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BIOLOGICAL RESOURCES ASSESSMENT FOR THE NEWELL CREEK DAM INLET/OUTLET REPLACEMENT PROJECT

SANTA CRUZ COUNTY, CALIFORNIA

PREPARED FOR:

CITY OF SANTA CRUZ WATER DEPARTMENT

PREPARED BY:

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INTRODUCTION

This Biological Resources Assessment describes the results of a reconnaissance-level biological survey and associated analysis conducted for the proposed Newell Creek Dam Inlet/Outlet Replacement Project (project) in Santa Cruz County, California. The focus of the survey was to identify and characterize existing biological resources within and immediately adjacent to the project site ("study area"), evaluate the site's potential to support special-status plant or wildlife species, determine if any sensitive natural communities or features are present, and identify and summarize potential adverse impacts on biological resources as a result of the proposed project. Measures that can potentially avoid/minimize/mitigate adverse impacts, as well as a description of the methods and results of the field survey are provided further below.

This assessment is intended to provide baseline information regarding biological resources that are present within the study area that can be incorporated into the Environmental Impact Report (EIR) being prepared as part of the project's environmental review pursuant to the California Environmental Quality Act. As noted above, this assessment also includes a discussion of potential impacts on biological resources based on information contained in the Newell Creek Dam Inlet/Outlet Replacement Project, 50% Design Report, Final Draft Memorandum, prepared by AECOM (AECOM 2018), as well as recommended measures to avoid, minimize, and/or mitigate such impacts. A more detailed evaluation of potential biological resource impacts of the proposed project will be conducted for the environmental review process.

1 SITE LOCATION AND PROJECT DESCRIPTION

Newell Creek Dam (NCD), which impounds Loch Lomond Reservoir (Reservoir), is located in unincorporated Santa Cruz County, approximately ten miles north of the City of Santa Cruz (City) and two miles east of the unincorporated community of Ben Lomond (see Figure 1). NCD and the southern half of the Reservoir are located on an approximate 520-acre site owned by the City of Santa Cruz.

NCD is approximately 195 feet in height and 750 feet in length. Loch Lomond Reservoir, which is within the Loch Lomond Recreation Area, has a water storage capacity of approximately 8,646 acre-feet. Newell Creek feeds the Reservoir from the north, and continues south from the dam where it eventually joins the San Lorenzo River which flows to the Pacific Ocean. The dam and Reservoir are surrounded predominately by mixed evergreen forest, including broadleaf and conifer species, and coast redwood forest. Loch Lomond Reservoir sits at an elevation of ~580 feet AMSL. Lands adjacent to the study area largely consist of undeveloped watershed lands managed primarily for the purposes of water supply and recreational uses.

The study area (Figure 2) is located in Township 9 South, Range 2 West, Section 34, and Township 10 South, Range 2 West, Section 3 in the Felton 7.5-minute U.S. Geological Survey (USGS) quadrangle. The center of the study area (the dam) corresponds to 37°06'09" north latitude and 122°04'26" west longitude. The Project area includes the following:

- The Newell Creek Dam
- The southern portion of the Loch Lomond Reservoir where the existing and proposed intakes are located
- The spillway plunge pool and plunge pool crossing
- The existing outlet structure and seepage channel at the toe of the of the dam
- The control house on the crest of the dam
- Newell Creek Road and access roads to the toe and crest of the dam,
- A portion of the Newell Creek Pipeline (NCP)
- A portion of an emergency access road (Haul Road) along the right bank of the Reservoir
- The LLRA boat launch
- Areas surrounding NCD and the Reservoir that would be used for construction staging and/or storage of excavated spoils

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Completed in 1961, Newell Creek Dam is owned and operated by the City. Loch Lomond Reservoir is the primary storage facility for the City's water supply system, which is operated by the City of Santa Cruz Water Department (SCWD). The existing NCD inlet/outlet works convey raw water from storage in the Reservoir to the City's Graham Hill Water Treatment Plant (GHWTP), deliver surface water diversions from San Lorenzo River to the Reservoir, provide beneficial releases to downstream Newell Creek, and implement operational and emergency flow releases from the Reservoir.

The proposed Project would consist of replacement of the existing aging inlet/outlet works in new locations at the Reservoir and other associated improvements. Figure 3 illustrates the location of the primary new facilities in relation to existing facilities. The proposed Project would be comprised of the following primary components:

- Three new inlets located within the Reservoir that function to control and convey flows in and out of the Reservoir;
- An outlet structure with valves and controls at the toe of the dam to convey flows in and out of the inlet/outlet works; the structure would provide for energy dissipation for water releases to the NCP or beneficial releases;
- A new dam seepage collection and monitoring system;
- A 14-foot maximum diameter tunnel containing 48-inch and 10-inch inlet/outlet pipelines through the right (west) dam abutment and under the dam;
- Replacement of an approximately 2,000-linear-foot section of the NCP between the outlet structure and the first isolation valve;
- A new control house on the dam crest to house controls for the inlets;
- Improvements along the dam's access roads to improve access for construction, including a new culvert crossing at the spillway plunge pool; and
- Decommission of the existing inlet/outlet works once the replacement inlet/outlet system is operational.

Major construction elements include: grading to create an approximate 0.5-acre "construction platform" at the toe of the dam, excavation of a tunnel under the dam to house the inlet/outlet conduit, and subsurface dredging and installation of the new intakes in the Reservoir. A temporary boat launch facility would be installed near the intake construction area for equipment and

materials during construction within the Reservoir. Grading and excavation of the construction platform and 14-foot tunnel would result in approximately 22,600 cy of spoils that would be permanently placed on site (at identified staging areas) or hauled off site to a suitable user or disposal site. Dredging within the Reservoir as currently proposed could result in 23,000 to 34,000 cubic yards (cy) of dredged material that would remain in the Reservoir. Other construction elements include excavation for installation of the outlet control system and electrical supply, installation of a new culverted bridge crossing at the location of the existing spillway plunge pool crossing, other improvements for access such as gate replacements and grading and/or graveling of existing access roads, and replacement of a segment of the NCP using conventional (open cut) trenching with small excavators and loaders.

Construction would utilize a range of heavy equipment. A total of 8 preliminary sites adjacent to NCD and the Reservoir have been identified as potential construction staging areas. These areas may be cleared, graded, or otherwise improved to be used for storage of construction equipment and materials, and some, but not all sites would be used for temporary storage and/or permanent placement of excavated materials (spoils).

2 SITE EVALUATION METHODS

2.1 Database and Literature Review

Special-status plant and wildlife species present or potentially present in the study area were identified through a desktop literature search using the following sources: U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation (IPaC) Trust Resource Report; California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB); and the California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Vascular Plants. Additionally, the Natural Resources Conservation Service (NRCS), Web Soil Survey (WSS) was queried to determine soil types that exist within the boundary of the study area (USDA 2018). The CNDDB and CNPS database searches included the 7.5' USGS Felton quadrangle and surrounding USGS quadrangles, including the *Big Basin*, *Castle Rock Ridge*, *Los Gatos*, *Davenport*, *Laurel*, *Santa Cruz*, *Santa Cruz OE W*, and *Soquel*. The CNDDB and CNPS queries did not return results for the *Santa Cruz OE W* quadrangle as the majority of this map covers the Pacific Ocean and is not included in either database. The IPaC search included the study area and a five-mile buffer surrounding the study area. Following a review of these resources, Dudek also reviewed relevant life history information on those species documented as occurring in the region, including habitat type, soils, and elevation preferences.

For the purposes of this report, special-status species are defined as those that meet one or more of the following criteria:

- Plants or animals listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (ESA).
- Plants or animals that are candidates for possible future listing as threatened or endangered under the ESA.
- Plants or animals listed or proposed for listing as threatened or endangered under the California Endangered Species Act (CESA).
- Plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code Section 1900 et seq.).
- Plants assigned to one of the following California Rare Plant Ranks (CRPR) by the California Native Plant Society (CNPS) and collaborators.
    - 1A – Presumed extirpated in California and either rare or extinct elsewhere.
    - 1B – Rare, threatened, or endangered in California and elsewhere.
    - 2A – Presumed extirpated in California, but more common elsewhere.
    - 2B – Rare, threatened, or endangered in California, but more common elsewhere.
- Animal species, subspecies, or distinct populations designated as Species of Special Concern by CDFW.

In addition to the database searches described above, Dudek reviewed previous biological resources surveys and studies prepared for Loch Lomond Reservoir, Newell Creek, and for the larger Newell Creek watershed. The documents reviewed include the following:

- *Newell Creek Dam Hydroelectric Project Biological Report*, prepared by Biotic Resources Group (2013);
- *Newell Creek Limit of Anadromy Report*, prepared by Hagar Environmental Science (HES), et al. (2017);
- *Watershed Lands Management Plan Final Implementation Report (Draft)*, prepared by City of Santa Cruz (2013)
- *Watershed Resources Management Plan, Existing Conditions Report*, prepared by Swanson Hydrology and Geomorphology, et al. (2001);
- *Western Pond Turtles at Newell Creek Reservoir*, Santa Cruz County, California, prepared by Alterra Environmental, Inc. (2009).

Relevant information regarding biological resources and characteristics, regulatory status, and study results from these sources are incorporated into this Biological Resources Assessment.

2.2 Field Reconnaissance

A reconnaissance-level biological survey was performed by Dudek biologists Lisa Achter and Laura Burris on April 11-12, 2018. For the purposes of this report, the study area encompasses the Project site depicted on Figure 2 and includes two distinct areas in which project activities are proposed. The survey consisted of walking throughout the study area to map and characterize vegetation communities, collect information on the quality of, and potential for, existing habitats to support the special-status species identified during the preliminary database and literature review discussed above, and to identify any other sensitive biological resources present or potentially present within the study area. An aerial photograph (Google Earth 2018) and georeferenced overlay of the Project boundary was used to map existing vegetation communities and record biological resources while in the field. Incidental observations of wildlife and wildlife sign and dominant plant species were also recorded. Because the focus of the survey was to identify and characterize vegetation communities and the potential of these communities to provide habitat for special-status plant and wildlife species, protocol-level surveys for special-status species were not conducted as part of this Biological Resources Assessment. However, any incidental observations of such species were documented.

A separate nesting raptor survey was conducted within and immediately adjacent to the study area on May 10, 2018. The focus of this survey was to: (1) search for active and/or inactive raptor nests; and (2) determine the suitability of the study area to support nesting for raptors known or expected to occur in the region. The survey was conducted by Dudek Senior Biologist David Compton, who has extensive experience with raptors and other avian species.

A formal habitat assessment for the federally-threatened California red-legged frog (*Rana draytonii*; CRF) was also performed by Dudek Senior Aquatic Ecologist Craig Seltenrich on June 21, 2018 (Dudek, October 2018). The focus of the assessment was to determine the potential of habitat within the study area, and within one mile of the study area (primarily via review of aerial topography and available documentation), to support this state-listed species particularly in terms of breeding opportunities but also including foraging and refuge/aestivation habitat suitability. Aquatic habitat areas evaluated within the study area included visual surveys along and around the spillway plunge pool, Newell Creek downstream of the spillway pool, a perennial bypass channel to the spillway pool (and Newell Creek), three ephemeral drainages, two seasonal wetlands, and two seeps. The Reservoir was not included as potential CRF habitat due to the presence of non-native fish species, especially largemouth bass (*Micropterus salmoides*), green sunfish (*Lepomis cyanellus*), and bluegill (*Lepomis macrochirus*), which are known to predate on amphibian eggs,

larvae, and adults. The CRF habitat assessment was based on habitat requirements and survey protocols as described in the *Revised Guidance on Site Assessments and Field Surveys for the California Red-Legged Frog* (USFWS 2005).

Concurrent with the habitat assessment for CRF described above, an assessment of aquatic habitat conditions in Newell Creek, extending approximately 1,000 linear feet below NCD, was also performed to gather data and information relative to the potential for this creek reach to support steelhead (*Oncorhynchus mykiss irideus*; Central California Coast DPS) and coho salmon *(Oncorhynchus kisutch*; Central California Coast ESU).

In addition to the field survey efforts described above, Dudek biologist Laura Burris performed a formal delineation of waters of the United States, including wetlands, to identify and map the extent of aquatic features in the study area that are potentially subject to regulation under Section 404 of the federal Clean Water Act. Following the initial field survey efforts, Dudek biologist Andy Hatch conducted a supplemental field visit on September 6, 2018 to review several areas in the study area that were not included in the initial delineation effort. The jurisdictional delineation was conducted based on methodology described in the 1987 *Corps of Engineers Wetlands Delineation Manual* (ACOE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (ACOE 2010). Non-wetland waters were identified and delineated in accordance with the methodology described in *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* (ACOE 2014). The jurisdictional delineation, the results of which are briefly summarized in Section 3.3 below, has been prepared as a separate stand-alone technical report that will be submitted to the ACOE for verification. The findings of the delineation, once verified, will form the basis of the aquatic resources impact analysis in the EIR and future aquatic resources permitting process for the Project.

2.3 Relevant Statutes, Regulations and Policies

Federal

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) prohibits the taking, possession, sale or transport of endangered species. Pursuant to the requirements of FESA, a federal agency reviewing a project within its jurisdiction must determine whether any federally listed threatened or endangered species could be present in the study area and determine the extent to which the project would have an effect on such species. In addition, federal agencies are required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat designated for such

species (16 USC 1536[3], [4]). Projects that would result in "take" of any federally-listed threatened or endangered species are required to obtain authorization from NMFS and/or USFWS through either Section 7 (interagency consultation) or section 10(a) (incidental take permit) of FESA, depending on whether there is federal involvement in the project (federal land, federal permitting or federal funding of the project).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50 Code of Federal Regulations (CFR) Section 10.13. The MBTA is an international treaty for the conservation and management of bird species that migrate through more than one country, and is enforced in the United States by the USFWS. Hunting of specific migratory game birds is permitted under the regulations listed in Title 50 CFR 20. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors).

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BAGEPA) is the primary law protecting both bald and golden eagles. Specifically, BAGEPA prohibits "take" of eagles without a permit and defines take to include "pursue, destroy, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb" and prohibits take of individuals, active nests, or eggs. The term "disturb" is further defined by regulation as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, injury to an eagle, a decrease in productivity, or nest abandonment" (50 CFR 22.3).

Federal Clean Water Act (Section 404)

The objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Under Section 404 of the CWA, the U.S. Army Corps of Engineers (ACOE) has the authority to regulate activities that could discharge fill or dredge material or otherwise adversely modify wetlands or other waters of the United States. The ACOE implements the federal policy embodied in Executive Order 11990, which is intended to result in no net loss of wetland values or function.

Federal Clean Water Act (Section 401)

The State Water Resources Control Board (SWRCB) has authority over wetlands through Section 401 of the CWA, as well as the Porter-Cologne Act, California Code of Regulations Section 3831(k), and California Wetlands Conservation Policy. The CWA requires that an applicant for a Section 404 permit (to discharge dredged or fill material into waters of the United States) first obtain certification from the appropriate state agency stating that the fill is consistent with the

State's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the SWRCB to the nine regional boards. The Central Coast Regional Water Quality Control Board (CCRWQCB) has authority for Section 401 compliance in the Project area. A request for certification is submitted to the regional board at the same time that an application is filed with the ACOE.

State

California Endangered Species Act

Under the California Endangered Species Act (CESA), the California Fish and Game Commission (CFGC) has the responsibility of listing or delisting threatened or endangered species in California. CDFW maintains a list of these species and related occurrence records in the CNDDB, as well as a Special Animals List, which includes Species of Special Concern (SSC) in California. A SSC is a species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria:

- is extirpated from the State or, in the case of birds, in its primary seasonal or breeding role;
- is listed as Federally-, but not State-, threatened or endangered;
- meets the State definition of threatened or endangered but has not formally been listed;
- is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status;
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

CESA prohibits the take of state-listed animals and plants in most cases, but CDFW may issue incidental take permits under special conditions. Pursuant to the requirements of CESA, a State agency reviewing a project within its jurisdiction must determine whether any state-listed endangered or threatened species could be present in the study area and determine whether the project would have a potentially significant impact on such species.

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 non-game bird as designated in the Migratory Bird Treaty Act. All nongame mammals, including bats, are protected by California Fish and Game Code 4150.

CDFW Lake and Streambed Alteration Agreement

Under Sections 1600-1616 of the California Fish and Game Code, the CDFW regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFW's jurisdiction are defined in the code as the "… bed, channel or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit ..." (Section 1601). In practice, the CDFW usually marks its jurisdictional limit at the top of the stream or bank, or at the outer edge of the riparian vegetation, whichever is wider.

CDFW Wetlands Protection Regulations

In some circumstances, CDFW regulates activities that affect wetlands. The authority to do so is derived from state legislation including Sections 1600-1616 of the Fish and Game Code (lake and streambed alteration agreements), CESA (protection of state listed species and their habitats - which could include wetlands), and the Keene-Nejedly California Wetlands Preservation Act of 1976 (states a need for an affirmative and sustained public policy program directed at wetlands preservation, restoration, and enhancement). In general, the CDFW asserts authority over wetlands within the state either through review and comment on ACOE Section 404 permits, review and comment on CEQA documents, preservation of state listed species, or through lake and streambed alteration agreements.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act established the SWRCB and RWQCB as the principal state agencies responsible for the protection of water quality in California. As noted above, the CCRWQCB has regulatory authority over the project area.

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 area.

California Environmental Quality Act

Although threatened and endangered species are protected by specific federal and state statutes, California Environmental Quality Act (CEQA) Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to *meet* certain criteria. These criteria have been modeled after the definition in FESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals, and allows a public agency to undertake a review to determine if a significant effect on a species that has not yet been listed by either the USFWS or CDFW (i.e., species of concern) would occur. Whether a species is rare, threatened, or endangered can be legally significant because, under CEQA Guidelines Section 15065, an agency must find an impact to be significant if a project would "substantially reduce the number or restrict the range of an endangered, rare, or threatened species." Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

3 RESULTS

3.1 Soils

According to the Natural Resources Conservation Service (USDA 2018), four native soil types and one anthropogenic soil type (Newell Creek Dam) are mapped within the study area (Figure 4). The native soils include Maymen-Rock outcrop complex, 50–75 percent slopes; Nisene-Aptos complex, 30–50 percent slopes; Nisene-Aptos complex, 50–75 percent slopes; and Lompico-Felton complex, 50–75 percent slopes. The Maymen-Rock outcrop complex is characterized by residuum weathered from sandstone and shale, or granite. This complex is a somewhat excessively drained soil consisting of approximately 75 percent Maymen soils and 25 percent rock outcrops (USDA 2018). Nisene-Aptos complex soils are derived from approximately 30 percent Nisene soils and 30percent Aptos soils, with the inclusion of other minor soil components. This complex is well drained and is derived from residuum weathered from sandstone and shale or from siltstone (USDA 2018). The Lompico-Felton complex contains approximately 45% Lompico soils and 40% Felton soils, with minor components included. This complex is well drained and is derived from residuum weathered from siltstone and/or mica schist, sandstone, and shale (USDA 2018).

3.2 Vegetation Communities and Land Cover Types

Eleven vegetation communities or land cover types were observed and mapped during the field survey using the classifications described in A Manual of California Vegetation (MCV) by Sawyer and Keeler-Wolf (2009), as well as several aquatic land cover types discussed below. Additional information regarding the composition of these communities in the study area was obtained from the Draft Watershed Lands Management Plan Existing Conditions Report (City of Santa Cruz 2013) that includes the City-owned Newell Creek Tract within which the proposed Project is located. Of note, and according to this Plan, the Newell Creek Tract was extensively logged in the late 1800s and early 1900s. Timber harvest activities resumed in 1968 and continued for the ensuing thirty years. The timber forest was segmented into multiple timber harvest areas with each logged on a rotating basis averaging once every 12-15 years. Logging removed roughly 20 to 30 percent of second growth conifers in each cut. As a result of the logging, no stands of old-growth forest, or stands in the late seral stages of growth, occur within the Newell Creek Tract. All forest and woodland tree communities within the study area, and as described below, are currently characterized as second growth communities.

