to occur. This species is known to occur on coastal bluffs in the region* and would have been detected during the site assessment. However, coastal bluffs are not present on site. The only CNDDB occurrence in the region* is located along the coast 7.2 miles northwest of the BSA (CDFW 2020).
Piperia candida	white-flowered rein orchid	None/None/1B.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest; sometimes serpentinite/perennial herb/(Mar)May–Sep/95–4,300	Moderate potential to occur. Suitable coniferous forest habitat including forest duff and mossy banks of which this species prefers is present on site, and the closest CNDDB occurrence is located 6.6 miles north of the BSA (CDFW 2020).
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcornflower	None/None/1B.2	Chaparral, Coastal prairie, Coastal scrub; mesic/annual herb/Mar–June/5–525	Not expected to occur. Suitable chaparral, scrub, or prairie habitat is not present.
Plagiobothrys diffusus	San Francisco popcornflower	None/SE/1B.1	Coastal prairie, Valley and foothill grassland/annual herb/Mar–June/195–1,180	Not expected to occur. Suitable grassland or prairie habitat is not present.
Polygonum hickmanii	Scotts Valley polygonum	FE/SE/1B.1	Valley and foothill grassland (mudstone and sandstone)/annual herb/May–Aug/685–820	Not expected to occur. Suitable grassland habitat is not present.
Rosa pinetorum	pine rose	None/None/1B.2	Closed-cone coniferous forest, Cismontane woodland/perennial shrub/May, July/5–,3100	Low potential to occur. Although coniferous forest habitat is present, the only CNDDB occurrence in the region* is located 9.5 miles northwest of the BSA (CDFW 2020).

Scientific Name	Common Name	Status Federal/State/ CRPR	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet amsl)	Potential to Occur
Senecio aphanactis	chaparral ragwort	None/None/2B.2	Chaparral, Cismontane woodland, Coastal scrub; sometimes alkaline/annual herb/Jan–Apr (May)/45–2,625	Not expected to occur. Suitable foothill woodland and coastal scrub habitat is not present on site. The closest CNDDB occurrence, which is the only recorded in the region*, is located 1.6 miles north of the BSA (CDFW 2020).
Silene scouleri ssp. *scouleri*	Scouler's catchfly	None/None/2B.2	Coastal bluff scrub, Coastal prairie, Valley and foothill grassland/perennial herb/(Mar–May) June–Aug (Sep)/0–1,970	Not expected to occur. Suitable grassland, scrub, or prairie habitat is not present.
Silene verecunda ssp. *verecunda*	San Francisco campion	None/None/1B.2	Coastal bluff scrub, Chaparral, Coastal prairie, Coastal scrub, Valley and foothill grassland; sandy/perennial herb/(Feb) Mar–June (Aug)/95–2,115	Not expected to occur. Suitable chaparral, scrub, prairie, or grassland habitat is not present.
Stebbinsoseris decipiens	Santa Cruz microseris	None/None/1B.2	Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, Coastal prairie, Coastal scrub, Valley and foothill grassland; open areas, sometimes serpentinite/annual herb/Apr–May/30–1,640	Low potential to occur. Suitable forest habitat is present; however, open areas with loose soils were not explicitly detected on site. The closest CNDDB occurrence is 1.4 miles southeast of the BSA (CDFW 2020).
Stuckenia filiformis ssp. *alpina*	slender-leaved pondweed	None/None/2B.2	Marshes and swamps (assorted shallow freshwater)/perennial rhizomatous herb (aquatic)/May–July/980–7,055	Not expected to occur. The site is outside of the species' known elevation range.
Trifolium buckwestiorum	Santa Cruz clover	None/None/1B.1	Broadleafed upland forest, Cismontane woodland, Coastal prairie; gravelly, margins/annual herb/Apr–Oct/340–2,000	Low potential to occur. Suitable woodland habitat is present; however, mesic grasslands or gravelly margins which this species prefers are not present within the BSA. The closest CNDDB occurrence is 2.9 miles east of the BSA (CDFW 2020).