The following terrestrial vegetation communities and land cover types have been documented in the study area and are described in further detail below: California annual grassland, arroyo willow-bigleaf maple groves, coyote brush scrub, French broom, mixed chaparral, redwood forest, bigleaf maple forest, red alder-bigleaf maple groves, redwood-Douglas fir forest, redwood – madrone woodland, Douglas fir forest, Douglas fir-knobcone pine forest, coast live oak-madrone woodland, and developed/ruderal. A number of aquatic resources (wetlands and non-wetland waters), including a portion of Loch Lomond Reservoir, are also present in the study area. These terrestrial and aquatic resources are described below. The approximate acreage of each community is included after the vegetation classification, and the location and general extent of each of these communities within the study area are depicted on Figure 5. Representative photographs of the study area that show selected features and natural communities are provided on Figures 6A – 6D. A total of 89 species of plants, consisting of 64 native species (72%) and 25 non-native species (28%), was recorded in the study area (see Appendix A).

A number of common wildlife species are expected to be associated with these vegetation communities (special-status species are addressed in Section 3.3 below). A total of 36 common wildlife species were observed during the biological field assessment. Of these, 26 were birds, 4 were mammals, and 3 were reptiles. A list of common wildlife species observed in the study area is found in Appendix D. All 36 wildlife species observed are native species.

Terrestrial Vegetation Communities and Land Cover Types

Fourteen vegetation communities or land cover types were observed and mapped during the field survey using the classifications described in A Manual of California Vegetation (MCV) by Sawyer and Keeler-Wolf (2009), as well as several aquatic land cover. The majority of the study area is comprised of Douglas fir (*Pseudotsuga menzieseii*) forest and other forest types. The location and general extent of each of these communities within the study area are depicted on Figure 4.3-1. A number of aquatic resources (wetlands and non-wetland waters), including a portion of Loch Lomond Reservoir, are also present in the study area.

California Annual Grassland (5.5 acres). California annual grassland in the study area is generally confined to the south-facing slope of the dam face but can also be found in small patches in other areas throughout the study area. This vegetation community is dominated by non-native annual grasses such as wild oat (*Avena fatua*), soft chess (*Bromus hordeaceus*), and rip-gut brome (*Bromus diandrus*). In addition to the non-native grasses, a native grass, red fescue (*Festuca rubra*), is also present. Annual forbs such as bicolor lupine (*Lupinus bicolor*), English plantain (*Plantago lanceolata*), and spring vetch (*Vicia sativa*) are also interspersed with the grasses of this land cover type.

Arroyo Willow-Bigleaf Maple Groves (Salix lasiolepis - Acer macrophyllum Shrubland Alliance) (0.96 acres). This vegetation community is a tall shrub/low tree canopy composed of codominant arroyo willow (Salix lasiolepis) and bigleaf maple (Acer macrophyllum) trees. This vegetation community occurs along the margins of Loch Lomond Reservoir to the northwest of NCD. Arroyo willow is a riparian tree or arborescent shrub that easily colonizes along stream banks and benches, slope seeps, and along drainages. It is valuable species for bank and slope stabilization. The herbaceous layer is variable and dependent on the coverage and density of the canopy and lower shrubs.

Coyote Brush Scrub (*Baccharis pilularis* Shrubland Alliance) (2.3 acres). Coyote brush (*Baccharis pilularis*) is the dominant shrub in this vegetation community. Coyote brush scrub occurs on a northwest-facing slope along the access road to NCD. Other shrub species observed in this community include pink honeysuckle (*Lonicera hispidula*), bush monkeyflower (*Diplacus aurantiacus*), and wedge leaf ceanothus (*Ceanothus cuneatus*). Scattered coast live oak trees (*Quercus agrifolia*) are also interspersed in this shrubland. The herbaceous understory of this vegetation community contains annual grasses and forbs consistent with those found in the California annual grassland community described above.

French Broom (*Cytisus scoparius* and Others Shrubland Semi-Natural Alliance) (0.5 acre). Patches of French broom occur in scattered locations throughout the study area, with the highest

concentrations along the ecotone of woodland and grassland adjacent to the face of NCD and along the margins of Loch Lomond Reservoir. This community is dominated by French broom (*Genista monspessulana*), a non-native, invasive species introduced from Europe. French broom grows vigorously in disturbed areas and can significantly reduce the plant diversity of an area through its aggressive and competitive growth habits. French broom creates a dense shrub canopy and herbaceous vegetation is generally sparse to absent in the understory.

Mixed Chaparral (1.6 acres). Mixed chaparral occurs on a bluff northwest of NCD. This habitat type is dominated by several species of manzanita (*Arctostaphylos* spp.), wedge leaf ceanothus, and wart leaf ceanothus (*Ceanothus papillosus*).

Redwood Forest (*Sequoia sempervirens* Forest Alliance) (0.7 acre). A small grove of second growth redwood (*Sequoia sempervirens*) trees is present along the NCD access road. This stand is dominated by redwood trees that form a dense and thick canopy. Due to the presence of a redwood leaf litter/duff layer, growth of understory vegetation is limited. Another small redwood grove is located within the southern portion of Staging Area 5. This grove has some large trees that are greater than 30 inches in diameter, a dense canopy, and very little understory vegetation. Some benches and a small wooden platform have been placed in the grove; these features are associated with the city-owned residence located nearby.

Bigleaf Maple Forest (*Acer macrophyllum* Forest Alliance) (0.4 acre). Small groves of big leaf maple (*Acer macrophyllum*) forest occur throughout the southern portion of the study area, primarily along the margins of the NCD face and on north-facing slopes adjacent to Newell Creek. Bigleaf maple is the dominant species in the tree canopy of this vegetation community. Other trees observed in this community include bay laurel (*Umbellularia californica*), redwood, and madrone (*Arbutus menziesii*). Understory plants include snowberry (*Symphoricarpos mollis*), toyon (*Heteromeles arbutifolia*), and poison oak (*Toxicodendron diversilobum*).

Red Alder–Bigleaf Maple Groves (*Alnus rubra* - *Acer macrophyllum* Forest Alliance) (2.0 acres). Big leaf maple forest within the study area intergrades with red alder (*Alnus rubra*) groves to form a mature riparian corridor along Newell Creek, the seepage channel, and along the margins of the spillway plunge pool. Understory plants typical of this community include species adapted to mesic conditions such as (*Polypodium californicum*), California blackberry (*Rubus ursinus)*, maidenhair fern (*Adiantum jordanii*), hazelnut (*Corylus cornuta*), five-finger fern (*Adiantum aleuticum*), chain fern (*Woodwardia fimbriata*), thimbleberry (*Rubus parviflorus*), creek dogwood (*Cornus glabrata*), sword fern (*Polystichum californicum*), and coffee berry (*Frangula californica*)..

Redwood-Douglas Fir Forest (*Sequoia sempervirens* - *Pseudotsuga menzieseii* Forest Alliance) (2.45 acres). Redwood are intermixed with Douglas fir (*Pseudotsuga menzieseii*) in the western portion of the study area. The canopy is relatively continuous and dense, with some areas of two-tiered canopy. Mixtures of redwood and Douglas fir usually occurs in protected upland slopes up to approximately 3,200 feet (976 m) elevation. The longitudinal extent of the Redwood – Douglas fir forest type is associated with a constant temperature and moisture regime that defines the Redwood fog belt.

Redwood – Madrone Woodland (*Sequoia sempervirens* - *Arbutus menziesii* woodland Alliance) (3.95 acres). This community extends in a north-south band on the west side of Loch Lomond Reservoir. The vegetation community is characterized by redwood trees and a nearly continuous lower canopy composed of madrone. Understory shrub and herbaceous species are sparse to intermittent.

Douglas Fir Forest (*Pseudotsuga menzieseii* Forest Alliance) (18.4 acres). Douglas fir forest dominates much of the eastern slopes of the study area. This community is characterized by Douglas fir intermixed with other tree species including madrone, redwood, and knobcone pine (*Pinus attenuata*). This forest type typically occurs on drier slopes and/or higher elevation areas than redwood forest. The moderately dense tree canopy of this community creates conditions for an understory of plant species requiring partial sun/shade. As such, the understory is often more diverse than that of redwood forest, with common occurrences of young trees of tan oak, madrone, redwood and Douglas fir. Other understory species include bracken fern (*Pteridium aquilinum var. pubescens*), Douglas iris, and yerba buena (*Satureja douglasii*).

Douglas Fir–Knobcone Pine Forest (*Pseudotsuga menzieseii – Pinus attenuata* Forest Alliance) (3.7 acres). The Douglas fir trees in the northwestern portion of the study area (north of NCD) are codominant in the tree canopy with knobcone pine (*Pinus attenuata*). This forest type primarily occurs in areas of the watershed where soils are shallow. Knobcone pine is the most widespread closed-cone pine in California; the species is most common in the coast range from the Santa Lucia Mountains north through the Klamath range (Lanner, 1999).

Coast Live Oak – Madrone Woodland (*Quercus agrifolia – Arbutus menziesii* woodland Alliance) (3.5 acres). The southern portion of the study area, especially north-facing slopes adjacent to NCD support a mixed coast live oak and madrone woodland community. Both species are co-dominant in the tree canopy. The coast live oak – madrone woodland community occurs in areas having deeper soil profiles that are rich in organic matter, and have a thick duff layer. Common understory shrub species are poison oak, California blackberry, blue blossom ceanothus (*Ceanothus thyrsiflorus*), coffeeberry, blue witch (*Solonum umbelliferum*), and huckleberry

(*Vaccinium ovatum*). In some areas, the woodland intergrades with more mesic redwood forest, where fewer madrone, Douglas fir, and tan oak trees occur.

Developed/Ruderal (6.0 acres). This land cover type consists of Newell Creek Dam and the established dirt, gravel and paved access roads leading to and from the dam and the boat launch areas, the bridge over Newell Creek below the dam, as well as the structures and facilities associated with regulating dam flows and the boat launch area. Vegetation is generally absent from this land cover type in the study area.

Aquatic Resources

Aquatic resources consisting of two types of wetlands and five types of non-wetland waters were identified in the study area during the formal jurisdictional delineation conducted in April and September 2018 (Dudek 2018). These aquatic resources consist of seasonal wetland and seeps, as well as perennial drainages, ephemeral drainages, roadside swale, spillway plunge pool, and Reservoir. These aquatic resources are summarized below and described in more detail in the stand-alone jurisdictional delineation report.

Seasonal Wetlands. Two seasonal wetlands were observed in the southern portion of the study area during the field survey. One of the seasonal wetlands is located at the base of a rock wall adjacent to the spillway plunge pool where water appears to pond in a natural depression as the levels of the pool recede during dry months. This area is characterized by Harford's sedge (*Carex harfordii*) and miner's lettuce (*Claytonia perfoliata*). A second seasonal wetland feature is located in an upland area adjacent to the western shoreline of the Reservoir north of the dam. This wetland is located in a natural depression above an old logging roadcut where rainwater runoff from the surrounding hills appears to pond for sufficient time to create hydric soils and support hydrophytic vegetation. Dominant vegetation in this wetland feature includes Baltic rush (*Juncus balticus*) and clustered sedge (*Carex densa*).

Seeps. Two small seep areas were observed in the study area. One feature is located adjacent to the existing outlet pipe at the base of the NCD and the other is located at the base of a hillslope adjacent to Newell Creek. The seep at the base of NCD and adjacent to the outlet structure appears to contain standing water for much of the year and is dominated by hydrophytic species such as watercress, stinging nettle (*Urtica dioica*), and redroot flatsedge (*Cyperus eragrostis*). The other seep is located just north of the low water crossing at the confluence of a tributary to Newell Creek and Newell Creek itself. This area contains a layer of bedrock below the soil that likely aids in retention of water in the surface soils and the creation of hydric soil conditions. Hydrophytic vegetation such as field sedge (*Juncus effusus*), horsetail (*Equisetum hyemale*), and redroot flatsedge.

Perennial Drainages. Newell Creek below and above the Reservoir holds water on a year-round basis. At least one cubic foot per second (CFS) of water is released from the Reservoir on a continuous basis (Berry, pers. comm. 2018), maintaining water flow into the seepage channel (a modified reach of the historic Newell Creek alignment), spillway pool, and the channel of Newell Creek. The bed of Newell Creek is comprised of large boulders and cobbles, and evidence of an OHWM includes debris wracking, undercut banks, and changes in vegetation and sediment texture. The seepage channel conveys water from the outlet structure to the spillway plunge pool and maintains water on an annual basis due to the continuous discharge from the Reservoir. This channel has an average width of five feet and is relatively shallow. The substrates in the channel are a mixture of cobbles and gravel and the OHWM is evidenced by the change in vegetation and sediment texture in the channel.

Ephemeral Drainages. Four ephemeral drainages occur within the southern portion of the study area. All tour features are tributary to Newell Creek, and convey water from the surrounding hillslopes either directly or indirectly to Newell Creek. All of these features exhibit evidence of an OHWM, based on shelving, watermarks on boulders, debris wracking, or changes in sediment texture or vegetation cover, however, none of the three drainages exhibited signs of continuous flows.

Roadside Swale. One roadside swale parallels the NCD access roadway. This feature is located downstream of, and is an extension of, one of the ephemeral drainages described above. This swale also appears to drain water from the hillslopes northeast of the NCD access roadway and conveys flows southward to where the swale crosses under the access roadway via a culvert. This swale is largely vegetated and does not contain evidence of an OHWM.

Spillway Plunge Pool. The spillway plunge pool at the base of the NCD spillway contains water on a year-round basis and is directly tributary to Newell Creek. This feature has a defined bed and bank, as well as an associated riparian fringe dominated by red alder and big leaf maple.

Reservoir. Loch Lomond Reservoir was created by the installation of NCD on Newell Creek. Reservoir outflows include a continuous minimum 1 cfs release to maintain fish habitat in Newell Creek downstream. Outflows also occur via the concrete spillway at the southern end of the Reservoir where water drains into the spillway plunge pool and then to Newell Creek during times of high flow. The Reservoir has a defined bed and bank and contains a mature, if sporadic, riparian fringe comprised of bigleaf maple and arroyo willow. Some areas of the Reservoir are fringed by stands of French broom.

3.3 Sensitive Resources

3.3.1 Special-Status Species

Special-status plant and wildlife species determined to potentially occur in the study area or in the study area vicinity, based on the preliminary review discussed above, on the suitability of habitat to support the species, and on the results of the field assessment, are discussed below. Tables summarizing the potential occurrence of special-status plant and wildlife species are included in Appendices B and C.

Plants

Based on the results of the CNDDB, CNPS and IPaC database searches, a total of 55 special-status plant species occur in the Project region (Appendix B). Of these, 54 were eliminated from consideration due to the lack of appropriate habitats (e.g., coastal dunes, coastal bluff scrub, freshwater/brackish marshes, etc.), absence of suitable edaphic conditions (e.g., alkaline or serpentine soils), extent of habitat degradation, or location of the study area outside of the species known range. The remaining special-status plant species, Woodland woolythreads is considered to have moderate potential to occur within the study area and is described in more detail below.

Woodland woolythreads (*Monolopia gracilens*)

Woodland woolythreads is a CRPR 1B.2 plant, meaning it is rare or endangered in California or elsewhere (CNPS 2018). It is an annual herb that occurs in broadleaved upland forest (openings), chaparral (openings), cismontane woodland, North Coast coniferous forest (openings), and valley and foothill grassland on serpentine soils. It generally blooms from March to July at elevations ranging from 325-3,935 feet AMSL.

Openings in the Coast Live Oak-Madrone Woodland, Redwood-Madrone Woodland, Mixed Chaparral, and coniferous forest types within the study area may provide potentially suitable habitat for this species. The nearest documented occurrence was observed in 1995 approximately 0.8 mile southeast of the study area (CDFW 2018). Although the field surveys of the study area were not exhaustive, all of the Project work areas and staging areas were searched for special-status plants that would be identifiable in April, including woodland woolythreads. This species was not observed within any of the proposed work areas or staging areas during the April 2018 field surveys. Nevertheless, this species is considered to have moderate potential to occur in suitable habitats outside of the defined work areas and staging areas, based on the presence of suitable woodland, coniferous forest and chaparral communities.

Wildlife

Results of the CNDDB and IPaC database searches indicate that 36 special-status wildlife species occur in the Project region (Appendix C). Of these, 25 species were eliminated from consideration due to the absence of suitable habitat (e.g., native grassland, coastal scrub, estuarine conditions, etc.) or because the study area is outside of the known range of the species and are not discussed any further. The remaining 11 special-status wildlife species, described in more detail below, were either observed, considered to have some potential to occur within or adjacent to the study area, or are known to occur in close proximity to the study area. Some species, though not expected to occur within the study area, are also discussed below because of their regulatory status as state- or federally-listed Threatened or Endangered species and/or the presence of designated Critical Habitat within the region. Because they are protected by the federal MBTA and provisions of the California Fish and Game Code, common native bird species, including raptors, potentially nesting within the study area are also discussed.

Coho salmon (*Oncorhynchus kisutch*, Central California Coast ESU) and steelhead (*Oncorhynchus mykiss irideus*, Central California Coast DPS)

Although Loch Lomond Reservoir supports a variety of non-native game fish, it does not support or provide passage for coho salmon, steelhead, or any other state or federally-protected fish species. The Reservoir supports a warm water fishery primarily composed of introduced game species including largemouth bass (*Micropterus salmoides*), green sunfish (*Lepomis cyanellus*), channel catfish (*Ictalurus punctatus*), and bluegill (*Lepomis macrochirus*) (City of Santa Cruz 2013). In addition, one other non-native species, golden shiner (*Notemigonus crysoleucas*) and three native species, Sacramento sucker (*Catostomus occidentalis),* prickly sculpin (*Cottus asper*) and rainbow trout (*Oncorhynchus mykiss*) are known to occur in the Reservoir, though golden shiner and Sacramento sucker have not been observed since 1992. CDFW has planted hatchery-raised rainbow trout in Loch Lomond as part of an annual stocking program, with stocking occurring in Loch Lomond as recently as June of 2018 (CDFW 2018). Therefore, all rainbow trout currently within the Reservoir are assumed to be hatchery-raised fish.

Newell Creek from the confluence of the San Lorenzo River up to Newell Creek Dam is designated critical habitat for both steelhead (Central California Coast Distinct Population Segment [DPS]) and coho salmon (Central California Coast Evolutionarily Significant Unit [ESU]) and essential fish habitat for coho salmon. Steelhead is federally listed as a threatened species. Coho salmon is federally and state listed as an endangered species.

A focused habitat and fish population study conducted on Newell Creek by Hagar Environmental Science (HES, 2007) found that the uppermost reach of Newell Creek (the reach extending approximately 0.3 mile downstream of NCD) supports a very sparse population of *O. mykiss*. Due

to the presence of a significant downstream passage barrier (described below) and the apparently low levels of production and/or low reproductive success, it is most likely that the *O. mykiss* present in this reach and in the spillway plunge pool are a resident (non-anadromous) population or possibly hatchery-raised individuals that accessed the pool and immediate area via the spillway from the Reservoir. Spawning and rearing habitat is present for both steelhead and coho salmon in the San Lorenzo River and in the lower reaches of Newell Creek. However, the San Lorenzo River and watershed have experienced a major decline in coho salmon abundance since the late 1980s, and current fish surveys have found very few coho within the system. Trapping conducted at the Felton Diversion Dam by the Monterey Bay Salmon and Trout Project found that the number of coho adults peaked at 183 during 1989-1990 and during most years and locations few coho individuals have been captured (Entrix, 2004). No juvenile coho salmon were captured during electrofishing surveys conducted throughout the San Lorenzo River watershed (including both mainstem and tributary locations) between 1994 and 2002 and only occasional juvenile or young-of-year coho have been observed in the system since. Due to the decline in the coho salmon population in the San Lorenzo River and its tributaries, including Newell Creek, it is unlikely coho salmon are present in Newell Creek (NMFS, 2012).

In addition, a previous study conducted in 2017 (HES, et al., 2017) determined that the upper reaches of Newell Creek extending to the dam are not accessible to coho salmon, and are likely not accessible to steelhead, due to a natural bedrock shelf feature that exists in the stream channel approximately 0.7 mile downstream of the dam. The study's model predicted that a steelhead individual, in peak condition, may only be able to pass the barrier during periods of high flow that are approximately 200-325 cubic feet per second (cfs) or greater. However, flows in Newell Creek that exceed 200 cfs are isolated and rare events; daily average flows during the steelhead migration season (December through April) would be in the hypothetically suitable flow range for passage between 0.6% and 1.7% of the time (Balance Hydrologics, 2008). Furthermore, habitat conditions between the bedrock feature and the dam are of low quality for steelhead. During habitat surveys conducted in 2007, it was found that the bedrock dominated reach (where the feature is located) and the upstream reach below the dam had markedly less instream cover and less potential spawning area than did the lower reach below the bedrock feature (HES, 2007). Therefore, the study concluded that the bedrock shelf feature is the effective limit of anadromy for both steelhead and coho salmon in Newell Creek. A team of biologists representing NOAA Fisheries, CDFW, and the City of Santa Cruz conducted a site visit to the bedrock feature on April 11, 2017, and despite difference of opinions about the level of flow that might be needed for passage, confirmed this assessment (HES, et al., 2017).Despite the low quality of habitat upstream of the barrier and rare or severely limited access by steelhead past the barrier, it is possible under certain conditions that anadromous O. mykiss could occur within the study area, but the frequency of potential migration conditions is too low to support a consistent anadromous run (HES, 2017). Coho salmon

are not expected to occur in the study area due to their limited populations numbers in the greater San Lorenzo River watershed, the barriers in Newell Creek, and the low quality habitat within Newell Creek for coho.

Santa Cruz black salamander (*Aneides niger*)

Santa Cruz black salamander (state Species of Special Concern) is a terrestrial species that inhabits mixed deciduous woodland, coniferous forests, and coastal grasslands. It is found under rocks near streams, in talus, under damp logs, and other objects (CDFW 2000). Santa Cruz black salamander is a lungless salamander (*Plethodontidae*), that 'breathes' through its skin and mouth lining. Thus they require damp-moist environments on land and can only move above ground during periods of high humidity. Unlike some other salamanders, they lay their eggs in moist locations on land in summer months (July-August), and do not have swimming larvae with gills. Rather, their young fully develop in the egg, then hatch into small terrestrial salamanders. In general, this species remains underground during periods of dry weather, but can be active near streams or in other damp locations year-round. Newell Creek and the adjacent drainage provides suitable habitat for Santa Cruz black salamander, and there are documented historical occurrences of this species in the vicinity of Ben Lomond southwest of the study area (from the 1930s and 1960s) and a more recent record (from 2012) from Henry Cowell Redwoods State Park farther south (CNDDB 2018). Therefore, this species is considered to have moderate potential of occurring within the study area, particularly along Newell Creek or in other areas with moist microclimates and suitable refugia.

California Giant Salamander (*Dicamptodon ensatus*)

California giant salamander, a state Species of Special Concern, is a nocturnal species that inhabits coastal forests with ample moisture and clean, cold, permanent or mostly permanent streams or seeps. Larvae are aquatic; they use calm nearshore habitat with cover such as rock crevices and leaf litter or other debris. The larvae develop and live in aquatic habitats for up to two to three years depending on aquatic conditions. Metamorphosed juveniles move out of streams during periods of rain or high humidity. Both juveniles and adults require damp-moist environments on land and tend to only move above ground during wet periods. Larval diet consists of invertebrates, smaller amphibians, or even small fish hatchlings. Adults are sit-and-wait predators and will eat just about anything that they can crush with their jaws including invertebrates (slugs), small rodents, lizards, or other amphibians. In spring, adults will find a stream location with suitable cover for breeding and egg deposition. In the similar species, Coastal giant salamander (*Dicamptondon tenebrosus*), females do not breed every year because they invest a lot of resources into guarding their eggs through hatching (November-December).

Newell Creek, the seepage channel, seeps and surrounding upland areas associated with these drainages provide suitable habitat for California giant salamander, and this species has been observed in in the study area. Four California giant salamander larvae were observed during field surveys in September 2018 near the existing outlet structure in a location with standing water that was approximately four inches in depth.

California red-legged frog (*Rana draytonii*)

Historical occurrences of California red-legged frog (federally Threatened, state Species of Special Concern) occur in a tributary of Zayante (2002) and within Bull (2004) Creeks, with the closest being approximately 3.5 miles east and 4.0 miles south of the study area, respectively. No documented historical occurrences of this species exist within the Newell Creek Tract.

The spillway plunge pool contains *O. mykiss* and non-native fish species, some of which prey on amphibians and amphibian egg masses. Additionally, during the winter/spring when the Reservoir typically spills, the pool may lack suitable calm water areas used for egg deposition. Various fish species are also assumed to occur within the upper stretches of Newell Creek below the plunge pool and in the seepage channel (a portion of Newell Creek's original alignment) upstream of the plunge pool. Newell Creek receives high flows in the winter and spring (during the CRF breeding period) when the Reservoir typically spills, and because the creek lacks side channels and other calm water areas utilized by CRF, these high water flows would preclude CRF from being able to lay egg masses. Additionally, much of Newell Creek has a fairly dense canopy cover (averaging 85% in the 300-meter reach downstream of the spillway plunge pool) with limited basking habitat. Consequently, no breeding habitat occurs for CRF within the plunge pool and within Newell Creek in the study area. The seepage channel from the Reservoir to the plunge pool and Newell Creek does not provide suitable breeding habitat for CRF due primarily to the lack of calm water areas and refugia within the channel.

The four ephemeral drainages assessed within the study area do not provide suitable breeding habitat due primarily to the ephemeral nature of the drainages (lack of perennial water), to high outflows that can occur in the winter and early spring during the CRF breeding period, and to the lack of sufficiently deep, calm water pools within these relatively narrow channels. The two seasonal wetlands assessed do not provide suitable breeding habitat due to the shallow water depth (several inches) for egg deposition and the absence of pooled water. The two seeps do not provide suitable breeding habitat due to the lack of surface water in one seep and the shallow water depth in the other seep (8 inches or less) and due to the small size of both these features. In addition, the habitat assessment conducted by Dudek for this species included an assessment of surrounding habitat areas up to one mile from the study area; no suitable breeding habitat within this surrounding area was identified.

In 2001, focused CRF surveys were conducted at the Reservoir, Newell Creek, and other City watershed lands in the Project vicinity, with negative results for all surveys (City of Santa Cruz Water Department 2013). Even though the survey results are 17 years old and CRF could have moved into the area since that time, the lack of breeding habitats within the study area and within at least 1 mile of the site, the marginal quality of spring and summer refugia within the study area, and the significant distance to the nearest occurrence record substantially reduces the potential for occurrence within the study area. Additional protocol-level surveys were conducted in 2013 in association with the proposed hydroelectric project for Newell Creek dam which also had negative results (Biotic Resources Group 2013).

Although several of the ephemeral drainages within the study area represent potentially suitable spring/summer refugia habitat for dispersing individuals, there is no known population source/suitable breeding habitat in close proximity to the study area, so the potential for dispersing CRF to occur in these refugia habitats is considered extremely remote. Consequently, due to a lack of suitable breeding habitat in the study area (and within one mile of the study area), the substantial distance to the nearest breeding record occurrence, and because of the negative findings of focused surveys previously conducted for the species, CRF is not expected to occur in any of the aquatic features within the study area (Dudek, 2018).

Foothill yellow-legged frog (*Rana boylii*)

The foothill yellow-legged frog (State candidate species for listing as Threatened and state Species of Special Concern) is known from the Santa Cruz region, with the closest records of this species being approximately 6.0 miles northeast of the study area in the Los Gatos Creek watershed, and approximately 8.0 miles east of the study area in Soquel Creek in the Soquel Demonstration State Forest. Small numbers of foothill yellow-legged frogs were reported from the Aptos Creek watershed in 1998, and small to moderate populations were reported from 1992-2008 in the Soquel Creek drainage (CNDDB 2016). No previous documented occurrences of this species exist within the Newell Creek watershed.

This species is characteristically found close to water in association with perennial streams and ephemeral creeks with boulder, cobble, and gravel substrates that retain perennial pools through the end of summer. In general, the species appears to prefer low to moderate gradient (0 to 4%) streams, particularly for breeding; however, juvenile and adult frogs may also utilize moderate to steep gradient (4 to ≥10%) creeks during the summer and early fall.

Foothill yellow-legged frog is associated with a variety of aquatic habitat types, including pools, riffles, runs, cascade pools, and step-pools, depending on life stage and the time of year. Breeding typically occurs in shallow edgewater areas along low gradient cobble and small boulder

dominated point or lateral bars, in side channels, pool tail-outs, and side pools along river margins. During the summer and fall, adult frogs appear to prefer stream channels that provide exposed basking sites and cool shady areas immediately adjacent to the water's edge. Perennial streams appear to be the preferred summer habitat of adults; however, ephemeral streams with perennial pools also provide suitable habitat (Seltenrich and Pool 2002).

During the June 2018 habitat assessment conducted for California red-legged frog, one sub-adult foothill yellow-legged frog was observed within standing water (approximately 8 inches in depth) associated with a seep at the base of the Newell Creek dam adjacent to the existing outlet structure. The observation is unusual since this species prefers stream habitats with cobble and gravel substrates and exposed banks for basking. Furthermore, based on the habitat assessment that was conducted during this survey, no breeding habitat for foothill yellow-legged frog was identified within the study area. Therefore, given the lack of suitable breeding habitat and absence of exposed banks and appropriate substrates in Newell Creek within the study area, the occurrence of foothill yellow-legged frog at the seep is considered an incidental occurrence of a dispersing individual from a suitable breeding habitat area within Newell Creek downstream of the study area. This species was not addressed in the 2013 biological report prepared for the Newell Creek Dam Hydroelectric Project (Biotic Resources Group 2013) and was considered unlikely to occur based on information contained in the Draft Watershed Lands Management Plan that addressed special-status species for the Newell Creek tract and other City-owned tracts (City of Santa Cruz 2013).

Western pond turtle (*Emys marmorata*)

Western pond turtle (state Species of Special Concern) uses both aquatic and terrestrial habitats. They are found in rivers, lakes, streams, ponds, wetlands, ephemeral creeks, reservoirs, agricultural ditches, estuaries, and brackish waters. Adults tend to favor deeper, slow moving water, whereas hatchlings search for slow and shallow water that is slightly warmer. Terrestrial habitats are used for wintering and usually consist of burrows in leaves and soil (CDFW 2018). Western pond turtle nesting typically occurs from March through July depending on local conditions (CDFW, 2000).

A study performed by Alterra Environmental Inc. (2009) within and adjacent to Loch Lomond Reservoir found several western pond turtles in the Reservoir during trapping events, and also observed several turtle nests in the northern portion of the bank of the Reservoir. Generally, the water temperature in the spillway plunge pool below the spillway is too cold for this species, and the pool lacks sufficient basking areas; however, a western pond turtle was observed in the spillway plunge pool in 2008. The study concluded there is a small population of western pond turtles that use Loch Lomond Reservoir and the surrounding areas for overwintering and nesting, and that this species could also be found in the spillway plunge pool and Newell Creek which provide some suitable habitat for this species (Alterra Environmental, 2009). However, they also found that

recruitment is low within the Reservoir, and that western pond turtles typically avoid areas where there are high levels of human activity.

Based on documented observations described above, western pond turtle is known to occur within Loch Lomond Reservoir and possibly in the spillway plunge pool below the dam, and within some areas of Newell Creek downstream.

Bald eagle (*Haliaeetus leucocephalus*)

Bald eagle (state Threatened/Fully Protected) occurs near large bodies of open water such as lakes, marshes, estuaries, seacoasts and rivers, where fish are abundant. They usually nest within one mile of water in tall trees with open branch work bordering lakes or large rivers (CDFW 2018). Bald eagles have been observed at Loch Lomond Reservoir (Berry, pers. comm. 2018), and suitable nesting and foraging habitat is available for this species within the study area, primarily associated with Loch Lomond Reservoir. Consequently, this species could occur within the study area.

Marbled murrelet (*Brachyramphus marmoratus*)

This species (federally Threatened, state Endangered) forages in coastal waters and bays, and breeds inland on mountains near the coast. They are sometimes found on lakes near the coast. Marbled murrelets nest on mountainsides on islands or well inland in mature forest habitat (CDFW 2018). The three separate areas where marbled murrelets currently are found in California correspond to the three largest remaining blocks of old-growth coastal conifer forests. These populations are largely separated by areas of second-growth forest not used by marbled murrelets (USFWS 1997). On the basis of forest surveys and locations of grounded juveniles, breeding habitat consists of mature and old-growth coniferous forests, or forests with old-growth components, including but not limited to large trees with large limbs and multilayered canopies (Hammer and Nelson 1995). Because adults do not build nests and depend on availability of large platforms, abundance of large platforms with moss or other thick substrate, such as piles of needles collected on limb near tree bole are key habitat components; absence of these factors may limit this species' distribution and habitat use. Designated Critical Habitat for marbled murrelet occurs approximately 1.5 miles southwest of the Project area within Henry Cowell Redwoods State Park (USFWS 2018).

Although an individual marbled murrelet was observed flying over the study area during the field survey, the Newell Creek Tract (inclusive of the proposed Project site and study area) has been extensively logged since the turn of the century, and particularly in the last 30-plus years, although timber harvesting on City-owned lands cease about 20 years ago. Because no old growth forest habitat with suitable nesting platform substrate occurs within the study area, this

species is not expected to nest within the study area. Of note, this species was not identified as occurring or potentially occurring in the Newell Creek Tract based on previous studies on City watershed lands (Swanson Hydrology & Geomorphology 2001) or in the biological report prepared for the Newell Creek Dam Hydroelectric Project (Biotic Resources Group 2013).

Consequently, while this species may irregularly fly over or near the study area, because of the lack of suitable nesting habitat, this species is not expected to nest within the study area.

San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*)

San Francisco dusky-footed woodrat (state Species of Special Concern) is found in forest and shrubland communities throughout the San Francisco Bay area (Hall 1981). They are well known for their large terrestrial stick houses (middens), some of which can persist for twenty or more years. Because the dusky-footed woodrat (*Neotoma fuscipes*) and San Francisco dusky-footed woodrat cannot be distinguished phenotypically, and the proposed Project is within the range of the San Francisco dusky-footed woodrat, presence of San Francisco dusky-footed woodrat is assumed. Woodrat middens are typically placed on the ground against or straddling a log or exposed roots of a standing tree, and are often located in dense brush. Nests are also placed in the crotches and cavities of trees and in hollow logs. Evergreen or live oaks and other thick-leaved trees and shrubs are important habitat components for dusky-footed woodrats. Suitable breeding and foraging habitat for dusky-footed woodrat occurs within the study area, and one large stick nest, indicative of woodrat activity (species undetermined), was observed on the southern edge of Staging Area 6 during the 2018 field survey. Therefore, this species is considered to have moderate potential to occur within the study area.

Bats

Pallid bat (*Antrozous pallidus*)

Pallid bat (State Species of Special Concern) is present in a variety of habitat types throughout California, except within the highest elevations of the Sierra Nevada. The pallid bat utilizes rocky outcrops, cliffs, crevices in buildings and bridges, and occasionally in hollow trees within which to breed and roost. The species is most common in open, dry habitats with rocky areas for roosting, and is highly sensitive to disturbance at or near roost sites. While the Reservoir and other open areas within the study area serve as potential foraging habitat, there is low potential for roosting/breeding due to the general lack of suitable roost habitat.

Townsend's Big-eared Bat (*Corynorhinus townsendii*)

Townsend's big-eared bat (State Species of Special Concern) is also found throughout California except in the highest elevations of the Sierra Nevada. It typically prefers roosting in human-made structures such as mines, tunnels, and buildings that provide cave-like habitat conditions. Similar to pallid bat, this species is highly sensitive to disturbance and could potentially utilize the Reservoir and other open areas within the study area as foraging habitat; however, there is low potential for roosting/breeding due to the general lack of suitable roost habitat.

Native Birds and Common Raptors

All individual native birds, including common raptors (special-status raptors are discussed separately above), are protected by the federal Migratory Bird Treaty Act. In California, active nests and eggs are also protected by provisions in the Fish and Game Code of California; an additional provision in the Fish and Game Code also protects individual raptors. A number of bird species were observed during the field assessment (Appendix D) and could potentially nest within the study area. Appendix E contains a list of migratory birds (Birds of Conservation Concern) that are known from or have potential to occur in the vicinity of the study area.

The nesting raptor survey conducted by Dudek resulted in observations of a pair of red-shouldered hawks (*Buteo lineatus*), two red-tailed hawks (*Buteo jamaicensis*), and one osprey (*Pandion haliaetus*). No active or inactive raptor nests were observed. Based on observations made during the survey, it was determined that the red-shouldered hawk pair are likely nesting on the east side of the Reservoir. This species will typically use the same nest over multiple years so there is potential that this particular pair could continue the nest within/adjacent to the Project area in the future. The study area overall provides suitable nesting and foraging habitat for this species.

The two red-tailed hawk observations were of soaring individuals made at separate times and locations within and adjacent to the study area; the observer was unable to determine if the observation was of the same individual or two separate individuals. Suitable nesting habitat is concentrated on the ridge west of Newell Creek, where taller trees provide views over adjoining habitat and access for larger birds of prey. Taller trees within or adjacent to the Project area could potentially provide suitable nest habitat, but these locations are away from suitable foraging habitat. The densely wooded habitat within the study area is not suitable foraging habitat for this species.

The single osprey that was observed near the dam was likely foraging over the Reservoir, though no active foraging behavior was observed at the time. No suitable osprey nest trees, or evidence of osprey nesting, were observed in the study area and the species is not expected to nest within or in

the immediate vicinity of the study area. However, osprey have historically nested within the City's Newell Creek watershed land tract.

Suitable nesting habitat occurs within and adjacent to the Project area for Cooper's hawk (*Accipiter cooperi*), but no observations of this species were made during the site survey. Suitable nesting and foraging habitat for several common owl species, including western screech-owl (*Megascops kennicottii*), great horned owl (*Bubo virginianus*), and northern saw-whet owl (*Aegolius acadicus*), also occurs within and adjacent to the study area.

3.3.2 Jurisdictional Aquatic Resources

Thirteen jurisdictional features were identified and mapped within the study area as part of the formal jurisdictional delineation conducted for the Project. These features include two perennial drainages (801 linear feet total), four ephemeral drainages (1,292 linear feet total), one roadside swale (540 linear feet), two seasonal wetlands (0.02 acre total), two seeps (0.05 acre total), the spillway plunge pool (0.21 acre), and Loch Lomond Reservoir (20.21 acre). The study area supports a total of 0.07 acre of wetlands and 20.81 acres (2,633 linear feet) of non-wetland waters that meet the required criteria to be jurisdictional waters of the United States. The study area does not support traditional navigable waters, interstate waters, or waters that support interstate commerce (33 CFR 328.3(a)(1–4)); therefore, potential ACOE jurisdiction was determined based on connectivity or adjacency to off-site waters of the United States (33 CFR 328.3(a)(5)).

Table 1 provides information regarding the total acreage of existing jurisdictional features in the Study Area, as well as each jurisdictional feature identified, including ecological characteristics, potential agency jurisdiction and extent. Detailed results of the jurisdictional delineation are described in a stand-alone jurisdictional delineation report prepared for the Project and submitted to the City under separate cover.