Scientific Name	Common Name	Status Federal/State/ CRPR	Primary Habitat Associations/Life Form/ Blooming Period/Elevation Range (feet amsl)	Potential to Occur
Trifolium polyodon	Pacific Grove clover	None/SR/1B.1	Closed-cone coniferous forest, Coastal prairie, Meadows and seeps, Valley and foothill grassland; mesic, sometimes granitic/annual herb/Apr–June (July)/15–1,395	Not expected to occur. Suitable coastal prairie, closed-cone pine forest, and meadow habitat is not present. Additionally, grassy openings or seeps which this species prefers are not present within the BSA. The closest CNDDB occurrence is 2.9 miles east of the BSA in Marshall Field (CDFW 2020).

Notes: BSA = Biological Study Area; CNDDB = California Natural Diversity Database.

* Region refers to the USGS 7.5-minute quadrangle in which the BSA is located (Davenport) and the six surrounding quadrangles (Santa Cruz, Felton, Año Nuevo, Castle Rock Ridge, Big Basin, and Franklin Point).

Status Legend

Federal

FE: Federally listed as endangered
FT: Federally listed as threatened
FC: Federal candidate for listing as threatened or endangered

State

SE: State listed as endangered
ST: State listed as threatened
SR: State listed as rare

CRPR (California Rare Plant Rank)

CRPR 1A: Plants presumed extinct in California and either rare or extinct elsewhere
CRPR List 1B: Plants rare, threatened, or endangered in California and elsewhere
CRPR List 2A: Plants rare, threatened, or endangered in California but common elsewhere
CRPR List 2B: Plants rare, threatened, or endangered in California but more common elsewhere

Threat Rank

.1 Seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)
.2 Fairly endangered in California (20% to 80% of occurrences threatened/moderate degree and immediacy of threat)
.3 Not very endangered in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known).

References

CDFW (California Department of Fish and Wildlife). 2020. RareFind 5, Version 5.2.14. California Natural Diversity Database. Sacramento, California: CDFW, Biogeographic Data Branch. Accessed February 2020. https://map.dfg.ca.gov/rarefind/view/RareFind.aspx.

USDA (U.S. Department of Agriculture). 2020. Web Soil Survey: Santa Cruz County Area. USDA, Natural Resources Conservation Service, Web Soil Survey Staff. Accessed February 2020. http://websoilsurvey.nrcs.usda.gov/.

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Appendix E

Special-Status Wildlife Species Potentially Occurring within the Biological Study Area

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Scientific Name	Common Name	Status (Federal/State)	Primary Habitat Associations	Potential to Occur
Amphibians				
Aneides niger	Santa Cruz black salamander	None/SSC	Restricted to mesic forests in the fog belt of the outer Coast Range of San Mateo, Santa Cruz, and Santa Clara Counties. Mixed deciduous and coniferous woodlands and coastal grasslands. Occurs in moist streamside microhabitats and is found under rocks, talus, and damp woody debris.	Moderate potential to occur. Suitable moist streamside habitat is present and the closest CNDDB occurrence is located 1.4 miles east of the BSA (CDFW 2020).
Dicamptodon ensatus	California giant salamander	None/SSC	Known from wet coastal forests and chaparral near streams and seeps from Mendocino County south to Monterey County and east to Napa County. Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes.	High potential to occur. Suitable habitat is present within the project site. A dead California giant salamander was observed within Reggiardo Creek west of the project site and the confluence with Laguna Creek.

Scientific Name	Common Name	Status (Federal/State)	Primary Habitat Associations	Potential to Occur
Rana boylii	foothill yellow-legged frog	None/SSC, PST	Rocky streams and rivers with open banks in forest, chaparral, and woodland.	Low potential to occur. Although suitable rocky stream habitat within forest is present, no occurrences post 1960 have been recorded within a 5-mile radius of the BSA (CDFW 2020). The closest CNDDB occurrence post 1960 is located 6 miles northeast of the BSA recorded in 2018 at the base of Loch Lomond Dam (CDFW 2020).
Rana draytonii	California red-legged frog	FT/SSC	Lowland streams, wetlands, riparian woodlands, livestock ponds; dense, shrubby or emergent vegetation associated with deep, still or slow-moving water; uses adjacent uplands.	Low potential to occur. In-stream pools occur within Laguna Creek above and below the dam; however, these pools lack emergent vegetation and have steep banks, and would likely only be used for low-flow foraging habitat by this species. The surrounding forest habitat lacks small mammal burrows and provides little upland refugia. The closest CNDDB occurrence is located 1.2 miles west of the BSA, within settlement ponds in the then active quarry property (CDFW 2020).