Table 1
Wetlands and Non-wetland Waters in the Study Area

Feature	Cowardin Code	Potential Jurisdiction	Acres	Linear Feet
Wetlands				
SW-01	PEM2	ACOE, RWQCB	0.01	N/A
SW-02	PEM2	ACOE, RWQCB	0.01	N/A
Seep-01	PEM1	ACOE, RWQCB	0.03	N/A
Seep-02	PEM1	ACOE, RWQCB	0.02	N/A
		Total	**0.07**	**N/A**
Other Waters				
PD-01	R3RB1	ACOE/RWQCB/CDFW	0.28	648
PD-02	R3RB	ACOE/RWQCB/CDFW	0.02	153
ED-01	R4SB1	ACOE/RWQCB/CDFW	0.03	414
ED-02	R4SB1	ACOE/RWQCB/CDFW	0.01	140
ED-03	R6	ACOE/RWQCB/CDFW	0.02	319
ED-04a	R6	ACOE/RWQCB/CDFW	0.01	202
ED-04b	R6	ACOE/RWQCB/CDFW	0.01	217
RS-01	R6	ACOE/RWQCB	0.01	540
SPP-01	L1RB	ACOE/RWQCB/CDFW	0.20	N/A
Reservoir-01	L1UB	ACOE/RWQCB/CDFW	20.21	N/A
		Total	**20.81**	**2,633**

Notes: SW = Seasonal Wetland; ACOE = U.S. Army Corps of Engineers; RWQCB; Regional Water Quality Control Board; N/A = not applicable; L1RB = Lacustrine, limnetic, rock bottom; L1UB = Lacustrine, limnetic, unconsolidated bottom; PEM1 = Palustrine, emergent, persistent; PEM2 = Palustrine, emergent, nonpersistent; ID = Intermittent Drainage; R3RB = Riverine, upper perennial, rock bottom; R3RB1 = Riverine, upper perennial, rock bottom, bedrock; R4SB1 = Riverine, intermittent, streambed, bedrock; RS = Roadside Swale; R6 = Riverine, ephemeral; ED = Ephemeral Drainage.

3.3.3 Sensitive Habitats

Sensitive habitats and natural vegetation communities include riparian corridors, wetlands, habitats for state and/or federally protected species and other special-status species, areas of high biological diversity, areas providing important wildlife habitat, and unusual or regionally-restricted habitat types. Sensitive natural vegetation communities are evaluated by CDFW and are assigned global (G) and state (S) ranks based on rarity of, and threats to, these vegetation communities in California. Natural communities with ranks of S1-S3 are considered Sensitive Natural Communities to be addressed in the CEQA environmental review process.

Four sensitive habitats, all ranked S3 by CDFW, occur in the study area and consist of riparian (red alder-bigleaf maple community along Newell Creek), bigleaf maple stands, coast live oak – madrone woodland, and wetland habitats (seeps and seasonal wetlands). All of these sensitive habitats and primary Project components are depicted on Figures 7A and 7B. Although redwood groves are also identified as a sensitive community by CDFW, Although redwood groves are also identified as a

sensitive community by CDFW, the two stands of redwood trees present in proposed Staging Area 5 are small, isolated, composed of second-growth trees, and occur in upland areas with very few associated understory species. Furthermore, neither stand of redwood trees would be considered unique or a regionally-restricted habitat type in this portion of Santa Cruz County. . Therefore, this particular community does not meet the criteria for ranking as a Sensitive Natural Community and is not considered sensitive in the context of this Project.

It should be noted that the riparian habitat within the study area is considered sensitive by CDFW in the context of California Fish and Game Code Section 1602 under which potential impacts to riparian communities are regulated. Riparian corridors also are protected under provisions of Chapter 16.30, Title 16 Environmental and Resource Protection, of the Santa Cruz County Code (Santa Cruz County 2018).

3.3.4 Wildlife Corridors and Habitat Linkages

Wildlife corridors are landscape features, usually linear in shape, that facilitate the movement of animals (or plants) over time between two or more patches of otherwise disjunct habitat. Corridors can be small and even man made (e.g., highway underpasses, culverts, bridges), narrow linear habitat areas (e.g., riparian strips, hedgerows), or wider landscape-level extensions of habitat that ultimately connect even larger core habitat areas. Depending on the size and extent, wildlife corridors can be used during animal migration, foraging events, and juvenile dispersal, and ultimately serve to facilitate genetic exchange between core populations, provide avenues for plant seed dispersal, enable increased biodiversity and maintenance of ecosystem integrity within habitat patches, and help offset the negative impacts of habitat fragmentation (Hilty et al. 2006).

Although the study area has a non-linear configuration, the study area has value as a potential habitat linkage between areas of adjacent forest habitats. Newell Creek flows through the southern portion of the Project area and flows into the San Lorenzo River. The creek corridor is likely used by a number of common and special-status wildlife species as cover and foraging habitat, and to move between adjacent similar habitats.

4 POTENTIAL IMPACTS ON BIOLOGICAL RESOURCES

A number of the proposed Project components could result in potential adverse impacts on biological resources. These include construction activities associated with the new inlet/outlet structure in Loch Lomond Reservoir, new crossing of Newell Creek at the spillway plunge pool, construction of a new outlet structure and associated fill of the existing seepage channel, and replacement of a segment of the existing Newell Creek Pipeline from the outlet structure to the

Newell Creek Road bridge. Impacts associated with construction related access, staging, and decommissioning the existing inlet/outlet works could also occur.

Adverse impacts on biological resources could be considered potentially significant under CEQA if the impacts meet the thresholds of significance as listed in Appendix G of the CEQA Guidelines. Therefore, for the purposes of this report, and based on information contained in the 50% design report, the discussion below summarizes potentially significant impacts on biological resources that may occur within the study area as a result of Project implementation. Recommendations to avoid, minimize and/or mitigate potential impacts on these resources are also provided. As previously noted, a more detailed assessment of specific impacts on biological resources, as well as mitigation measures, will be provided in the EIR that will analyze any further refinements to the Project design.

4.1 Sensitive Resources

4.1.1 Special-Status Species

For those species either observed, known to occur, or potentially occurring within the study area, the discussion below addresses potential significant impacts pursuant to CEQA that could occur as a result of Project construction activities, and measures to potentially avoid, minimize, and/or mitigate these impacts.

Plants

Destruction of individuals or populations of special-status plants would be considered potentially significant under CEQA. The only species that has potential to occur in the study area, woodland woolythreads, was not observed in any of the Project work areas or defined staging areas during the reconnaissance-level field surveys, which were conducted during a period when this species would have been evident and identifiable. Therefore, woodland woolythreads is not considered to be present in these areas. However, based on the presence of a number of communities/habitats outside of the Project work areas and staging areas that could support this species, any Project activities occurring beyond the limits of the currently defined work areas and staging areas could impact woodland wooly threads, if present. Consequently, if Project activities are proposed outside of these areas, protocol-level surveys should be performed during the blooming season for woodland woolythreads. If any individuals or populations of woodland woolythreads, or other special-status plants, are detected during the protocol surveys, the location of the species would be mapped. If impacts to special-status plants cannot be avoided by Project activities, a species-specific mitigation plan would be prepared that describes the measures to be implemented to reduce and mitigate the unavoidable impacts of the Project. The mitigation plan would include (but not be limited to) the following elements and criteria and would be subject to review and approval by the City:

1. A description of any areas of habitat occupied by special status plants to be preserved and/or removed by the Project;
2. Identification and evaluation of the suitability of on-site or off-site areas for preservation, restoration, enhancement or translocation;
3. Analysis of species-specific requirements and considerations for success relative to restoration, enhancement or translocation.
4. A description of proposed methods of preservation, restoration, enhancement, and/or translocation;
5. A description of specific performance standards, including a required replacement ratio and minimum success standard of 1:1 for impacted individuals or populations;
6. A monitoring and reporting program to ensure mitigation success; and
7. A description of adaptive management and associated remedial measures to be implemented in the event that performance stands are not achieved.

Wildlife

Coho salmon – Central California Coast ESU; steelhead – Central California Coast DPS

The proposed Project improvements could result in direct impacts to steelhead if present, in the upper reach of Newell Creek within the Project study area. The proposed Project improvements would not result in direct impacts to coho salmon because they are not expected to occur within the study area. Project construction activities would involve disturbance in the Reservoir, Newell Creek, the seepage channel, or spillway plunge pool, which could result in potential indirect water quality effects downstream (e.g., elevated turbidity levels, discharges of fine sediments, etc.). Such water quality effects could result in indirect adverse impacts to coho salmon and steelhead or degradation of suitable spawning and rearing habitat for these species in the lower reaches of Newell Creek. Any indirect impacts to coho salmon or steelhead would be considered potentially significant under CEQA.

Best Management Practices (BMPs) are incorporated in the Project to protect water quality, prevent erosion and sedimentation into water bodies, and provide habitat protection during construction. Other measures recommended to avoid and minimize potential indirect water quality impacts on coho salmon and steelhead and habitat for these species in the lower reaches of Newell Creek include:

- All instream construction activities would be limited to the low-flow period between June 15 through November 1, except by extension approved by CDFW and NMFS.

Western pond turtle

Construction of the proposed Project has the potential to impact Western pond turtle, if present, in the Project area in Loch Lomond Reservoir, the spillway plunge pool, or downstream in Newell Creek. Impacts to Western pond turtle would be considered potentially significant under CEQA. Construction activities in Loch Lomond Reservoir associated with the installation of the new inlet/outlet structure and temporary boat launch along the shoreline, as well as the establishment of staging areas and improvements to access roads adjacent to the Reservoir could result in direct impacts through injury or harm to individual pond turtles, eggs or nests. However, because pond turtles are secretive and averse to human activity and disturbance, it is anticipated that any individual pond turtles that are present in the vicinity of the in Reservoir work area would move out of and away from the work area to other undisturbed portions of the Reservoir as work activities are initiated. In addition, grading and excavation work associated with the installation of the new NCP and culvert bridge crossing downstream of the spillway plunge pool or other activities that result in alteration of aquatic or upland habitats could also cause impacts to this species. Noise, construction traffic, ground vibration, and increased activity could also contribute to impacts on this species. Pre-construction surveys would be required in areas where the species may occur with implementation of a capture and relocation plan if any are found. The specifications for the survey will be included in the EIR.

Santa Cruz black salamander

Impacts to individuals or habitat areas known to support this species would be considered potentially significant under CEQA. Ground disturbing activities in damp upland areas near Newell Creek, the seepage channel, ephemeral drainages, and seeps at the base of NCD could result in impacts to this species if present. Pre-construction surveys would be required in areas where the species may occur with implementation of a relocation plan if any are found. The specifications will be included in the EIR.

California Giant Salamander

Newell Creek, the seepage channel, seeps and surrounding upland areas associated with these aquatic features provide suitable habitat for California giant salamander. Construction and other ground disturbing activities associated with the establishment of the construction platform at the base of NCD, installation of the new NCP across Newell Creek, and construction of the culvert bridge crossing downstream of the spillway plunge pool could have impacts on individuals and habitat for this species. Pre-construction surveys would be required in areas where the species may occur with implementation of a relocation plan if any are found. The specifications will be included in the EIR.

Foothill yellow-legged frog

While this species is not expected to breed or regularly occur within the study area due to the lack of suitable aquatic habitat for breeding and absence of other habitat characteristics that this species requires, dispersing individuals could temporarily occur within suitable refugia habitat along Newell Creek, the seepage channel, seeps, and spillway plunge pool within the study area. Work activities in Newell Creek associated with the installation of the NCP, new culvert bridge crossing downstream of the spillway plunge pool, and establishment of the construction platform and outlet pad work area, could result in adverse impacts on individuals of this species, if present during Project construction. Impacts on this species would be considered potentially significant under CEQA without mitigation and would potentially trigger the need for an Incidental Take Permit pursuant to Section 2081 of the California Fish and Game Code. Pre-construction surveys would be required in areas where the species may occur with implementation appropriate measures to avoid take of individuals. The specifications for the survey and mitigation will be included in the EIR.

Bald eagle

No active or inactive bald eagle nests (or nests of any other raptors) were observed within the study area during the reconnaissance-level field survey on April 11-12, 2018, or during the focused nesting raptor survey conducted on May 10, 2018. Direct or indirect impacts on active nests of bald eagle, if present, would be considered potentially significant under CEQA and a potential take under both the California Endangered Species Act and BAGEPA. Pre-construction nesting surveys would be required if construction activities are initiated during the nesting season for bald eagle (February-July in California) with implementation of appropriate buffers or other measures to protect nests and nesting activity. The specifications for the survey and mitigation will be included in the EIR.

San Francisco dusky-footed woodrat

Impacts to active San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*; SFDFW) middens would be considered potentially significant under CEQA. Because the dusky-footed woodrat (*Neotoma fuscipes*) and SFDFW cannot be distinguished phenotypically, and the Project is within the range of the SFDFW, presence of SFDFW is assumed. One woodrat midden was observed on the southern edge of Staging Area 6 and suitable habitat is present in nearly every vegetation community in the study area. Construction activities that involve ground disturbance or removal of vegetation, especially those activities necessary for establishment of Project work areas and staging areas, could result in impacts to SFDFW. For the protection of SFDFW present in the study area, complete avoidance of SFDFW middens/nests is recommended based on results

of pre-construction surveys. If complete avoidance of identified SFDFW middens/nests is not feasible, mitigation mitigations would be required to avoid or reduce impacts to the species; the details of the mitigation will be included in the EIR.

Bats

The potential for pallid bat and Townsend's big-eared bat to breed and/or roost within the study area is considered low based on the general lack of suitable roosting habitat observed during the reconnaissance-level survey conducted in 2018. However, a thorough survey for any potential roost habitat within the study area has not been conducted and, as such, the potential for either of these species to roost within the study area during Project construction activities cannot be entirely ruled out. Direct impacts on active maternity roosts or on daytime roost sites that would result in direct harm/injury to roosting bats would be considered potentially significant under CEQA. A pre-construction survey would be required with implementation of measures to avoid and minimize impacts to these species if present; the details of the survey and protection measures will be included in the EIR.

Native Birds and Common Raptors

The Project has potential to impact native birds, including common raptors if construction activities occur during the nesting season. All native birds and common raptors, in California are protected by the federal MBTA and provisions of the California Fish and Game Code. Section 3503.5 of the California Fish and Game Code specifically protects raptors. Ground disturbance or vegetation removal that would result in destruction of active bird nests or disruption of breeding/nesting activity could be a violation of the MBTA and/or California Fish and Game Code, as well as a potentially significant impact under CEQA. The bald eagle is also protected by the BAGEPA and the CESA while the marbled murrelet is regulated under both the ESA and CESA. Impacts to nesting individuals or populations of these species, in addition to being a potentially significant impact under CEQA, could also trigger the need for take authorization under the BAGEPA and CESA for bald eagle, and the ESA and CESA for marbled murrelet.

During the initial reconnaissance–level survey conducted on April 11-12, 2018 and during the focused raptor nest survey conducted on May 10, 2018, no active or inactive raptor nests were observed within the study area; however, several smaller passerine nests were observed throughout the study area. Given the size of the study area and diversity of habitats, nests of various passerine and raptor species could be constructed within the study area during future nesting seasons prior to Project construction. Pre-construction nesting surveys would be required if construction activities are initiated during the nesting season (February 1 – August 31) with implementation of

appropriate buffers or other measures to protect nests and nesting activity. The specifications for the survey and mitigation will be included in the EIR.

4.1.2 Jurisdictional Aquatic Resources

The proposed Project would result in impacts to Loch Lomond Reservoir, the seepage channel, an ephemeral drainage, two seep wetlands, one seasonal wetland, and Newell Creek. All of these features are considered potentially jurisdictional waters of the U.S. and impacts to these features would be considered potentially significant under CEQA. The construction of the new inlet/outlet structure and associated dredging in the Reservoir, improvements to the Reservoir shoreline along the boundary of Staging Area 1 for installation of the temporary boat launch facility, establishment of the construction platform and outlet pad work area at the base of NCD, installation of the NCP across Newell Creek, and construction of the culvert bridge crossing downstream of the spillway plunge pool would result in impacts to approximately 1.58 acres of wetlands and non-wetland waters of the U.S. This total consists of 0.06 acre of impacts to wetlands and 1.52 acres of impacts to non-wetland waters of the U.S.

Impacts to jurisdictional aquatic resources would trigger the need for authorizations from the regulatory agencies including Clean Water Act Section 404 Permit from the ACOE, Section 401 Water Quality Certification from the RWQCB, and Section 1602 Lake and Streambed Alteration Agreement from CDFW. The regulatory permitting process requires the project applicant demonstrate that the project design and associated impacts to jurisdictional aquatic resources comply with mitigation sequencing prioritized as follows: (1) avoidance of impacts; (2) minimization of impacts; and (3) compensation for unavoidable impacts. The following measures are recommended to avoid, minimize and compensate for impacts to jurisdictional aquatic resources resulting from Project implementation:

1. Future refinements to the proposed Project (i.e., as Project components are further developed from the 50% design level to 100% design) shall endeavor to avoid jurisdictional aquatic resources through Project design changes or implementation of alternative construction methodologies.
2. For unavoidable impacts to jurisdictional aquatic resources, a project-specific mitigation plan would be required. The mitigation plan will specify the criteria and standards by which the mitigation would compensate for impacts of the proposed Project and include discussion of the following:
    a. the mitigation objectives and type and amount of mitigation to be implemented (in-kind mitigation at a minimum mitigation ratio of 1:1);

b. the location of the proposed mitigation site (within the San Lorenzo River watershed, if possible);

c. the methods to be employed for mitigation implementation (wetland establishment, re-establishment, enhancement, preservation);

d. success criteria, a monitoring program to ensure mitigation success;

e. adaptive management and remedial measures in the event that performance stands are not achieved; and

f. a mechanism for long term management and protection of the mitigation area.

3. Where feasible and appropriate, all jurisdictional aquatic resources not directly affected by construction activities should be avoided and protected by establishing staking, flagging or fencing between the identified construction areas and aquatic resources to be avoided/preserved.

4. Sediment and erosion control BMPs would be implemented as part of the Project for all construction activities occurring in or adjacent to jurisdictional aquatic resources..

4.1.3 Sensitive Habitats

Project construction activities that result in degradation and/or loss of sensitive vegetation communities, including red alder-bigleaf maple forest (this community is dominant along Newell Creek in the study area), bigleaf maple forest, coast live oak-madrone woodland, and/or jurisdictional wetlands and aquatic resources would be considered potentially significant impacts under CEQA. Several Project components, including grading and site preparation work associated with Staging Area 5, establishment of the construction platform and outlet pad work area at the base of NCD, installation of the NCP across Newell Creek, construction of the culvert bridge crossing downstream of the spillway plunge pool, and improvements to the Reservoir shoreline along Staging Area 1 for the temporary boat launch facility, would all involve removal of sensitive vegetation communities and/or jurisdictional aquatic resources. Project construction would result in both temporary and permanent impacts on sensitive vegetation communities as in Table 2 summarized below.

Impacts to riparian/aquatic resources would also trigger the need for state and federal regulatory authorizations. Impacts to sensitive habitat resources, as well as to other natural vegetation communities in the study area, may also result in impacts to several special-status plant and animal species, as discussed above.

Table 2
Impacts to Sensitive Habitats in the Study Area

Proposed Construction Activity	Permanent Impact (Acres; habitat type[1])	Total (Acres)
Staging Area 2 Site Preparation	0.01; BMF	0.01
Culvert Bridge Crossing & NCP Installation	0.10; RAB	0.10
Construction Platform – Staging Area 4 Site Preparation	0.31; RAB & 0.01;BMF	0.32
Staging Area 5 Site Preparation	0.17; LOM	0.17
Total	**0.41 RAB; 0,17 LOM; 0,02 BMF**	**0.60**

[1]Habitat types: BMF = Bigleaf maple forest; RAB = Red Alder – Bigleaf maple forest; LOM = Coast live oak – Madrone woodland

4.1.4 Wildlife Corridors and Habitat Linkages

The study area 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 open space areas. However, Newell Creek serves as a natural riparian corridor that provides cover and food resources for many different wildlife species, and is likely used by several common and special-status species when moving between similar habitats in the region. During construction, activities could block or otherwise hinder wildlife movement along Newell Creek or temporarily affect the ability of wildlife to access other habitat areas upstream or downstream of the study area.. However, this impact would be temporary and would not permanently affect the function of the creek as a movement corridor and habitat linkage. Therefore, no significant impacts pursuant to CEQA are expected to occur.

5 REFERENCES CITED

16 U.S.C. 703–712. Migratory Bird Treaty Act, as amended.

ACOE (U.S. Army Corps of Engineers). 1987. *Corps of Engineers Wetlands Delineation Manual.* Online ed. Environmental Laboratory, Wetlands Research Program Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Engineer Waterways Experiment Station. January 1987. Accessed December 2016. http://www.fedcenter.gov/Bookmarks/index.cfm?id=6403&pge_id=1606.