Scientific Name	Common Name	Status (Federal/State)	Primary Habitat Associations	Potential to Occur
Reptiles				
Actinemys marmorata	northwestern pond turtle	None/SSC	Slow-moving permanent or intermittent streams, ponds, small lakes, and reservoirs with emergent basking sites; adjacent uplands used for nesting and during winter.	Low potential to occur. Although suitable perennial stream habitat is present within the BSA, drainages are fairly incised with steep banks that limit accessibility to adjacent uplands and accelerate heavy flows. The BSA is also heavily shaded limiting basking habitat. The closest CNDDB occurrence is located 4.3 miles northeast of the BSA near a long pool in Felton (CDFW 2020).
Thamnophis sirtalis tetrataenia	San Francisco garter snake	FE/FP, SE	Wide range of habitats including grasslands or wetlands adjacent to ponds, marshes, and sloughs	Low potential to occur. Marginal slow-moving aquatic habitat is present within the BSA. However, the project site lacks emergent vegetation for cover and likely supports unsuitable velocities during high flows due to steep surrounding banks. The closest CNDDB occurrences are located within the Ano Nuevo or Franklin Point USGS quadrangles approximately 10.5 miles northwest of the BSA (CDFW 2020).
Birds				
Brachyramphus marmoratus (nesting)	marbled murrelet	FT/SE	Nests in old-growth coastal forests, forages in subtidal and pelagic habitats.	Low potential to occur (nest). Suitable coastal redwood forest habitat is present in the BSA and is located within 6 miles inland. However, small, isolated populations in the Santa Cruz Mountains are limited to the Pescadero Creek, Butano Creek, Little Butano Creek, Gazos Creek, Cascade Creek, Waddell Creek, and Scott Creek watersheds north of the BSA. The closest CNDDB occurrence is located 3.7 miles north of the BSA in Henry Cowell Redwoods State Park (CDFW 2020).

Scientific Name	Common Name	Status (Federal/State)	Primary Habitat Associations	Potential to Occur
Charadrius alexandrinus nivosus (nesting)	western snowy plover	FT, BCC/SSC	On coasts, nests on sandy marine and estuarine shores; in the interior, nests on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds.	Not expected to occur. Suitable nesting habitat is not present within the BSA, and this species is only known to nest along the coast within the region* (CDFW 2020).
Coturnicops noveboracensis	yellow rail	BCC/SSC	Nesting requires wet marsh/sedge meadows or coastal marshes with wet soil and shallow, standing water.	Not expected to occur. Suitable marshland habitat is not present within the BSA, and the only CNDDB occurrence within the region* dates back to 1905 (CDFW 2020).
Cypseloides niger (nesting)	black swift	BCC/SSC	Nests in moist crevices, caves, and cliffs behind or adjacent to waterfalls in deep canyons; forages over a wide range of habitats.	Not expected to occur. Suitable cliff or deep canyon nesting habitat is not present within the BSA, although this species may forage on site. This species is known to nest along the coastal cliffs and caves in the region* approximately 3.4 miles south of the BSA (CDFW 2020).
Elanus leucurus (nesting)	white-tailed kite	None/FP	Nests in woodland, riparian, and individual trees near open lands; forages opportunistically in grassland, meadows, scrubs, agriculture, emergent wetland, savanna, and disturbed lands.	Low potential to occur (nest). Suitable dense woodland for nesting is present within the BSA; however, nearby open habitat for foraging is not present. The closest CNDDB occurrence is 4.1 miles southeast of the BSA (CDFW 2020).
Falco peregrinus anatum (nesting)	American peregrine falcon	FDL, BCC/FP, SDL	Nests on cliffs, buildings, and bridges; forages in wetlands, riparian, meadows, croplands, especially where waterfowl are present.	Not expected to occur. Suitable nesting habitat is not present within the BSA, and this species is only known to nest along the coast within the region* (CDFW 2020).
Geothlypis trichas sinuosa	saltmarsh common yellowthroat	BCC/SSC	Nests and forages in emergent wetlands including woody swamp, brackish marsh, and freshwater marsh.	Not expected to occur. Suitable emergent wetland or marsh habitat is not present within the BSA, and the only CNDDB occurrence in the region* is 5.5 miles west of the BSA within brackish marsh habitat (CDFW 2020).