ACOE. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast (Version 2.0).* Environmental Laboratory, ERDC/EL TR-10-3. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center. May 2010. Accessed March 2017. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1046494.pdf.

ACOE. 2014. *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.* Cold Regions Research and Engineering Laboratory, ERDC/CRREL TR-14-13. Hanover, New Hampshire: U.S. Army Engineer Research and Development Center. August 2014. Accessed March 2017. http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/west_mt_finalsupp_aug2014.pdf.

AECOM. 2018. Newell Creek Dam Inlet/Outlet Replacement Project, 50% Design Report, Final Draft Memorandum. Prepared for the City of Santa Cruz Water Department, July.

Allterra Environmental, Inc. 2009. Western pond turtles (*Actinemys marmorata*) at Newell Creek Reservoir, Santa Cruz County, California: Habitat use, population structure and prospects for viability. Prepared for City of Santa Cruz Water Department, California.

Berry, C. 2018. Discussion of current operations of Newell Creek Dam and natural resources in the Newell Creek Watershed. Conversation between C. Berry (City of Santa Cruz Water Department), S. Easley Perez (City of Santa Cruz Water Department), L. Burris (Dudek), and L. Achter (Dudek). April 11.

Biotic Resources Group. 2013. *Newell Creek Dam Hydro-electric Project. Santa Cruz County, California. Biological Report*. 31 pp.

CDFW (California Department of Fish and Wildlife). 2000, 2014. “Black Salamander.” Prepared by M. Marangio. CDFW, California Wildlife Habitat Relationships System, California Interagency Wildlife Task Group.

CDFW (California Department of Fish and Wildlife). 2000. "Western Pond Turtle." Prepared by S. Morey. CDFW, California Wildlife Habitat Relationships System, California Interagency Wildlife Task Group.

CDFW. 2018a. California Natural Diversity Database (CNDDB). Rarefind, Version 5 (Commercial Subscription). Sacramento, California. https://www.wildlife.ca.gov/Data/CNDDB.

CDFW. 2018b. "Special Animals List." California Natural Diversity Database. CDFW, Biogeographic Data Branch. July 2017. California Native Plant Society (CNPS), Rare Plant Program. 2018. *Inventory of Rare and Endangered Plants (online edition, v8-02).* Accessed March 2018. California Native Plant Society, Sacramento, California. http://www.rareplants.cnps.org/.

California Native Plant Society (CNPS), Rare Plant Program. 2018. *Inventory of Rare and Endangered Plants (online edition, v8-02).* Accessed March 2018.California Native Plant Society, Sacramento, California. http://www.rareplants.cnps.org/.

City of Santa Cruz. 2013. *Draft Watershed Lands Management Plan. Final Implementation Plan. Newell, Zayante, and Laguna Creek Tracts (DRAFT).* Prepared by the City of Santa Cruz Water Department. 100 pp.

Dudek. 2018. *Preliminary Jurisdictional Delineation Newell Creek Inlet-Outlet Replacement Project, Santa Cruz County, California*. Prepared for the City of Santa Cruz Water Department. 53 pp. August.

Google Earth V 7.1.5.1557. 2015. Auburn, California. 37°24'52" N, 122°23'51" W, Eye alt 5,830 feet. May 20, 2015. Accessed April 5, 2017. *Digital Globe 2017*. http://www.earth.google.com.

HES. 2007. Newell Creek Habitat and Fish Population Survey 2007. Technical Memorandum Prepared for: Ebbin, Moser and Skaggs LLC. J-133. December 13, 2007.

HES. 2017. Newell Creek Limit of Anadromy. Prepared for City of Santa Cruz Water Department, California.

Hall, E.R. 1981. Mammals of North America. John Wiley and Sons, 1181 pp.Hamer, T. E. and S. K. Nelson. 1995. *Characteristics of Marbled Murrelet nest trees and nesting stands*. In Ecology and conservation of the Marbled Murrelet., edited by C. J. Ralph, Jr G. L. Hunt,

M. G. Raphael and J. F. Piatt, 69-82. Albany, CA: USDA For. Serv. Gen. Tech. Rep. PSW-152.

Hilty, J. A., W. Z. Lidicker, and A. M. Merenlender. 2006. *Corridor Ecology: The Science and Practice of Linking Landscapes for Biodiversity Conservation.* Washington, D.C.: Island Press

Lanner, R.M. 1999. Conifers of California. Cachuma Press, Los Olivos, California, USA.

NMFS. 2011. Letter from Rodney R. McInnis, NOAA to Lieutenant Colonel Torrey A. DiCiro of the USACE, regarding consultation for the City of Santa Cruz's water intake improvement at Newell Creek Dam on Loch Lomond Reservoir. June 21.

Santa Cruz County 2018. Santa Cruz County Code Title 16 Environmental and Resource Protection, Chapter 16.30 Riparian Corridor and Wetlands Protection. (2018). Updated May 8, 2018

Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation, Second Edition*. California Native Plant Society, Sacramento. 1300 pp.

Seltenrich, C. P. and A. C. Pool. 2002. A standardized approach for habitat assessments and visual encounter surveys for the foothill yellow-legged frog (*Rana boylii*). Pacific Gas and Electric Company.

Swanson Hydrology & Geomorphology, et at. 2001. Watershed Resources Management Plan Existing Conditions Report. Prepared for: City of Santa Cruz Water Department and The Watershed Resources Technical Advisory Task Force, Santa Cruz, California.

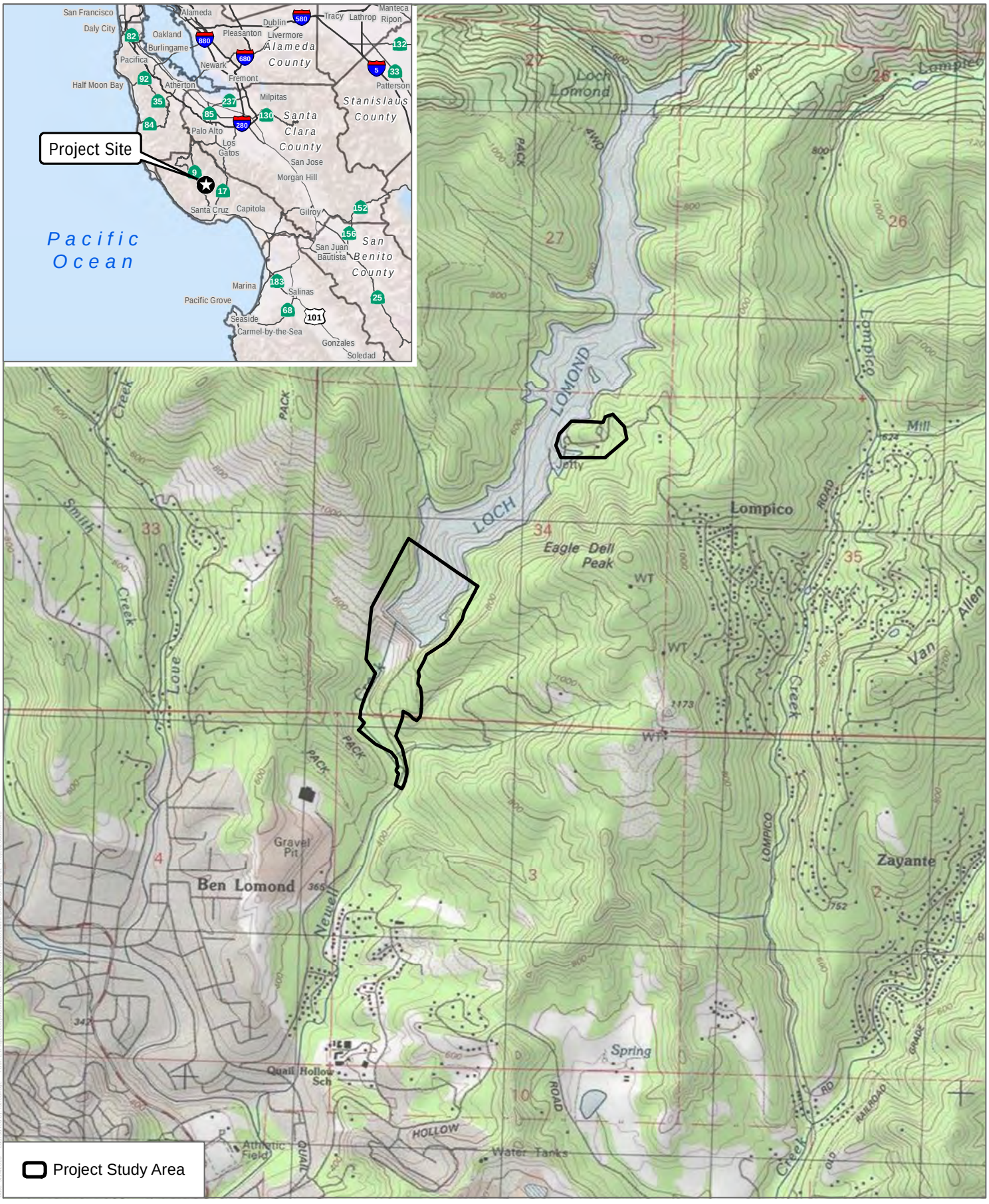
Swanson Hydrology & Geomorphology, et al. 2002. Watershed Resources Management Plan: Planning Analysis and Recommendations Report. Prepared for: City of Santa Cruz Water Department and The Watershed Resources Technical Advisory Task Force, California.

U.S. Army Corps of Engineers (ACOE). 1987. *Corps of Engineers Wetlands Delineation Manual.* Wetlands Research Program Technical Report Y-87- 1.

USDA (U.S. Department of Agriculture). 2018. Natural Resources Conservation Service (NRCS). Web Soil Survey. Accessed March 2018. http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

USFWS. 1997. Recovery Plan for the Marbled Murrelet (Washington, Oregon, and California Populations). Region 1, U.S. Fish and Wildlife Service: Portland, Ore.

USFWS (U.S. Fish and Wildlife Service). 2018. Information, Planning and Conservation (IPaC). Accessed March 2018. https://ecos.fws.gov/ipac/.



SOURCE: USGS 7.5-Minute Series Felton Quadrangle

DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Newell Creek Dam Inlet/Outlet Replacement Project

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SOURCE: Bing Maps 2018

DUDEK

0 500 1,000 Feet

FIGURE 2

Project Site

Newell Creek Dam Inlet/Outlet Replacement Project

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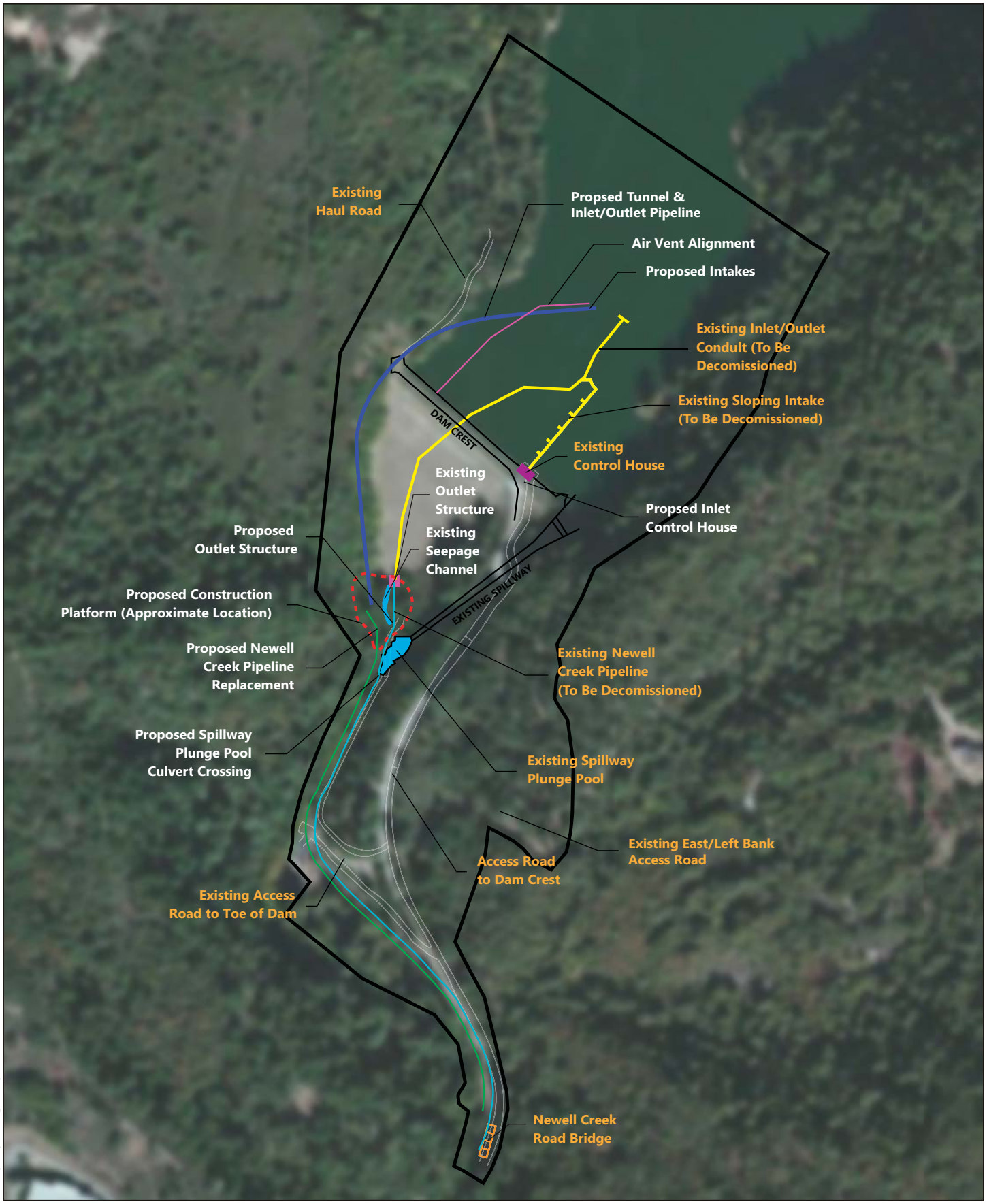

FIGURE 3

Project Overview

Newell Creek Dam Inlet/Outlet Replacement Project

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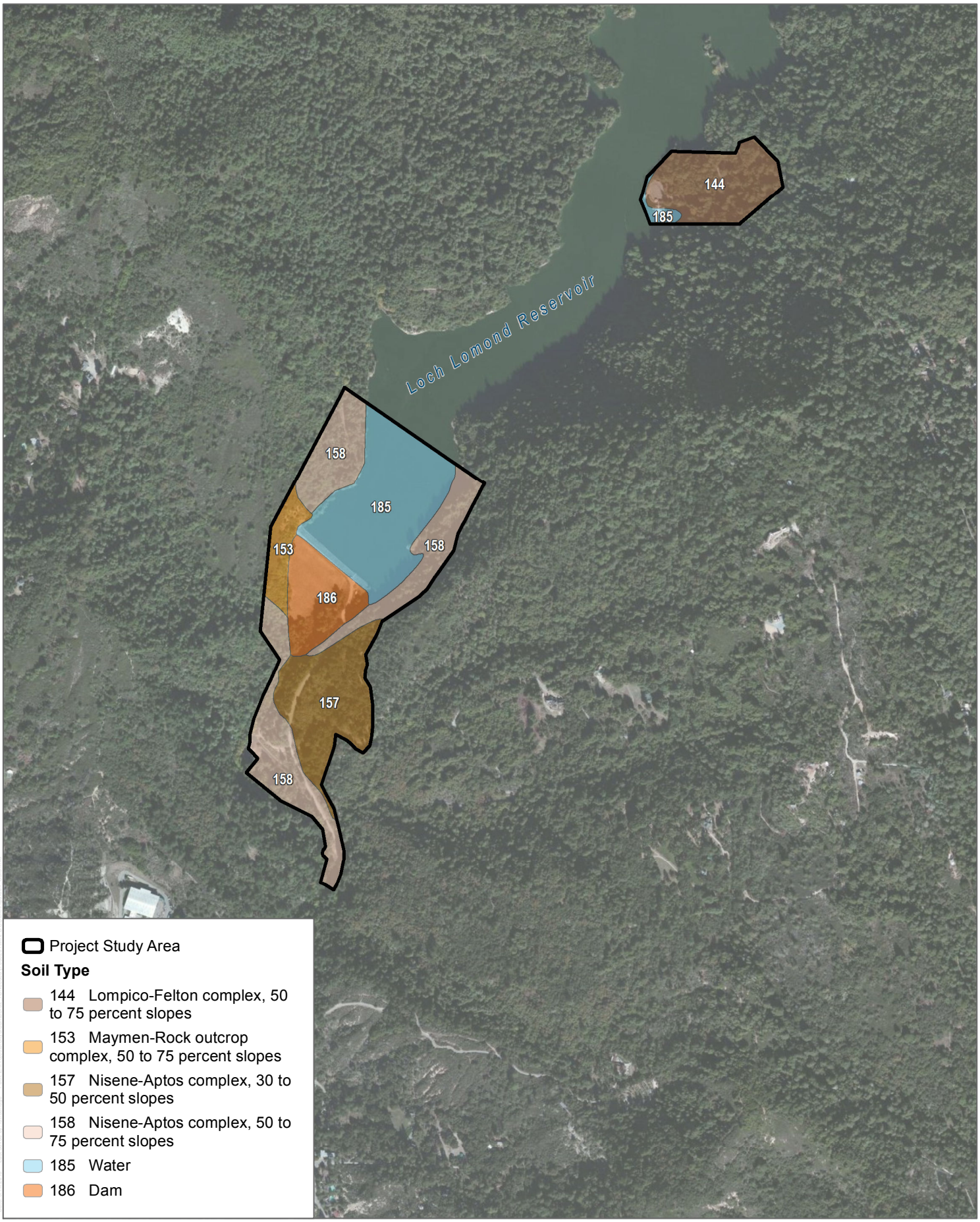

SOURCE: Bing Maps 2018; USDA 2017

DUDEK

0 500 1,000 Feet

FIGURE 4

Soils

Newell Creek Dam Inlet/Outlet Replacement Project

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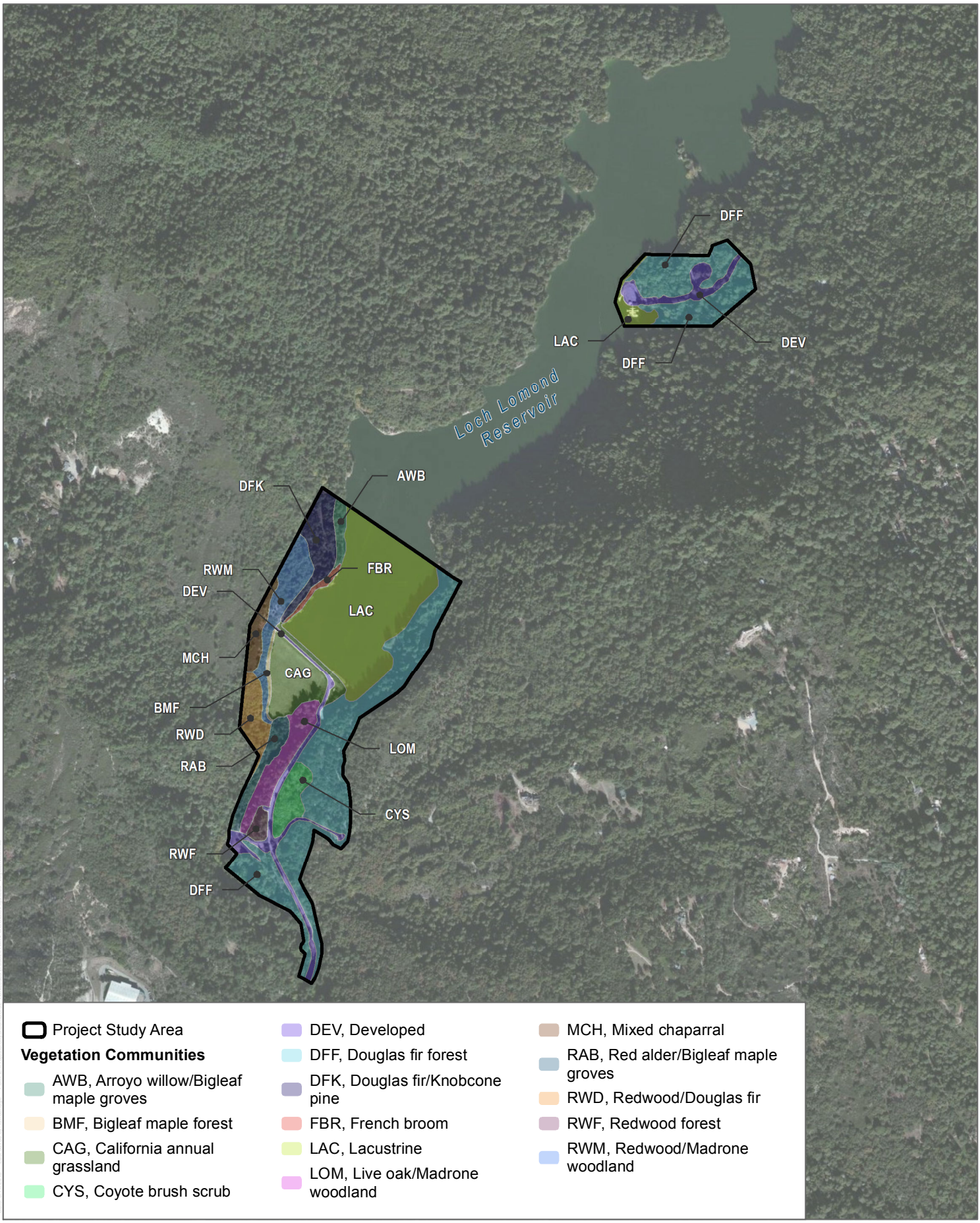

SOURCE: Bing Maps 2018

DUDEK

0 500 1,000 Feet

FIGURE 5

Vegetation Communities and Land Cover Types

Newell Creek Dam Inlet/Outlet Replacement Project

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Seepage channel downstream of existing outlet structure.
View facing south. April 10, 2018.