Scientific Name	Common Name	Status (Federal/State)	Primary Habitat Associations	Potential to Occur
Laterallus jamaicensis coturniculus	California black rail	BCC/FP, ST	Tidal marshes, shallow freshwater margins, wet meadows, and flooded grassy vegetation; suitable habitats are often supplied by canal leakage in Sierra Nevada foothill populations.	Not expected to occur. Suitable marsh or meadow habitat is not present within the BSA, and the closest CNDDB occurrence dates back to 1941, approximately 6.6 miles southeast of the site (CDFW 2020).
Riparia riparia (nesting)	bank swallow	None/ST	Nests in riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with sandy soils; open country and water during migration.	Not expected to occur. Suitable riparian, coastal, or lacustrine nesting habitat with bluffs or cliffs is not present within the BSA.
Fishes				
Eucyclogobius newberryi	tidewater goby	FE/SSC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County, to the mouth of the Smith River.	Not expected to occur. No suitable brackish habitat present.
Oncorhynchus kisutch pop. 4	coho salmon - central California coast ESU	FE/SE	Streams and small freshwater tributaries during first half of life cycle and estuarine and marine waters of the Pacific Ocean during the second half of life cycle. Spawns in small streams with stable gravel substrates.	Not expected to occur. There is a barrier to anadromy about 1.4 miles upstream of the Ocean in Laguna Creek in the form of a large bedrock waterfall which precludes anadromous fishes from traveling further upstream (Hagar et al. 2017). However, coho salmon were observed in the lower Laguna Creek lagoon in 2015 (Berry et al. 2019; CDFW 2020).

Scientific Name	Common Name	Status (Federal/State)	Primary Habitat Associations	Potential to Occur
Oncorhynchus mykiss irideus pop. 8	steelhead - central California coast DPS	FT/None	Coastal basins from Redwood Creek south to the Gualala River, inclusive; does not include summer-run steelhead.	Not expected to occur. There is a barrier to anadromy about 1.4 miles upstream of the Ocean in Laguna Creek in the form of a large bedrock waterfall which precludes anadromous fishes from traveling further upstream (Hagar et al. 2017). Steelhead are known to occur in the lower creek reaches and lagoon (Berry et al. 2019; CDFW 2020). Resident populations of rainbow trout are known to occur in the upper reaches of Laguna Creek where the BSA is located (Hagar et al. 2017).
Spirinchus thaleichthys	longfin smelt	FC/ST	Aquatic, estuary.	Not expected to occur. No suitable estuarine habitat present.
Mammals				
Antrozous pallidus	pallid bat	None/SSC	Grasslands, shrublands, woodlands, forests; most common in open, dry habitats with rocky outcrops for roosting, but also roosts in man-made structures and trees.	Low potential to occur. Suitable forest habitat is present, although roosting potential is largely absent on site with the exception of the diversion facility control building present within the BSA. The only CNDDB occurrence within the region* is 7.9 miles north of the BSA (CDFW 2020).
Corynorhinus townsendii	Townsend's big-eared bat	None/SSC	Mesic habitats characterized by coniferous and deciduous forests and riparian habitat, but also xeric areas; roosts in limestone caves and lava tubes, man-made structures, and tunnels.	Low potential to occur. Suitable mesic forest habitat is present, and although roosting potential is largely absent on site with the exception of the diversion facility control building present within the BSA. The closest CNDDB occurrence is 1.9 miles west of the BSA, while the closest maternity roost CNDDB occurrence is located 5.2 miles west of the BSA.