Existing outlet structure.
View facing north. April 10, 2018.

FIGURE 6A

Representative Site Photographs

Newell Creek Dam Inlet/Outlet Replacement Project

DUDEK

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Plunge pool below Newell Creek Dam spillway.
View facing north. April 10, 2018.

Newell Creek and associated riparian vegetation.
View facing south. April 10, 2018.

DUDEK

FIGURE 6B

Representative Site Photographs

Newell Creek Dam Inlet/Outlet Replacement Project

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South face of dam downslope toward existing outlet structure.
View facing south. April 10, 2018.

Crest of Newell Creek Dam and existing access road.
View facing west. April 10, 2018.

FIGURE 6C

Representative Site Photographs

Newell Creek Dam Inlet/Outlet Replacement Project

DUDEK

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Southwest shoreline of Loch Lomond.
View facing north. April 10, 2018.

FIGURE 6D

Representative Site Photographs

Newell Creek Dam Inlet/Outlet Replacement Project

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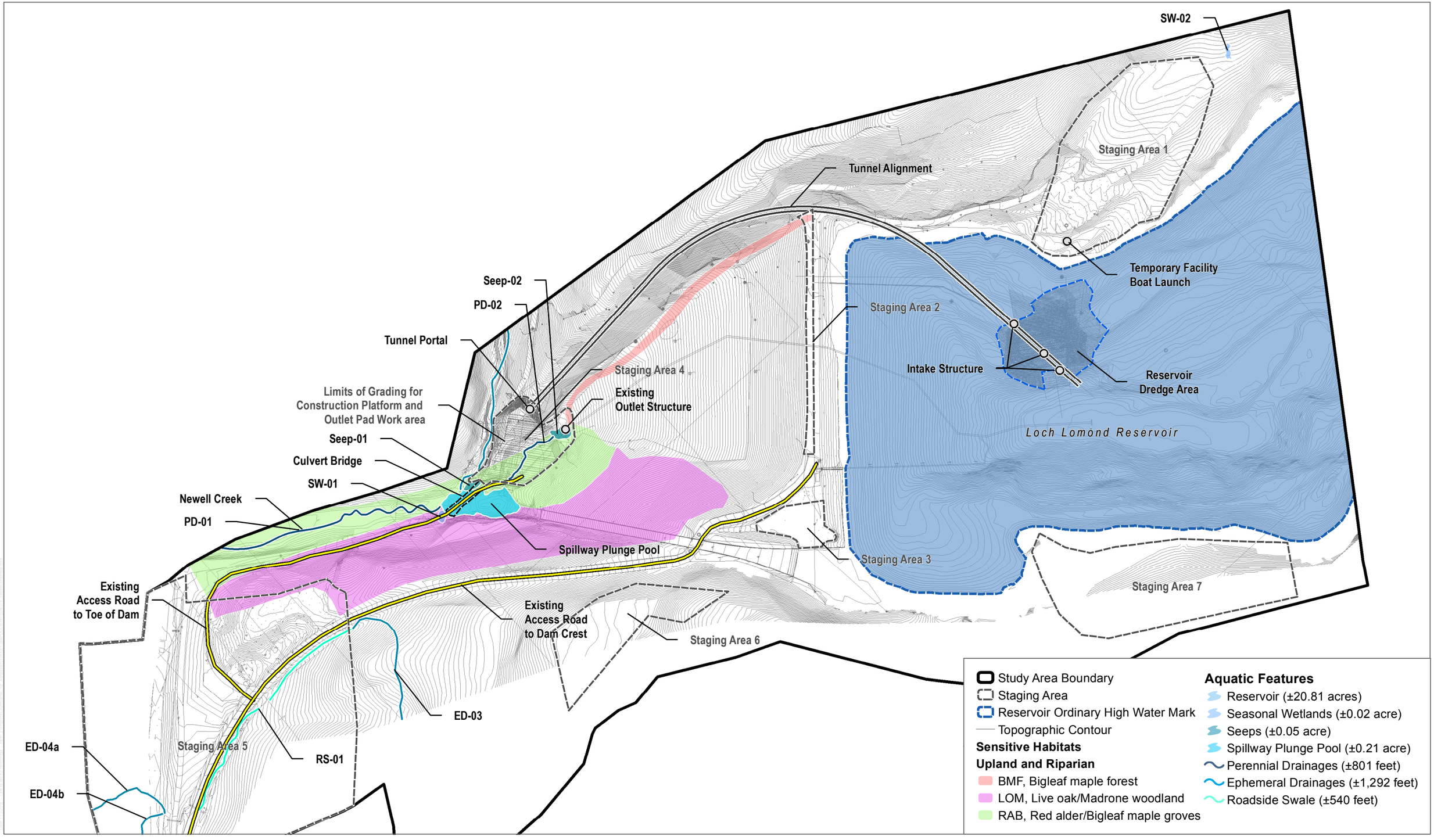


SOURCE: USDA 2016; AECOM 2018

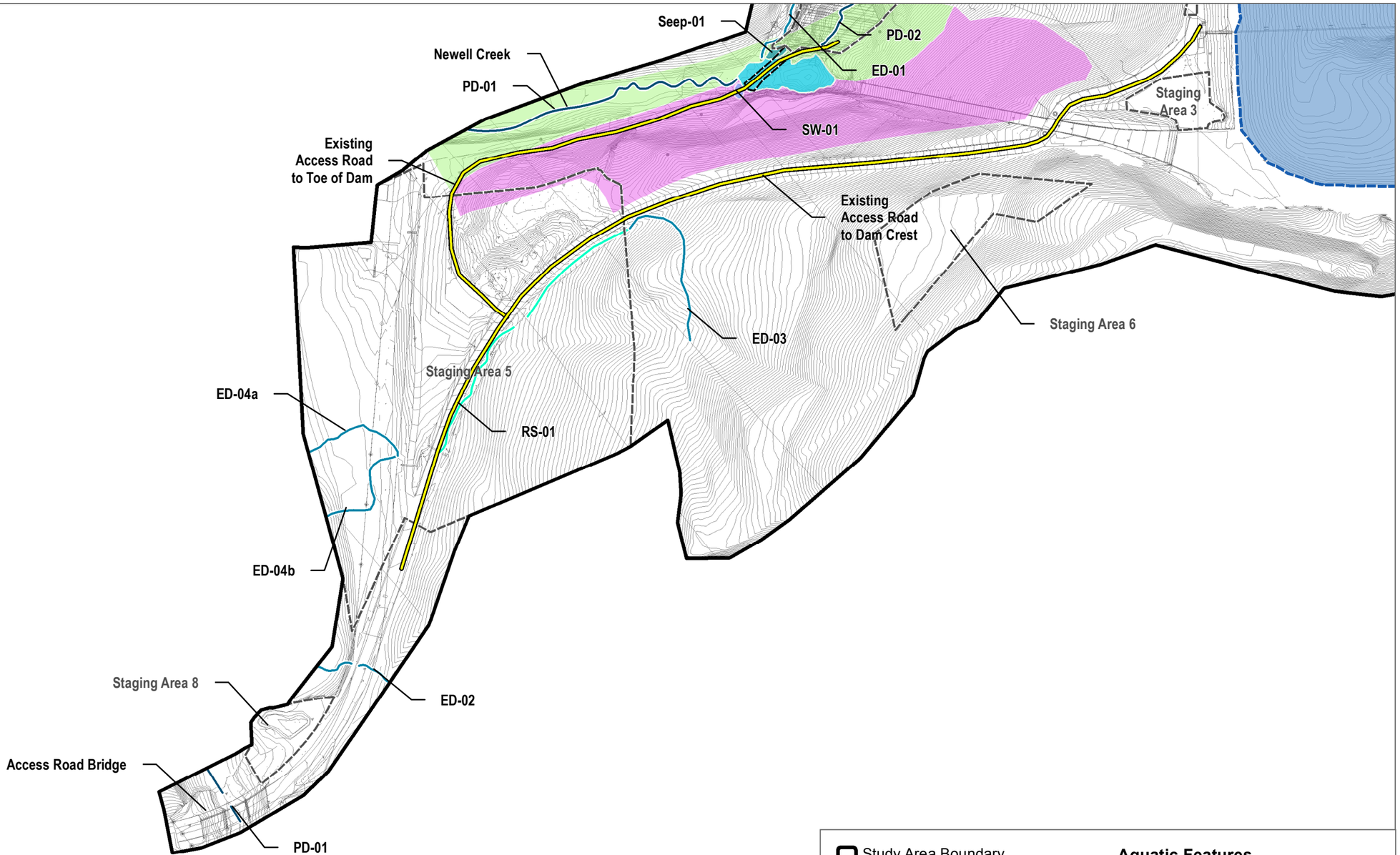
DUDEK

0 100 200 Feet

FIGURE 7A

Sensitive Habitats

Newell Creek Dam Inlet/Outlet Replacement Project



SOURCE: USDA 2016; AECOM 2018

DUDEK

0 100 200 Feet

FIGURE 7B

Sensitive Habitats

Newell Creek Dam Inlet/Outlet Replacement Project

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APPENDIX A

Plant Species Observed within the Newell Creek Dam Inlet/Outlet Replacement Project Study Area, Santa Cruz County, California

APPENDIX A
Plant Species Observed on the Newell Creek Dam Outlet Conduit Replacement Project Site in Santa Cruz County, California

EUDICOTS

VASCULAR SPECIES

ADOXACEAE—MUSKROOT FAMILY

Sambucus nigra—blue elderberry

ANACARDIACEAE—SUMAC OR CASHEW FAMILY

Toxicodendron diversilobum—poison oak

APIACEAE—CARROT FAMILY

* *Foeniculum vulgare*—fennel

* *Torilis arvensis*—spreading hedgeparsley

ARALIACEAE—GINSENG FAMILY

* *Hedera helix*—English ivy

ASTERACEAE—SUNFLOWER FAMILY

Artemisia douglasiana—Douglas' sagewort

Baccharis pilularis—coyote brush

* *Cirsium vulgare*—bull thistle

Hieracium albiflorum—white hawkweed

* *Sonchus asper*—spiny sowthistle

BETULACEAE—BIRCH FAMILY

Alnus rhombifolia—white alder

Corylus cornuta—beaked hazelnut

BORAGINACEAE—BORAGE FAMILY

Amsinckia menziesii—Menzies' fiddleneck

Cynoglossum grande—Pacific hound's tongue

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

Phacelia ramosissima—branching phacelia

BRASSICACEAE—MUSTARD FAMILY

* *Brassica nigra*—black mustard

Cardamine californica—milkmaids

Nasturtium officinale—watercress

APPENDIX A
Plant Species Observed on the Newell Creek Dam Outlet Conduit Replacement Project Site in Santa Cruz County, California

CAPRIFOLIACEAE—HONEYSUCKLE FAMILY

Lonicera hispidula—pink honeysuckle
Symphoricarpos albus—common snowberry

CARYOPHYLLACEAE—PINK FAMILY

* *Stellaria media*—common chickweed

ERICACEAE—HEATH FAMILY

Arbutus menziesii—madrone

FABACEAE—LEGUME FAMILY

Acmispon glaber—deer weed
* *Genista monspessulana*—French broom
Lathyrus jepsonii—Delta tule pea
Lathyrus torreyi—Torrey's pea
Lupinus bicolor—miniature lupine
* *Melilotus indicus*—annual yellow sweetclover
* *Trifolium campestre*—field clover
* *Vicia sativa*—garden vetch
* *Vicia villosa*—winter vetch

FAGACEAE—OAK FAMILY

Notholithocarpus densiflorus—tanoak
Quercus agrifolia—coast live oak

GERANIACEAE—GERANIUM FAMILY

* *Geranium dissectum*—cutleaf geranium
* *Geranium molle*—dovefoot geranium

LAMIACEAE—MINT FAMILY

Clinopodium douglasii—yerba buena
* *Marrubium vulgare*—horehound

LAURACEAE—LAUREL FAMILY

Umbellularia californica—California bay

APPENDIX A
Plant Species Observed on the Newell Creek Dam Outlet Conduit Replacement Project Site in Santa Cruz County, California

MONTIACEAE—MONTIA FAMILY

Claytonia perfoliata—miner's lettuce

PHRYMACEAE—LOPSEED FAMILY

Diplacus aurantiacus—bush monkeyflower
Erythranthe guttata—common monkey flower

PLANTAGINACEAE—PLANTAIN FAMILY

* *Plantago lanceolata*—narrowleaf plantain

RHAMNACEAE—BUCKTHORN FAMILY

Ceanothus cuneatus—wedge leaf ceanothus
Ceanothus papillosus—wart leaf ceanothus

ROSACEAE—ROSE FAMILY

Holodiscus discolor—ocean spray brush
Rosa gymnocarpa—dwarf rose
* *Rubus armeniacus*—Himalayan black berry
Rubus ursinus—California blackberry

RUBIACEAE—MADDER FAMILY

Galium californicum—California bedstraw

SALICACEAE—WILLOW FAMILY

Salix lasiandra—shining willow

SAPINDACEAE—SOAPBERRY FAMILY

Acer macrophyllum—bigleaf maple
Aesculus californica—California buckeye

SAXIFRAGACEAE—SAXIFRAGE FAMILY

Lithophragma affine—San Francisco woodland-star

URTICACEAE—NETTLE FAMILY

Urtica dioica—stinging nettle

APPENDIX A
Plant Species Observed on the Newell Creek Dam Outlet Conduit Replacement Project Site in Santa Cruz County, California

FERNS AND FERN ALLIES

VASCULAR SPECIES

BLECHNACEAE—DEER FERN FAMILY

Woodwardia fimbriata—giant chainfern

DENNSTAEDTIACEAE—BRACKEN FAMILY

Pteridium aquilinum—western brackenfern

DRYOPTERIDACEAE—WOOD FERN FAMILY

Dryopteris arguta—coastal woodfern

Polystichum munitum—western swordfern

EQUISETACEAE—HORSETAIL FAMILY

Equisetum hyemale—scouringrush horsetail

PTERIDACEAE—BRAKE FAMILY

Adiantum capillus-veneris—common maidenhair

Pentagramma triangularis—goldback fern

GYMNOSPERMS AND GNETOPHYTES

VASCULAR SPECIES

CUPRESSACEAE—CYPRESS FAMILY

Calocedrus decurrens—incense cedar

Sequoia sempervirens—redwood

PINACEAE—PINE FAMILY

Pinus attenuata—knobcone pine

Pseudotsuga menziesii—Douglas fir

MONOCOTS

VASCULAR SPECIES

CYPERACEAE—SEDGE FAMILY

Cyperus eragrostis—tall flatsedge

APPENDIX A
Plant Species Observed on the Newell Creek Dam Outlet Conduit Replacement Project Site in Santa Cruz County, California

IRIDACEAE—IRIS FAMILY

Iris douglasiana—Douglas iris

LILIACEAE—LILY FAMILY

Calochortus albus—white fairy-lantern

MELANTHIACEAE—FALSE HELLEBORE FAMILY

Toxicoscordion fremontii—Fremont's deathcamas

POACEAE—GRASS FAMILY

* *Avena fatua*—wild oat
* *Bromus diandrus*—ripgut brome
* *Bromus hordeaceus*—soft brome
* *Festuca myuros*—rat-tail fescue
* *Festuca perennis*—perennial rye grass
Festuca rubra—red fescue
* *Hordeum murinum*—mouse barley
* *Phalaris aquatica*—Harding grass

RUSCACEAE—LILY-OF-THE-VALLEY FAMILY

Maianthemum racemosum—feathery false lily of the valley

* Non-native species

"Latin and common names for plant species with a California Rare Plant Rank (formerly CNPS List) follow the *California Native Plant Society On-Line Inventory of Rare, Threatened, and Endangered Plants of California* (CNPS 2015). For plant species without a California Rare Plant Rank, Latin names follow the *Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California* (Jepson Flora Project 2015) and common names follow the United States Department of Agriculture (USDA) Natural Resources Conservation Service Plants Database (USDA 2015)."

CNPS (California Native Plant Society). 2018. Inventory of Rare and Endangered Plants (online edition, v8-02). Sacramento, California: California N
www.rareplants.cnps.org.

APPENDIX B

Special-Status Plant Species Known From or Potentially Occurring in the Vicinity of the Newell Creek Dam Inlet/Outlet Replacement Project Study Area, Santa Cruz County, California

APPENDIX B
Special-Status Plant Species Known From or Potentially Occurring in the Vicinity of the Newell Creek Dam Outlet Conduit Replacement Project in Santa Cruz County, California

Scientific Name	Common Name	Status (Federal/State, CRPR)	Life Form/Primary Habitat Associations/ Elevation Range (feet)/Blooming Period	Potential to Occur
Agrostis blasdalei	Blasdale's bent grass	None/None, 1B.2	Perennial rhizomatous herb. Coastal bluff scrub, coastal dunes, coastal prairie. Elevation 0-490 feet. Blooms May-Jul.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Amsinckia lunaris	bent-flowered fiddleneck	None/None, 1B.2	Annual herb. Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation 5-1,640 feet. Blooms Mar-Jun.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Arctostaphylos andersonii	Anderson's manzanita	None/None, 1B.2	Perennial evergreen shrub. Broadleaved upland forest, chaparral, North Coast coniferous forest (openings and edges). Elevation 195-2,495 feet. Blooms Nov-May.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Arctostaphylos glutinosa	Schreiber's manzanita	None/None, 1B.2	Perennial evergreen shrub. Closed-cone coniferous forest, chaparral in diatomaceous shale soils. Elevation 555-2,245 feet. Blooms Mar-Apr.	**Low potential to occur**. Although the coniferous forest and chaparral communities in the study area provide potentially suitable habitat for this species, no diatomaceous shale soils are present in the study area. The nearest documented occurrence for this species was last observed in 1965 approximately 4.6 miles southwest of the study area (CDFW 2018).
Arctostaphylos ohloneana	Ohlone manzanita	None/None, 1B.1	Evergreen shrub. Closed-cone coniferous forest, coastal scrub. Elevation 1,475-1,740 feet. Blooms Feb-Mar.	**Low potential to occur**. Although the coniferous forest types in the study area provide potentially suitable habitat for this species, it has not been documented within 5 miles of the study area. The nearest documented occurrence was observed in 2009 approximately 6.8 miles west of the study area (CDFW 2018).
Arctostaphylos pajaroensis	Pajaro manzanita	None/None, 1B.1	Perennial evergreen shrub. Chaparral (sandy), cismontane woodland. Elevation 95-2,495 feet. Blooms Dec-Mar.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Arctostaphylos regismontana	Kings Mountain manzanita	None/None, 1B.2	Perennial evergreen shrub. Broadleaved upland forest, chaparral, North Coast	**Not expected to occur**. The study area lacks suitable habitat for this species.

Scientific Name	Common Name	Status (Federal/State, CRPR)	Life Form/Primary Habitat Associations/ Elevation Range (feet)/Blooming Period	Potential to Occur
			coniferous forest (granitic or sandstone). Elevation 1,000-2,395 feet. Blooms Dec-Apr.	
Arctostaphylos silvicola	Bonny Doon manzanita	None/None, 1B.2	Perennial evergreen shrub. Closed-cone coniferous forest, chaparral, lower montane coniferous forest. Elevation 390-1,970 feet. Blooms Jan-Mar.	**Low potential to occur**. Although the sandy marine terrace substrates that this species is typically known to occur on are absent, the coniferous forest types (Douglas Fir, Douglas Fir-Knobcone Pine, Redwood-Douglas Fir) and mixed chaparral community in the study area may provide potentially suitable habitat for this species. There are several documented occurrences within 5 miles of the study area; the nearest documented occurrence was observed in 1977 approximately 0.4 mile southwest of the study area (CDFW 2018). This species was not observed in any of the proposed work areas or staging areas during the March 2018 surveys, when this perennial evergreeen species would have been evident and identifiable.
Arenaria paludicola	marsh sandwort	Endangered/Endangered, 1B.1	Perennial stoloniferous herb. Marshes and swamps (freshwater or brackish) in sandy openings. Elevation 5-560 feet. Blooms May-Aug.	**Not expected to occur**. The study area lacks suitable sandy openings in marshes and swamps.
Calyptridium parryi var. hesseae	Santa Cruz Mountains pussypaws	None/None, 1B.1	Annual herb. Chaparral, cismontane woodland (sandy or gravelly openings). Elevation 1,000-5,020 feet. Blooms May-Aug.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Campanula californica	swamp harebell	None/None, 1B.2	Perennial rhizomatous herb. Bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and swamps (freshwater), North Coast coniferous forest (mesic). Elevation 0-1,330 feet. Blooms Jun-Oct.	**Low potential to occur**. Although mesic areas in the coniferous forest in the study area may provide potentially suitable habitat, there is only one documented occurrence of this species within 5 miles. The nearest documented occurrence was last observed in 1944 approximately 3.6 miles south of the study area (CDFW 2018).

Scientific Name	Common Name	Status (Federal/State, CRPR)	Life Form/Primary Habitat Associations/ Elevation Range (feet)/Blooming Period	Potential to Occur
Carex comosa	bristly sedge	None/None, 2B.1	Perennial rhizomatous herb. Coastal prairie, marshes and swamps (lake margins), valley and foothill grassland. Elevation 0-2,050 feet. Blooms May-Sep.	**Not expected to occur**. Although the reservioir margins in the study area may provide potentially suitable habitat for this species, it has not been previously documented within 10 miles of the study area (CDFW 2018).
Carex saliniformis	deceiving sedge	None/None, 1B.2	Perennial rhizomatous herb. Coastal prairie (mesic), coastal scrub, meadows and seeps, marshes and swamps (coastal salt). Elevation 5-755 feet. Blooms Jun-Jul.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Chorizanthe pungens var. hartwegiana	Ben Lomond spineflower	Endangered/None, 1B.1	Annual herb. Lower montane coniferous forest (maritime ponderosa pine sandhills). Elevation 295-2,000 feet. Blooms Apr-Jun.	**Not expected to occur**. Although there are numerous documented occurrence of this species within 5 miles of the study area, the study area lacks suitable maritime ponderosa pine sandhills habitat (CDFW 2018).
Chorizanthe robusta var. hartwegii	Scotts Valley spineflower	Endangered/None, 1B.1	Annual herb. Meadows and seeps (sandy), valley and foothill grassland (mudstone and Purisima outcrops). Elevation 750-805 feet. Blooms Apr-Jun.	**Not expected to occur**. The study area lacks suitable habitat and is outside the known elevation range for this species.
Chorizanthe robusta var. robusta	robust spineflower	Endangered/None, 1B.1	Annual herb. Chaparral (maritime), cismontane woodland (openings), coastal dunes, coastal scrub (sandy or gravelly). Elevation 5-985 feet. Blooms Apr-Sep.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Cirsium fontinale var. campylon	Mt. Hamilton fountain thistle	None/None, 1B.2	Perennial herb. Chaparral, cismontane woodland, valley and foothill grassland (serpentinite seeps). Elevation 325-2,920 feet. Blooms Feb (Apr-Oct).	**Not expected to occur**. The study area lacks suitable habitat for this species.
Collinsia multicolor	San Francisco collinsia	None/None, 1B.2	Annual herb. Closed-cone coniferous forest, coastal scrub (sometimes serpentinite). Elevation 95-820 feet. Blooms Feb (Mar-May).	**Not expected to occur**. Although the coniferous forest in the study area provides potentially suitable habitat for this species, it has only been previously documented along the coast, approximately 9 miles west of the study area (CDFW 2018).

Scientific Name	Common Name	Status (Federal/State, CRPR)	Life Form/Primary Habitat Associations/ Elevation Range (feet)/Blooming Period	Potential to Occur
Dacryophyllum falcifolium	tear drop moss	None/None, 1B.3	Moss. North Coast coniferous forest (carbonate). Elevation 160-900 feet.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Dudleya abramsii ssp. setchellii	Santa Clara Valley dudleya	Endangered/None, 1B.1	Perennial herb. Cismontane woodland, valley and foothill grassland (serpentinite, rocky). Elevation 195-1,495 feet. Blooms Apr-Oct.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Eriogonum nudum var. decurrens	Ben Lomond buckwheat	None/None, 1B.1	Perennial herb. Chaparral, cismontane woodland, lower montane coniferous forest (maritime ponderosa pine sandhills). Elevation 160-2,625 feet. Blooms Jun-Oct.	**Not expected to occur**. Although there are numerous documented occurrence of this species within 5 miles of the study area, the study area lacks suitable maritime ponderosa pine sandhills habitat (CDFW 2018).
Erysimum teretifolium	Santa Cruz wallflower	Endangered/Endangered, 1B.1	Perennial herb. Chaparral, lower montane coniferous forest (inland marine sands). Elevation 390-2,000 feet. Blooms Mar-Jul.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Fissidens pauperculus	minute pocket moss	None/None, 1B.2	Moss. North Coast coniferous forest (damp coastal soil). Elevation 30-3,360 feet.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Fritillaria liliacea	fragrant fritillary	None/None, 1B.2	Perennial bulbiferous herb. Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland (often serpentinite). Elevation 5-1,345 feet. Blooms Feb-Apr.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Grimmia torenii	Toren's grimmia	None/None, 1B.3	Moss. Chaparral, cismontane woodland, lower montane coniferous forest (openings, rocky, boulder and rock walls, carbonate, volcanic). Elevation 1,065-3,805 feet.	**Not expected to occur**. Although rock outcroppings in the coniferous forest and woodland communities in the study area may provide potentially suitable habitat for this species, it has not been previously documented within 10 miles of the study area (CDFW 2018).
Grimmia vaginulata	vaginulate grimmia	None/None, 1B.1	Moss. Chaparral (openings, rocky, boulder and rock walls, carbonate). Elevation 2,245 feet.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Hesperevax sparsiflora var. brevifolia	short-leaved evax	None/None, 1B.2	Annual herb. Coastal bluff scrub (sandy), coastal dunes, coastal prairie. Elevation 0-705 feet. Blooms Mar-Jun.	**Not expected to occur**. The study area lacks suitable habitat for this species.

Scientific Name	Common Name	Status (Federal/State, CRPR)	Life Form/Primary Habitat Associations/ Elevation Range (feet)/Blooming Period	Potential to Occur
Hesperocyparis abramsiana var. abramsiana	Santa Cruz cypress	Threatened/Endangered, 1B.2	Perennial evergreen tree. Closed-cone coniferous forest, chaparral, lower montane coniferous forest (sandstone or granitic). Elevation 915-2,625 feet.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Hesperocyparis abramsiana var. butanoensis	Butano Ridge cypress	Threatened/Endangered, 1B.2	Perennial evergreen tree. Closed-cone coniferous forest, chaparral, lower montane coniferous forest (sandstone). Elevation 1,310-1,610 feet. Blooms Oct.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Hoita strobilina	Loma Prieta hoita	None/None, 1B.1	Perennial herb. Chaparral, cismontane woodland, riparian woodland (usually serpentinite, mesic). Elevation 95-2,820 feet. Blooms May-Jul (Aug-Oct).	**Not expected to occur**. The study area lacks serpentine soil substrates preferred by this species and it has not been previously documented within 10 miles of the study area (CDFW 2018).
Holocarpha macradenia	Santa Cruz tarplant	Threatened/Endangered, 1B.1	Annual herb. Coastal prairie, coastal scrub, valley and foothill grassland (often clay, sandy). Elevation 30-720 feet. Blooms Jun-Oct.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Horkelia cuneata var. sericea	Kellogg's horkelia	None/None, 1B.1	Perennial herb. Closed-cone coniferous forest, chaparral (maritime), coastal dunes, coastal scrub (sandy or gravelly, openings). Elevation 30-655 feet. Blooms Apr-Sep.	**Not expected to occur**. The study area lacks suitable maritime, sandy, or gravelly openings.
Horkelia marinensis	Point Reyes horkelia	None/None, 1B.2	Perennial herb. Coastal dunes, coastal prairie, coastal scrub (sandy). Elevation 15-2,475 feet. Blooms May-Sep.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Lasthenia californica ssp. macrantha	perennial goldfields	None/None, 1B.2	Perennial herb. Coastal bluff scrub, coastal dunes, coastal scrub. Elevation 15-1,705 feet. Blooms Jan-Nov.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Lessingia micradenia var. glabrata	smooth lessingia	None/None, 1B.2	Annual herb. Chaparral, cismontane woodland, valley and foothill grassland (serpentinite, often roadsides). Elevation 390-1,380 feet. Blooms (Apr-Jun) Jul-Nov.	**Not expected to occur**. The study area lacks suitable serpentine soils and this species has not been previously documented within 10 miles of the study area (CDFW 2018).
Malacothamnus arcuatus	arcuate bush-mallow	None/None, 1B.2	Perennial evergreen shrub. Chaparral, cismontane woodland. Elevation 45-1,165 feet. Blooms Apr-Sep.	**Not expected to occur.** The study area lacks suitable habitat for this species.

Scientific Name	Common Name	Status (Federal/State, CRPR)	Life Form/Primary Habitat Associations/ Elevation Range (feet)/Blooming Period	Potential to Occur
Microseris paludosa	marsh microseris	None/None, 1B.2	Perennial herb. Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation 15-1,165 feet. Blooms Apr-Jun (Jul).	**Low potential to occur**. Although the coniferous forest may provide potentially suitable habitat for this species, the nearest documented occurrences are closer to the coast, approximately 5 miles south of the project (CDFW 2018).
Monardella sinuata ssp. nigrescens	northern curly-leaved monardella	None/None, 1B.2	Annual herb. Chaparral (SCR Co.), coastal dunes, coastal scrub, lower montane coniferous forest (SCR Co., ponderosa pine sandhills). Elevation 0-985 feet. Blooms (Apr) May-Jul (Aug-Sep).	**Not expected to occur**. Although there are numerous documented occurrence of this species within 5 miles of the study area, the study area lacks suitable ponderosa pine sandhills habitat (CDFW 2018).
Monolopia gracilens	woodland woolythreads	None/None, 1B.2	Annual herb. Broadleaved upland forest (openings), chaparral (openings), cismontane woodland, North Coast coniferous forest (openings), valley and foothill grassland (serpentinite). Elevation 325-3,935 feet. Blooms (Feb) Mar-Jul.	**Moderate potential to occur**. Openings in the coniferous forest and chaparral communities may provide potentially suitable habitat for this species. The nearest documented occurrence for this species was observed in 1995 approximately 0.8 mile southeast of the study area (CDFW 2018). This species was not observed within the project work areas or staging areas during the March 2018 survey, which was conducted when this species would be evident and identifiable, but may occur in other portions of the study area.
Orthotrichum kellmanii	Kellman's bristle moss	None/None, 1B.2	Moss. Chaparral, cismontane woodland (sandstone, carbonate). Elevation 1,125-2,245 feet. Blooms Jan-Feb.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Pedicularis dudleyi	Dudley's lousewort	None/Rare, 1B.2	Perennial herb. Chaparral (maritime), cismontane woodland, North Coast coniferous forest, valley and foothill grassland. Elevation 195-2,955 feet. Blooms Apr-Jun.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Penstemon rattanii var. kleei	Santa Cruz Mountains beardtongue	None/None, 1B.2	Perennial herb. Chaparral, lower montane coniferous forest, North Coast coniferous forest. Elevation 1,310-3,610 feet. Blooms May-Jun.	**Not expected to occur**. The study area is outside the known elevation range for this species.

Scientific Name	Common Name	Status (Federal/State, CRPR)	Life Form/Primary Habitat Associations/ Elevation Range (feet)/Blooming Period	Potential to Occur
Pentachaeta bellidiflora	white-rayed pentachaeta	Endangered/Endangered, 1B.1	Annual herb. Cismontane woodland, valley and foothill grassland (often serpentinite). Elevation 110-2,035 feet. Blooms Mar-May.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Pinus radiata	Monterey pine	None/None, 1B.1	Perennial evergreen tree. Closed-cone coniferous forest, cismontane woodland. Elevation 80-605 feet.	**Not expected to occur**. Monterey pine was not observed in the study area and native stands of this species have only been documented along the coast, approximately 9 miles west of the study area (CDFW 2018).
Piperia candida	white-flowered rein orchid	None/None, 1B.2	Perennial herb. Broadleaved upland forest, lower montane coniferous forest, North Coast coniferous forest (sometimes serpentinite). Elevation 95-4,300 feet. Blooms (Mar) May-Sep.	**Low potential to occur.** Although the coniferous forest types in the study area may provide potentially suitable habitat for this species, the study area does not contain serpentine soils. The nearest documented occurrence was last observed in 1966 approximately 2.3 miles northwest of the study area (CDFW 2018).
Plagiobothrys chorisianus var. chorisianus	Choris' popcornflower	None/None, 1B.2	Annual herb. Chaparral, coastal prairie, coastal scrub (mesic). Elevation 5-525 feet. Blooms Mar-Jun.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Plagiobothrys diffusus	San Francisco popcornflower	None/Endangered, 1B.1	Annual herb. Coastal prairie, valley and foothill grassland. Elevation 195-1,180 feet. Blooms Mar-Jun.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Plagiobothrys glaber	hairless popcornflower	None/None, 1A	Annual herb. Meadows and seeps (alkaline), Marshes and swamps (coastal salt). Elevation 45-590 feet. Blooms Mar-May.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Polygonum hickmanii	Scotts Valley polygonum	Endangered/Endangered, 1B.1	Annual herb. Valley and foothill grassland (mudstone and sandstone). Elevation 685-820 feet. Blooms May-Aug.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Senecio aphanactis	chaparral ragwort	None/None, 2B.2	Annual herb. Chaparral, cismontane woodland, coastal scrub (sometimes alkaline). Elevation 45-2,625 feet. Blooms Jan-Apr (May).	**Not expected to occur**. The study area lacks suitable habitat for this species.
Silene verecunda ssp. verecunda	San Francisco campion	None/None, 1B.2	Perennial herb. Coastal bluff scrub, chaparral, coastal prairie, coastal scrub, valley and	**Not expected to occur**. The study area lacks suitable habitat for this species.

Scientific Name	Common Name	Status (Federal/State, CRPR)	Life Form/Primary Habitat Associations/ Elevation Range (feet)/Blooming Period	Potential to Occur
			foothill grassland (sandy). Elevation 95-2,115 feet. Blooms (Feb) Mar-Jun (Aug).	
Stebbinsoseris decipiens	Santa Cruz microseris	None/None, 1B.2	Annual herb. Broadleaved upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland (open areas, sometimes serpentinite). Elevation 30-1,640 feet. Blooms Apr-May.	**Not expected to occur.** Although the coniferous forest and chaparral communities in the study area may provide potentially suitable habitat, this species has only been documented closer to the coast, approximately 9 miles west of the study area (CDFW 2018).
Streptanthus albidus ssp. albidus	Metcalf Canyon jewelflower	Endangered/None, 1B.1	Annual herb. Valley and foothill grassland (serpentinite). Elevation 145-2,625 feet. Blooms Apr-Jul.	**Not expected to occur**. The study area lacks suitable habitat for this species.
Streptanthus albidus ssp. peramoenus	most beautiful jewelflower	None/None, 1B.2	Annual herb. Chaparral, cismontane woodland, valley and foothill grassland (serpentinite). Elevation 310-3,280 feet. Blooms (Mar) Apr-Sep (Oct).	**Not expected to occur**. The study area lacks suitable habitat for this species.
Trifolium buckwestiorum	Santa Cruz clover	None/None, 1B.1	Annual herb. Broadleaved upland forest, cismontane woodland, coastal prairie (gravelly, margins). Elevation 340-2,000 feet. Blooms Apr-Oct.	**Not expected to occur.** The study area lacks suitable habitat for this species.

APPENDIX C

Special-Status Wildlife Species Known From or Potentially Occurring in the Vicinity of the Newell Creek Dam Inlet/Outlet Replacement Project Study Area, Santa Cruz County, California

APPENDIX C
Special-Status Wildlife Known From or Potentially Occurring in the Vicinity of the Newell Creek Dam Outlet Conduit Replacement Project Study Area, Santa Cruz County, California

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Study area
Invertebrates				
Mount Hermon June beetle	*Polyphylla barbata*	Endangered/None	Mount Hermon June beetle occurs in sparsely vegetated ponderosa pine and chaparral habitat with sandy sedimentary derived soils in the Zayante Sandhills formation in Santa Cruz County.	**Not expected to occur.** Suitable habitat for this species does not occur within the study area, and the study area is outside of this species known range.
Ohlone tiger beetle	*Cicindela ohlone*	Endangered/None	Ohlone tiger beetle occurs on coastal terraces with remnant stands of open native grassland containing purple needlegrass (*Stipa pulchra*), California oat grass (*Danthonia californica*), Gairdners yampa (*Perideridia gairdneri*), and/or Kellogg's yampa (*Perideridia kelloggii*) and poorly drained clay or sandy clay soils.	**Not expected to occur.** No native grassland occurs within the study area.
Smith's blue butterfly	*Euphilotes enoptes smithi*	Endangered/None	Smith's blue butterfly occurs in dune habitat with coast or seacliff buckwheat around the Monterey Bay.	**Not expected to occur.** No dune habitat occurs within the study area.
Zayante band-winged grasshopper	*Trimerotropis infantilis*	Endangered/None	Zayante band-winged grasshopper occurs in open sandy areas with sparse, low annual and perennial herbs on high ridges and hills with sparse ponderosa pine within the Zayante Sandhills formation in Santa Cruz County.	**Not expected to occur.** The study area is outside of this species known range.
Fish				
coho salmon – Central California coast ESU (NMFS)	*Oncorhynchus kisutch*	Endangered/Endangered	Coho spend approximately the first half of their life cycle rearing and feeding in streams and small freshwater tributaries. Spawning habitat is small streams with stable gravel substrates. The remainder of the life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean. They feed on plankton and insects in freshwater and switch to a diet of small fishes while in the ocean. Southern limit of range is in central Santa Cruz county.	**Not expected to occur.** This species is known to occur further downstream of Newell Creek dam. However, a bedrock chute 0.7 mi downstream serves as a substantial barrier for this species from accessing the upper reaches of the creek.
eulachon	*Thaleichthys pacificus*	Threatened/None	Eulachon are an anadromous forage fish and are endemic to the northeastern Pacific Ocean; they range from northern California to southwest and south-central Alaska and into the southeastern Bering Sea. The southern DPS of eulachon is comprised of fish	**Not expected to occur.** The study area is outside of the species known range.