Scientific Name	Common Name	Status (Federal/State)	Primary Habitat Associations	Potential to Occur
Neotoma fuscipes annectens	San Francisco dusky-footed woodrat	None/SSC	Forest habitats with a moderate canopy and moderate to dense understory.	Moderate potential to occur. Suitable redwood forest habitat is present within the BSA. The closest CNDDB occurrence is located 1.5 miles west of the BSA in redwood forest/grassland margins along the then active quarry (CDFW 2020).
Taxidea taxus	American badger	None/SSC	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils.	Not expected to occur. Suitable dry, open habitats are not present within the heavily forested BSA, and the closest CNDDB occurrence, which was recorded in 1983, is 2.8 miles southeast of the BSA (CDFW 2020).
Invertebrates				
Bombus occidentalis	western bumble bee	None/PSE	Once common and widespread, species has declined precipitously from central California to southern British Columbia, perhaps from disease.	Low potential to occur. Suitable habitat dependent on abundant flowering plants is limited within the BSA; however the most recent CNDDB occurrence in the region* dates back to 1983. This 1983 occurrence is also the closest, located 4.9 miles southeast of the BSA (CDFW 2020).
Cicindela ohlone	Ohlone tiger beetle	FE/None	Remnant native grasslands with California oatgrass (*Danthonia californica*) and purple needlegrass (*Stipa pulchra*) in Santa Cruz County	Not expected to occur. No suitable grassland vegetation present.
Euphilotes enoptes smithi	Smith's blue butterfly	FE/None	Sand dunes, scrub, chaparral, grassland, and their ecotones.	Not expected to occur. No suitable dune, scrub, chaparral, or grassland vegetation present.
Polyphylla barbata	Mount Hermon (=barbate) June beetle	FE/None	Known only from sand hills in vicinity of Mount Hermon, Santa Cruz County	Not expected to occur. Suitable sand hill habitat is not present within the BSA, and the nearest CNDDB occurrence is located 4 miles east of the site (CDFW 2020).
Speyeria zerene myrtleae	Myrtle's silverspot butterfly	FE/None	Coastal dunes, coastal scrub, and coastal prairie	Not expected to occur. No suitable dune, scrub, or prairie vegetation present.

Scientific Name	Common Name	Status (Federal/State)	Primary Habitat Associations	Potential to Occur
Trimerotropis infantilis	Zayante band-winged grasshopper	FE/None	Isolated sandstone deposits in the Santa Cruz Mountains (the Zayante Sand Hills ecosystem)	Not expected to occur. Suitable sandstone deposit habitat is not present within the BSA, and the nearest CNDDB occurrence is located 4.3 miles east of the site (CDFW 2020).

Notes: BSA = Biological Study Area; CNDDB = California Natural Diversity Database; USGS = U.S. Geological Survey; ESU = Evolutionarily Significant Unit, DPS = Distinct Population Segment.

* Region refers to the USGS 7.5-minute quadrangle in which the BSA is located (Davenport) and the six surrounding quadrangles (Santa Cruz, Felton, Ano Nuevo, Castle Rock Ridge, Big Basin, and Franklin Point).

Status Legend

Federal

BCC: Bird of Conservation Concern
FC: Candidate for federal listing as threatened or endangered
FDL: Federally delisted; monitored for 5 years
FE: Federally listed endangered
FT: Federally listed as threatened

State

PSE: Proposed state listing as endangered
SDL: State delisted
SSC: Species of Special Concern
FP: California Department of Fish and Wildlife Protected and Fully Protected Species
SE: State listed as endangered
ST: State listed as threatened

References

Berry, C., Bean, E., Bassett, R., Martinez-McKinney, J., Retford, N., Chirco-MacDonald, D., and Hagar, J. 2019. North Coast Anadromous Creeks Snorkel Fish Counts and Habitat Survey Data Summary 2018. Prepared for the City of Santa Cruz Water Department. Santa Cruz, CA.

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