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Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Study area
			that spawn in rivers south of the Nass River in British Columbia to, and including, the Mad River in California. Adult eulachon typically spawn at age 2-5 in the lower portions of rivers. The spawning migration usually occurs between December and June.	
steelhead – central California coast DPS (NMFS)	*Oncorhynchus mykiss irideus*	Threatened/None	Central California coast steelhead (and their progeny) spawns in streams from the Russian River to Aptos Creek, Santa Cruz County, California (inclusive). They also occur in drainages of San Francisco and San Pablo Bays. Regardless of life history strategy, for the first year or two of life rainbow trout and steelhead are found in cool, clear, fast-flowing permanent streams and rivers where riffles predominate over pools, there is ample cover from riparian vegetation or undercut banks, and invertebrate life is diverse and abundant.	**Not expected to occur.** This species is known to occur in Newell Creek below Loch Lomond reservoir. During periods of high flow, there is some possibility for fish in prime condition to cross the natural rock barrier 0.7 mi downstream of the dam and access the plunge pool below the spillway; however, these high flow events are extremely isolated and rare and the chance that such flows would occur during the spawning season when this species would be moving up Newell Creek is considered remote.
tidewater goby	*Eucyclogobius newberryi*	Endangered/None, SSC	The tidewater goby is endemic to California and found primarily in waters of coastal lagoons, estuaries, and marshes. They are benthic in nature, and habitat is characterized by brackish, shallow lagoons and lower stream reaches where the water is fairly still but not stagnant. Tidewater gobies prefer a sandy substrate for breeding, but they can be found on rocky, mud, and silt substrates as well. Tidewater gobies have been documented in waters with salinity levels from 0 to 42 parts per thousand, temperature levels from 8 to 25 degrees Celsius (46 to 77 degrees Fahrenheit), and water depths from 25 to 200 centimeters (10 to 79 inches). The tidewater goby appears to spend all life stages in lagoons, estuaries, and river mouths. Tidewater gobies may enter marine environments only when flushed out	**Not expected to occur.** Suitable habitat for this species is not present within or adjacent to the study area.

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Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Study area
			of lagoons, estuaries, and river mouths by normal breaching of the sandbars following storm events.	
Amphibians and Reptiles				
California giant salamander	*Dicamptodon ensatus*	None/None, SSC	California giant salamander occurs in wet coastal forests in or near clear, cold permanent and semi-permanent streams and seepages. Aquatic larvae transform into four-legged salamanders that live on the ground and breathe air with lungs. This salamander is nocturnal, but also active in daylight in wet conditions. Adults are also found under cover objects such as rocks, logs and artificial cover.	**Not expected to occur.** Historical records occur in the vicinity of the study area. However, this species is currently found primarily in wet coastal forests adjacent to the coast.
California red-legged frog	*Rana draytonii*	Threatened/None, SSC	California red-legged frogs occur in different habitats depending on their life stage, the season, and weather conditions. Breeding habitat includes coastal lagoons, marshes, springs, permanent and semi-permanent natural ponds, and ponded and backwater portions of streams. Adult frogs prefer dense, shrubby or emergent riparian vegetation near deep (≥2 to 3 feet), still or slow moving water.	**Not expected to occur.** There are occurrence records for this species in Bull Creek, approximately 4 miles south of the study area, and in Zayante Creek, approximately 1.8 miles east of the study area. However, the species is not expected to breed within the aquatic habitat onsite due to the presence of predatory fish, lack of calm, pooled water, and other physical characteristics. No suitable breeding habitat was detected within a mile of the study area.
California tiger salamander	*Ambystoma californiense*	Threatened/Threatened	California tiger salamander (CTS) may be found in riparian and wet meadow habitats, but is more common in grasslands. CTS spend most of its life cycle underground in adjacent valley oak woodland or grassland habitat, primarily in rodent burrows. Breeding takes place following the first heavy winter rains. Temporary or permanent freshwater pools or slowly flowing streams are required for egg-laying and larval development. They appear to be absent in waters containing predatory game fish.	**Not expected to occur.** The study area is outside of the species range and there is no suitable habitat within the study area.

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Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Study area
foothill yellow-legged frog	*Rana boylii*	None/Candidate Threatened, SSC	Foothill yellow-legged frog frequents rocky streams and rivers with rocky substrate and open, sunny banks, in forests, chaparral, and woodlands. Sometimes found in isolated pools, vegetated backwaters, and deep, shaded, spring-fed pools.	**Observed, not expected to breed.** One sub-adult individual was observed in a small seep area at the base of the dam adjacent to the outlet. Because of the lack of suitable breeding habitat and absence of other habitat characteristics within the study area, it is assumed that this observation was an incidental occurrence of an individual that dispersed from areas of Newell Creek downstream and was temporarily utilizing the seep as refugia habitat.
Santa Cruz black salamander	*Aneides niger*	None/None, SSC	Santa Cruz black salamander is a terrestrial species that occurs in mixed deciduous woodland, coniferous forests, and coastal grasslands. Found under rocks near streams, in talus, under damp logs, and other objects.	**Moderate potential to occur.** There is suitable habitat for this species within the study area, as well as historical occurrence records in the vicinity of the study area.
Santa Cruz long-toed salamander	*Ambystoma macrodactylum croceum*	Endangered/Endangered, FP	Santa Cruz long-toed salamander occurs in upland mesic coastal scrub, live oak or Monterey pine woodland and riparian vegetation with small mammal burrows, leaf litter or rotten logs for burrowing. Breeds in shallow, usually ephemeral freshwater ponds. Restricted to southern Santa Cruz county (south of Aptos Creek) and northern Monterey county.	**Not expected to occur.** The study area is outside of the species known range.
San Francisco gartersnake	*Thamnophis sirtalis tetrataenia*	Endangered/Endangered	San Francisco gartersnake is endemic to California, found only on the San Francisco peninsula from near the southern San Francisco County line south to Rancho del Oso State Park in Santa Cruz County. It utilizes a wide variety of habitats, preferring grasslands or wetlands near ponds, marshes and sloughs. May overwinter in upland areas away from water.	**Not expected to occur.** There is no suitable habitat for this species within or adjacent to the study area, and the site is outside of the species known range.

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Special-Status Wildlife Known From or Potentially Occurring in the Vicinity of the Newell Creek Dam Outlet Conduit Replacement Project Study Area, Santa Cruz County, California

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Study area
western pond turtle	*Emys marmorata*	None/SSC	Western pond turtles use both aquatic and terrestrial habitats. They are found in rivers, lakes, streams, ponds, wetlands, vernal pools, ephemeral creeks, reservoirs, agricultural ditches, estuaries, and brackish waters. Western pond turtles prefer areas that provide cover from predators, such as vegetation and algae, as well as basking sites for thermoregulation. Adults tend to favor deeper, slow moving water, whereas hatchlings search for slow and shallow water that is slightly warmer. Terrestrial habitats are used for wintering and usually consist of burrows in leaves and soil. Western pond turtles also lay their eggs in terrestrial habitats. They are rarely found at altitudes above 1,500 meters.	**Observed.** There is suitable habitat for this species within the study area, as well as historical occurrence records in the vicinity of the study area. This species has been observed within Loch Lomond Reservoir and in the plunge pool below the spillway.
Birds				
American peregrine falcon	*Falco peregrinus anatum*	Delisted/Delisted, FP	American peregrine falcons are found in a variety of open habitats, cliffs (mountains to coast); sometimes cities. Often near water, especially along coast, and migrants may fly far out to sea. Within natural habitat areas, the species typically nests on small outcrops/ledges within cliffs or rock substrate areas.	**Not expected to occur.** While the reservoir can serve as suitable foraging habitat for this species during movement events, no suitable nesting habitat occurs within the study area.
bald eagle	*Haliaeetus leucocephalus*	Delisted, BGEPA/Endangered, FP	Bald eagle occurs near large bodies of open water such as lakes, marshes, estuaries, seacoasts and rivers, where fish are abundant. Usually nests within one mile of water in tall trees with open branchwork bordering lakes or large rivers. In Central California, bald eagles prefer foothill pines for nesting.	**Observed.** Suitable nesting and foraging habitat for this species exists within the study area, primarily associated with Loch Lomond Reservoir, and this species has been historically observed at the reservoir.
bank swallow	*Riparia riparia*	None/Threatened	Bank swallow is restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured or sandy soils, into which it digs nesting holes. Feeds predominantly over open riparian areas, but also over brushland, grassland, wetlands, water, and cropland.	**Not expected to occur.** Suitable cliff habitat for this species is not present within the study area, and the nearest documented occurrence is over 9 miles south of Loch Lomond reservoir.

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Special-Status Wildlife Known From or Potentially Occurring in the Vicinity of the Newell Creek Dam Outlet Conduit Replacement Project Study Area, Santa Cruz County, California

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Study area
black swift	*Cypseloides niger*	None/SSC	Black swift 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.** There is a small waterfall below the spillway that drains into the plunge pool, however, no black swifts were observed during the biological survey and the nest habitat there is considered marginal for this species.
burrowing owl	*Athene cunicularia*	None/SSC	Burrowing owl utilizes abandoned ground squirrel burrows in open habitats and grasslands, also disturbed areas. Diet consists of insects, small mammals, reptiles and amphibians. Commonly uses burrows on levees or mounds where there are unobstructed views of possible predators such as raptors or foxes.	**Not expected to occur**. Suitable habitat is not present within or adjacent to the study area.
California black rail	*Laterallus jamaicensis coturniculus*	None/Threatened, FP	California black rail occurs near freshwater marshes along the margins of ponds, lakes, and water impoundments; also herb dominated wetlands on sloped ground associated with springs, canal leaks, seepage from impoundments and agricultural irrigation. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	**Not expected to occur**. Suitable habitat is not present within or adjacent to the study area.
California least tern	*Sterna antillarum browni*	Endangered/Endangered	During the breeding season, California least tern forms colonies and nests on open, flat beaches along lagoon or estuary edges. Sometimes nests on mud or sand flats farther inland, or on artificial islands created by dredge spoils. Tends use the same nest from year to year and return to natal nest site. During the non-breeding season California least tern occurs singly or in small groups. Eats mainly small fish by diving from the air into shallow water.	**Not expected to occur**. Suitable habitat is not present within or adjacent to the study area.
Least Bell's vireo	*Vireo bellii pusillus*	Endangered/Endangered	Least Bell's vireo primarily occupies riverine riparian habitats along water, including dry portions of intermittent streams that typically provide dense cover within 1 to 2 meters (3.3 to 6.6	**Not expected to occur**. Suitable habitat is not present within or adjacent to the study area.

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Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Study area
			feet) off the ground, often adjacent to a complex, stratified canopy.	
marbled murrelet	*Brachyramphus marmoratus*	Threatened/Endangered	Marbled murrelet forages in coastal waters and bays, and breeds inland on mountains near coast. Generally on calm protected waters near coast, as in bays, inlets, among islands; does most foraging in fairly shallow water. Sometimes found on lakes near coast. Nests on mountainsides on islands or well inland in mature forest habitat, typically within old growth forests containing trees with suitably large branches that serve as nest platforms.	**Observed, not expected to breed.** While an individual was observed flying over the study area during the field survey, because the study area has been extensively logged and does not contain old growth forest and nest habitat preferred by this species, it is not expected to nest within the study area or adjacent habitat. Critical habitat for this species occurs approximately 1.5 miles southwest of the study area.
purple martin	*Progne subis*	None/SSC	Purple martin occurs in towns, farms, and semi-open country near water; in the west it also inhabits mountain forest and saguaro desert. Nests in cavities of trees, usually in colonies. Forages for flying insects.	**Not expected to occur**. Although suitable habitat is present within the study area, few suitable tree cavities were observed during the biological survey and no purple martins were observed.
saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	None/SSC	Saltmarsh common yellowthroat remains locally numerous in areas where extensive wetlands with adjacent riparian thickets occur. In brackish and saline tidal marsh habitat around San Francisco Bay, yellowthroats prefer habitats consisting of rushes (*Scirpus* spp.), peppergrass (*Leipidium latifolium*), and *Juncus*.	**Not expected to occur**. Suitable habitat is not present within or adjacent to the study area.
southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered/Endangered	Found in bushes, willow thickets, brushy fields, upland groves. Breeds in thickets of deciduous trees and shrubs, especially willows, or along woodland edges. Often near streams or marshes (especially in southern part of range).	**Not expected to occur**. Suitable habitat is not present within or adjacent to the study area.

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Special-Status Wildlife Known From or Potentially Occurring in the Vicinity of the Newell Creek Dam Outlet Conduit Replacement Project Study Area, Santa Cruz County, California

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Study area
tricolored blackbird	*Agelaius tricolor*	None/Candidate Endangered, SSC	Tricolored blackbird is a colonial species found almost exclusively in California. It utilizes wetlands, marshes and agricultural grain fields for foraging and nesting. The tricolored blackbird population has declined significantly in the past 6 years due to habitat loss and harvest of grain fields before young have fledged.	**Not expected to occur.** Suitable habitat is not present within or adjacent to the study area.
western snowy plover	*Charadrius alexandrinus nivosus*	Threatened/SSC	Western snowy plover is a small shorebird, approximately the size of a sparrow. During the breeding season (March through September), plovers can be seen nesting along the shores, peninsulas, offshore islands, bays, estuaries, and rivers of the United States' Pacific Coast. Plovers will use almost anything they can find on the beach to make their nests, including kelp, driftwood, shells, rocks, and even human footprints	**Not expected to occur**. Suitable habitat is not present within or adjacent to the study area.
white-tailed kite	*Elanus leucurus*	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.	**Not expected to occur.** Suitable habitat is not present within or adjacent to the study area.
yellow rail	*Coturnicops noveboracensis*	None, SSC	Yellow Rail occurs year round in California, currently in the northeastern interior and as a winter visitor on the coast. They require densely vegetated marshes for breeding, with sedges or meadows that have moist soils or shallow standing water.	**Not expected to occur.** Suitable habitat is not present within or adjacent to the study area.
		Mammals		
American badger	*Taxidea taxus*	None/SSC	American badger is most abundant in drier open stages of most shrub, forest and herbaceous habitats with friable soils. Will dig burrows for cover. Will reuse burrows occasionally but also may dig new burrows each night in summer. Diet consists of rodents, small mammals, reptiles, insects, birds and carrion.	**Not expected to occur.** Suitable habitat is not present within or adjacent to the study area.

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Special-Status Wildlife Known From or Potentially Occurring in the Vicinity of the Newell Creek Dam Outlet Conduit Replacement Project Study Area, Santa Cruz County, California

Common Name	Scientific Name	Federal/State Status	Habitat Associations	Potential to Occur in the Study area
pallid bat	*Antrozous pallidus*	None/SSC	Pallid bat occupies a variety of habitats including grassland, shrubland, woodland and forests from sea level up through mixed conifer forest. Roosts in caves, mines, crevices and occasionally hollow trees or buildings. Prefers open habitats for foraging.	**Low potential to occur.** Suitable foraging habitat is present within the study area; there is a low potential for roosting/breeding due to the general lack of suitable roost habitat. There is one documented occurrence approximately 2 miles north of the study area.
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	None/SSC	Dusky-footed woodrats are found in forest and shrubland communities throughout much of California. They are well known for their large terrestrial stick houses (midden), some of which can last for twenty or more years. Houses typically are placed on the ground against or straddling a log or exposed roots of a standing tree, and are often located in dense brush. Nests are also placed in the crotches and cavities of trees and in hollow logs.	**Moderate potential to occur.** One woodrat midden was observed within the study area during surveys. However, it is not possible to discern *N. fuscipes* and *N. fuscipes annectens* species phenotypically. Suitable habitat occurs for this species within the study area.
Townsend's big-eared bat	*Corynorhinus townsendii*	None/SSC	Townsend's big-eared bat is found throughout most of western North America. Hibernates and roosts in caves and mines near entrances, or cave like structures such as buildings or under decks. Forages in forested habitats, along open edges.	**Low potential to occur.** Suitable foraging habitat is present within the study area; however, there is a low potential for roosting/breeding due to the general lack of suitable roost habitat. There is a documented occurrence approximately 2 miles north of the study area.

APPENDIX D

Wildlife Species Observed Within the within the Newell Creek Inlet/Outlet Replacement Project Study Area, Santa Cruz County, California

APPENDIX D
List of Wildlife Species Observed within the Newell Creek Dam Outlet Conduit Replacement Project Study Area, Santa Cruz County, California

Scientific Name	Common Name
Mammals	
Neotoma fuscipes	woodrat (sticknest near Staging Area 6; one individual observed [dead] in spillway, unknown subspecies)
Urocyon cinereoargenteus	gray fox (scat)
Microtus californicus	California vole (sign)
Sylvilagus bachmani	western brush rabbit (scat)
Birds	
Cathartes aura	turkey vulture
Buteo jamaicensis	red-tailed hawk
Buteo lineatus	red-shouldered hawk
Colaptes auratus	northern flicker
Cyanocitta stellleri	Steller's jay
Aphelocoma californica	western scrub jay
Zenaida macroura	mourning dove
Mergus merganser	common merganser
Psaltriparus minimus	bushtit
Calypte anna	Anna's hummingbird
Junco hyemalis	dark-eyed junco
Brachyramphus marmoratus	marbled murrelet
Corvus brachyrhynchos	American crow
Sayornis nigricans	black phoebe
Melozone crissalis	California towhee
Anas platyrhynchos	mallard
Cardellina pusilla	Wilson's warbler
Fulica americana	American coot
Pandion haliaetus	osprey
Turdus migratorius	American robin
Myiarchus cinerascens	ash-throated flycatcher
Certhia americana	brown creeper
Branta canadensis	Canada goose
Podilymbus podiceps	pied-billed grebe
Picoides nuttallii	Nuttall's woodpecker
Setophaga coronata	yellow-rumped warbler
Petrochelidon pyrrhonota	cliff swallow
Dendroica petechia	yellow warbler
Reptiles and Amphibians	
Taricha torosa	California newt
Plestiodon skiltonianus skiltonianus	Skilton's skink
Pseudacris regilla	pacific chorus frog
Rana boylii	foothill yellow-legged frog

APPENDIX E

Migratory Bird Species (Birds of Conservation Concern) Known From or Potentially Occurring in the Vicinity of the Newell Creek Dam Inlet/Outlet Replacement Project Study Area, Santa Cruz County, California

Migratory Bird Species (Birds of Conservation Concern) Known From or Potentially Occurring in the Vicinity of the Newell Creek Dam Inlet/Outlet Replacement Project Study Area, Santa Cruz County, California

Species	Period when Present/Potentially Present	Past Sightings within Project Area
Bald eagle (*Haliaeetus leucocephalus*)	Year round	Yes
Peregrine falcon (*Falco peregrinus*)	Year round	No
Yellow rail (*Coturnicops noveboracensis*)	Early October to mid-April	Yes
Long-billed curlew (*Numenius americanus*)	Early July to early April	No
Flammulated owl (*Psiloscops flammeolus*)	Mid-May to mid-October	No
Black swift (*Cypseloides niger*)	Mid-April to mid-October	No
Costa's hummingbird (*Calypte costae*)	Mid-March to late June	No
Allen's hummingbird (*Selasphorus sasin*)	Summer resident (January to July)	Yes
Lewis's woodpecker (*Melanerpes lewis*)	Winter (irregular)	No
Nuttall's woodpecker (*Picoides nuttallii*)	Year round	Yes
Loggerhead shrike (*Lanius ludovicianus*)	Year round	No
Yellow-billed magpie (*Pica nuttalli*)	Year round	No
Oak titmouse (*Baeolophus inornatus*)	Year round	Yes
Yellow warbler (*Dendroica petechial brewsteri*)	Late March to early October	Yes
Common yellowthroat (*Geothlypis trichas sinuosa*)	Year round	Yes
Spotted towhee (*Pipilo maculatus clementae*)	Year round	Yes
Black-chinned sparrow (*Spizella atrogularis*)	Summer resident	No
Song sparrow (*Melospiza melodia* spp.)	Year round	Yes
Lawrence's goldfinch (*Spinus lawrencei*)	Year round (irregular)	No